

**ANALYSING THE RELATIONSHIP BETWEEN FINANCIAL LITERACY AND
THE USE OF FINANCIAL PRODUCTS IN NAMIBIA**

A THESIS SUBMITTED IN PARTIAL FULFILMENT OF THE REQUIREMENTS

FOR

THE MASTER OF BUSINESS ADMINISTRATION FINANCE DEGREE

OF

THE UNIVERSITY OF NAMIBIA

BY

TIOFILIA JENTZSCH

200732447

SEPTEMBER 2021

SUPERVISOR: DR. ALFRED KECHIA MUKONG (UNAM)

ABSTRACT

This study analyses the relationship between financial literacy and the use of financial products in Namibia. The objectives of the study were: to examine the determinants of financial literacy as well as examine the effects of financial literacy on the use of financial products in Namibia. This study was important because it provides financial institutions and policy makers with an insight on how to promote financial literacy and the use of financial products in Namibia. The data used in this study were sourced from the Namibia Financial Inclusion Survey of 2017. The study employed the ordinary least squares (OLS) model to estimate the determinants of financial literacy and the probit model, and an instrumental variable probit (IV Probit) to examine the impact of financial literacy on the use of financial products. The study focused on individuals aged 16 years and older, the legal age that allows individuals to own formal financial products in Namibia. The results suggest that age, gender, location, formal education, access to television, participation in household financial decisions, access to mobile phone and being a member of a savings club significantly influences the level of financial literacy. The study found that a one index point increase in financial literacy increases the probability of having a savings account by 96%age points and the probability of having a bank account by 89%age points. For the individual measures of financial literacy, the results suggest that a unit index point increase in financial attitude, financial knowledge, and financial awareness increases the probability of having a saving account by 32, 15 and 55 percentage points and the probability of having a bank account 21, 41, and 16 percentage points, respectively. Similarly, a one index increase in financial literacy increases the probability of having access to credit by 52%age points and the probability of having access to insurance by 89%age points. For the individual measures of financial literacy, a unit index increase in financial attitude, financial knowledge, financial confidence, and financial awareness increases the probability of having access to credit by 17, 20 and 11 percentage points and the probability of having access to insurance by 27, 45 and 15 percentage points, respectively. The study recommended that the

Government of Namibia, in conjunction with the Financial Literacy Initiative as well as various stakeholders and experts, should work on developing a national policy on financial literacy.

TABLE OF CONTENTS

ABSTRACT	ii
TABLE OF CONTENTS	iv
LIST OF TABLES	vii
LIST OF FIGURES	viii
ACKNOWLEDGEMENTS	ix
DEDICATION	x
DECLARATIONS	xi
RETENTION AND USE OF THESIS	xii
CHAPTER 1: INTRODUCTION	1
1.1 Background of the Study.....	1
1.1.1. Financial literacy and financial inclusion in Namibia.....	6
1.2 Statement of the problem	8
1.3 Objectives of the study.....	10
1.4 Hypotheses of the study	10
1.5 The significance of the study	11
1.6 Limitations of the Study.....	12
1.7 Delimitation of the study.....	13
1.8 Organisation of the Thesis	13
1.9 Summary	13

CHAPTER TWO: LITERATURE REVIEW	15
2.1. Introduction	15
2.2. Meaning and Overview of Financial Literacy	15
2.3 Empirical Literature Review	17
2.3.2 Financial Literacy and Financial Efficiency	23
2.3.3 Financial Literacy and Participation in the Financial Markets	24
2.3.4 Financial Literacy and Use of Quality Products	25
2.3.5 Financial Literacy and Financial Inclusion	25
2.3.6 Dangers of being Financially Illiterate.....	26
2.4 Theoretical Framework	27
2.5 Summary	32
CHAPTER THREE: RESEARCH METHODOLOGY	33
3.1 Introduction	33
3.2 Data Type and Sources.....	33
3.4 Measurement of Financial Literacy and Financial Products.....	34
3.4.1 Financial Products	34
3.4.2 Financial Literacy.....	35
3.5 Estimation Strategy	39
3.6 Research ethics.....	42
3.7 Summary	42

CHAPTER FOUR: RESULTS AND DISCUSSIONS	43
4.0 Introduction	43
4.1 Descriptive statistics.....	43
4.2 The Determinants of Financial Literacy	46
4.3 Summary	57
CHAPTER FIVE: CONCLUSIONS AND RECOMMENDATIONS	58
5.1 Introduction	58
5.2 Summary of the study.....	58
5.3 Summary of findings and conclusions	59
5.4 Policy Recommendations	62
5.5 Further Research.....	63
6.0 REFERENCES.....	64
7.0 APPENDICES	74

LIST OF TABLES

Table 3.1: Description of variables used in the analysis.....	30
Table 4.1: Descriptive statistics of variables used.....	37
Table 4.2 Determinants of financial literacy – OLS regression.....	39
Table 4.3: Marginal effect estimates of financial literacy on use of financial products.....	41
Table 4.4: IV Probit estimates of the effect of financial literacy on use of financial products.....	43
Table 4.5: Marginal effect estimates of financial literacy on use of financial products by gender.....	45
Table 4.6: Marginal effect estimates of financial literacy on use of financial products by location.....	46

LIST OF FIGURES

Figure 2.1: Family Resource Management Model23

Figure 2.2: Model of the Study – Financial Literacy Impact Model26

ACKNOWLEDGEMENTS

I would like to thank the Almighty God for good health, insights, and resources to undertake this study. I salute the overwhelming support of my boss Mr. Tjipura for ensuring business continuity while I was away to conduct my research work and meetings with my supervisor. The understanding of my (CEO) Mr. Josef A. /Urib in accommodating my request for regular absence from duty to pursue this project is invaluable and appreciated. I am also deeply grateful to my coursemates and friends, more especially Mr. Valentinus Sindongo and Mr. Daniel Kandiado, whose contributions, resourcefulness and ideas were exceptional. I would like to further extend my special gratitude to my supervisor Dr. Alfred K. Mukong, for his guidance, encouragement, and patience; he has been exceptionally supportive to me. I appreciate his wealth of experience and his rich knowledge in thesis writing.

DEDICATION

I dedicate this work to my dearest husband, Michael Jentsch, my two sons Emanuel and Michael, as well as my friends for the sacrifices they made towards this project. Their love, care, concern, support, encouragement and enthusiasm inspired me to achieve this goal. Thank you.

DECLARATIONS

I, Tiofilia Jentsch, hereby declare that the work contained in the mini-thesis, entitled “Analysing the Relationship Between Financial Literacy and the use of Financial Products in Namibia”, is my own original work and that I have not previously in its entirety or in part submitted it at any university or other higher education institution for the award of a degree.

No part of this thesis/dissertation may be reproduced, stored in any retrieval system, or transmitted in any form, or by means (e.g. electronic, mechanical, photocopying, recording or otherwise) without the author's prior permission or The University of Namibia on my behalf.

I, Tiofilia Jentsch, grant The University of Namibia the right to reproduce this thesis in whole or in part, any manner or format, which The University of Namibia may deem fit.

Signature: _____ Date: _____

RETENTION AND USE OF THESIS

I, Tiofilia Jentsch, being a candidate for the Master's Degree, accept the requirements of the University of Namibia relating to the retention and use of mini-theses deposited in the Library. In terms of these conditions, I agree that the original of my mini-thesis be deposited in the library to be accessible for study and research, in accordance with the normal conditions established by the librarian for the care, loan or reproduction of mini theses.

Signature: _____

CHAPTER 1: INTRODUCTION

1.1 Background of the Study

There is consensus that the financial sector plays a pivotal role in the economic growth and development of a country as it encourages both savings and investments (Brown & Graf, 2013). A well-developed and efficient financial sector reduces the cost and risk of producing and trading goods and services, making an important contribution to raising the standards of living. Therefore, making financial services or products easily accessible to all is a way of ensuring economic growth.

Through competition and the advantages of an efficient financial sector, financial markets have increasingly provided new financial products and services (Lusardi and Mitchell, 2014). The growing number of financial instruments suggests that individuals and businesses need to enhance their management responsibility on how to borrow, save and invest (Sevim *et al.*, 2012; Lusardi and Mitchell, 2014). Many new financial products are complex and difficult to understand, especially among the less educated and financially illiterate consumers. Hence, financial literacy is essential for consumers in making the appropriate and needed financial decisions.

Financial literacy is the ability of individuals to process economic information and make informed decisions about financial planning, wealth accumulation, debt, and pensions (Lusardi and Mitchell 2014). Hence, financial literacy is a combination of awareness, knowledge, skill, attitude, and behaviours of

individuals necessary to make sound financial decisions and achieve financial well-being (Christelis *et al.*, 2010). Sound financial literacy policies thus create awareness of the availability of financial products, their benefits and how they can be accessed (Cole *et al.*, 2011). While the importance of sound financial knowledge in the utilisation of financial products and services is widely acknowledged, surveys consistently show that the level of financial literacy is relatively low even in many advanced economies (Organisation for Economic Co-operation and Development, (OECD), 2016). This is particularly a problem in many third world countries where access and use of financial products and services are still low. In many cases, consumers make financial decisions with little understanding and have difficulties finding easy-to-understand information or do not actively seek information at all (Smith & Stewart, 2009).

In the global context, studies show that financial literacy is very low in developing countries. Using experimental data from Indonesia and India, Cole *et al.* (2011) found that financial literacy positively influences the demand for financial services. The study demonstrates that financial literacy increases the probability of opening a bank or savings account. Sevim *et al.* (2012) estimate the effect of financial literacy of Turkish financial consumers on the borrowing behaviour of individuals. The authors found that individuals with higher financial literacy were less likely to exhibit excessive borrowing. This suggests that policy efforts to increase financial literacy may have important implications in preventing excessive borrowing. Doi *et al.* (2014) used a field experiment and found that financial literacy is an important determinant of financial

decision-making among farmers in Rwanda. Murendo and Mutsonziwa (2017) found that financial literacy is an important determinant of individual saving decisions in Zimbabwe.

The OECD (2013) report emphasised that developing countries, particularly African countries, should invest in improving the level of financial literacy of their citizens. That is, there is the possibility of improving the level of financial literacy among the most vulnerable parts of the African population. There are several reasons justifying the implementation of well-designed financial education initiatives in Africa, including the need for higher financial inclusion and appropriate use of financial products. Also, the need to better manage personal/household resources and to start and develop entrepreneurial activities (OECD, 2013).

Evidence suggests that financial literacy is linked to financial behaviours, including borrowing, saving and investments decisions of individuals (Jappelli and Padula, 2013; Lusardi and Mitchell, 2014). For example, interacting effectively with financial service providers and making sound financial decisions increases the probability of hedging against financial and economic risks, thereby improving individual or household wellbeing. According to the OECD (2013), financial education can help to reduce the demand-side barriers to financial inclusion. Improved financial literacy can increase awareness of products and services, as well as confidence and ability in using them. In turn, this can help to promote the demand for formal financial products and services.

To be effectively included in financial markets, consumers need not only to have access to safe and regulated financial products but also to be aware of their existence, understand their terms and conditions and be able to compare products to choose those facilities most appropriate for their needs. Consumers' lack of knowledge and experience with financial issues may put them in a disadvantaged position with respect to banks, microfinance institutions, and informal lenders, thus increasing the probability that they become victims of fraud or abuse.

In light of the foregoing, financial education can also foster effective financial inclusion by making consumers aware of their rights and the ability to better avoid scams and abuse from unscrupulous financial sector providers. For this reason, enhancing the financial knowledge of individuals has been recognised as a public policy option for improving financial decision-making and thus welfare (Huston, 2010; Lusardi and Mitchell, 2014). For example, to promote the level of financial inclusion in developing countries, financial literacy training and intervention programs have been cited as essential.

To validate these arguments, researchers in recent decades have focussed on examining financial literacy and its implications on financial behaviour and well-being (Lusardi and Mitchell, 2007; Cole *et al.*, 2011; Sevim *et al.*, 2012; Jappelli and Padula, 2013; Karlan *et al.*, 2014; Gaudecker, 2015). For instance, Jappelli and Padula (2013) found that financial literacy is strongly correlated

with wealth and Cole *et al.* (2011) found that financial literacy is a strong determinant of the use of financial products and services.

While there is vast evidence on the impact of financial literacy on financial behaviour (Lusardi and Mitchell, 2007; Bucher-Koenen and Lusardi, 2011; Jappelli and Padula, 2013; Landerretche and Martinez, 2013; Gaudecker, 2015), that there is an upsurge of such evidence in some developing countries (Cole *et al.*, 2011; Sevim *et al.*, 2012; Doi *et al.*, 2014; Karlan *et al.*, 2014; Murendo and Mutsonziwa, 2017). The growing literature in developing countries is limited, as the majority of these studies did not consider the independent role of the different measures of financial literacy on the financial behaviour of individuals and households.

Murendo and Mutsonziwa (2017) cited that due to preference heterogeneity of individuals, there is needed to disaggregate the analysis further to understand the effects of financial literacy on financial behaviour. This study contributes to the literature by disaggregating financial literacy and estimating their effects on the use of financial products. The study also disaggregates the analysis into gender and location to account for the possible preference heterogeneity.

The limited availability of evidence of financial literacy and the use of financial products in many developing countries has been attributed to the lack of comprehensive and reliable data (Murendo and Mutsonziwa, 2017). However, the upsurge in Global Financial Inclusion databases and Financial Inclusion Surveys makes it possible to unpack the role of financial literacy on financial

decisions of individuals in many developing countries that are characterised by low financial inclusion and poor financial institutions.

This study used the Financial Inclusion Survey for Namibia to contribute to the growing evidence of financial literacy in Africa. The study contributes to the literature in the following ways: First, the study examines the determinants of financial literacy with the aim of understanding the segments of the population that required specific interventions. Second, the study investigates the effect of financial literacy on the use of financial products to promote the choice of profitable financial products by consumers. Finally, the analysis of the effect of financial literacy on financial decisions is further disaggregated to understand the location and gender-specific effects of financial literacy on financial behaviour.

1.1.1. Financial literacy and financial inclusion in Namibia.

The level of financial inclusion has increased remarkably in recent years in Namibia. For example, the country has a high percentage of banked individuals. This suggests that Namibia has a sound financial system, with over 78% of its population financially included and is ranked 4th in SADC in terms of financial inclusion (NSA, 2017). Importantly, the increase in the banked population has largely emerged from low-income earners who tend to live in rural areas.

The Financial Literacy Initiative (FLI, 2013) found that 60 percent of Namibians had bank accounts, which was slightly higher than the level observed in South Africa and East Asia and Pacific (EAP) regions. Similarly,

Global Findex (2014) finds a relatively high percentage of individuals with accounts at financial institutions (58 percent vs 69 percent in South Africa and 51 percent in LAC). However, Namibians are not making sufficient use of the vast formal financial products and services available in the financial market (NSA, 2017).

Increased financial inclusion has been driven by transactional and savings products with relatively low usage of credit, insurance, bonds, stock markets, medical aid, microfinance and unit trusts. The 2017 Namibia Financial Inclusion Survey shows that only 30% of those who participated in the survey had insurance cover. Regarding banking financial products, close to 48% have savings accounts. However, with less use of other banking financial products such as fixed deposits (8.1%), credit cards (8.3%), debit orders (7.8%), personal loan accounts (3.7%), money market accounts (1.4%) and foreign currency accounts (0.6).

The Namibia Financial Capability Survey (NFCS, 2017) suggests that the use of financial products is determined by the capability of consumers to access such products. The survey indicated that there are factors such as level of income, behaviour, age, generation, geographical location, employment status and knowledge of the financial products. The survey indicates that the majority have challenges in accessing some financial products due to lack of income, employment and knowledge of financial products.

The NFCS (2017) measures the Namibian financial literacy index based on Huston (2010)'s four dimensions of financial literacy. The four dimensions include money basics - which include the time value of money, purchasing power, and personal financial accounting concepts; inter-temporal transfers of resources between time periods; borrowing – bringing future resources into the present by means of credit cards, personal loans, and home loans. Also, investing – saving present resources for future use by means of savings accounts, investment accounts, mutual funds and protecting resources – by means of insurance or risk management techniques. Based on these indicators, Namibia scored 53.7% (money basics), 15.2% (Intertemporal Transfers - Borrowing), 35.57% (Intertemporal Transfers - Investing) and 18.8% (protecting Resources) on financial literacy (NFCS, 2017).

While these surveys (NFIS, 2017, NFCS, 2017, World Bank, 2016) and studies (Shaanika, 2018, and Hasheela 2013) provide detailed information on the level of financial inclusion in Namibia, the researcher could not identify any study that investigated the impact of financial literacy on the use of financial products. It is against this background that this study seeks to analyse the issue of financial literacy and the use of financial products/services in Namibia.

1.2 Statement of the problem

The increased growth in financial services provided by the financial market presents opportunities to consumers and businesses (World Bank, 2012). The current global business world is dynamic and provides various financial

services, some of which have high returns than others within a short period (Brown, & Graf, 2013). The financial markets are complex, offering both banked and non-banked services. The recent trends show that some consumers have turned to non-banked financial products such as cryptocurrency, pyramid businesses, forex trading and any financial product that promises a high return (Campbell, 2016). For example, investments in securities such as cryptocurrency and forex trading are legit but are high risk, hence requiring people with adequate knowledge on the nature of the investment (Schlomit, 2018).

Thakur and Banik (2018) pointed out that cryptocurrency is difficult to understand, and people who are not well knowledgeable on how digital money operates are at risk of losing all their investments. They also added that due to limited information, the system is more vulnerable to fraudsters and scammers. According to their study, Thakur and Banik (2018) indicated that Mt. Gox, the world's largest bitcoin exchange went offline in January 2014 and it was never seen again by the owners of 85,000 bitcoins.

There is a high level of financial inclusion in Namibia, with 78% of individuals having at least a savings bank account (NSA, 2017). However, the same report indicates that only 23.8% of Namibians have access to other financial products such as commodities, securities, stock markets, trust accounts and insurance. The limited use of other formal financial products other than savings could be partly attributed to a lack of financial knowledge. Using the Houston (2010)

Financial Literacy Index, Namibia's financial level stands at 53.7% (money basics), 15.2% (Intertemporal Transfers - Borrowing), 35.57% (Intertemporal Transfers - Investing) and 18.8% (Protecting Resources) (NFCS, 2017).

Results show that the majority of Namibians are knowledgeable on money basics but have little knowledge on other financial products such as borrowing, investing and protecting their resources. Lower financial knowledge and skills may result in wrong and costly financial decisions and lead to a higher level of over-indebtedness. While such wrong financial decisions can be attributed partly to a lack of financial knowledge, there is no formal evidence on the role of financial literacy in the use of financial products and services in Namibia. This study contributes to this evidence gap by analysing the relationship between financial literacy and the use of financial products in Namibia.

1.3 Objectives of the study

The main objective of this study is to analyse the relationship between financial literacy and the use of financial products and services in Namibia. Specifically, the study seeks to:

- Examine the determinants of financial literacy in Namibia
- Examine the effect of financial literacy on the use of financial products in Namibia

1.4 Hypotheses of the study

H_{0a}: Individual socioeconomic and demographic factors have no significant effect on the level of financial literacy in Namibia

H_{1a}: Individual socioeconomic and demographic factors have a significant effect on the level of financial literacy in Namibia

H_{0b}: Financial literacy has no significant effect on the use of financial products in Namibia

H_{1b}: Financial literacy has a significant effect on the use of financial products in Namibia

1.5 The significance of the study

The primary goal for this study is to provide new empirical evidence on financial literacy and the use of formal financial products in Namibia, in the process contributing to global evidence. Unlike in many countries, the level of financial inclusion is high (78%) in Namibia, yet the level of usage of profitable financial services is very low relative to the level of financial inclusion. In addition to the low level of usage of some formal financial products, little is known on the determinants of financial literacy and the role of financial literacy in financial behaviour in Namibia. Evidence on what explains the level of financial literacy and financial decisions in such an economy provides useful information for development agencies seeking to influence financial behaviour.

A similar study was conducted by Kunovskaya (2010) who examined the influence of financial literacy on the use of financial services in Russia. The study used secondary data from the Nationwide Financial Literacy survey and the results indicated that financial literacy does affect the use of financial services. However, these results cannot be replicated in Namibia due to

demographic and geographic environments hence, the important to contact this study. In Namibia, (Shiwayu, 2019) analysed the determinants of financial inclusion in Namibia, using the NFIS (2017) report adopted in in this study for data. It emerged that financial literacy is one of the determinants of financial inclusion. However, the study did not explain the relationship between financial literacy and the use of financial products in Namibia. Therefore, this study helps to cover the literature gap and contributes to the literature by disaggregating financial literacy and estimating its effects on the use of financial products. The study also disaggregates the analysis into gender and location to account for the possible preference heterogeneity. The findings from this study provide financial institutions and policy makers with insight into how they can promote financial literacy and the use of financial products in Namibia. This study is of importance to researchers, for it contributes to the growing evidence on financial literacy and the use of financial products.

1.6 Limitations of the Study

This study could not consider all aspects of the financial literacy of consumers and all types of formal financial products due to the limited or unavailability of information and data. For example, the study could not measure the financial literacy and understanding of participants on financial products such as bonds/securities, stock markets, commodities, and derivatives as they were not included in the Namibia Financial Inclusion Survey used in the study. However, it is important to note that such limitation does not undermine the contribution of this study, and it is recommended that future surveys include such variables.

1.7 Delimitation of the study

The study is restricted to individuals aged 16 years and older. The study used secondary data (Namibian financial inclusion survey) that was collected by the Namibia Statistics Agency (NSA) between 2015 and 2016. The survey is a national representation of individuals aged 16 years and older, the legal age to own a bank account in Namibia, implying the findings can be generalisable.

1.8 Organisation of the Thesis

The remainder of the study is organised as follows: Chapter Two presents the literature review, which discusses relevant literature, from the motives and theoretic considerations to empirical studies. Chapter Three provides the research methods, which include a discussion of the data used, the empirical strategy used and ethical considerations. Chapter Four discusses the empirical results, that is, an analysis and discussion of the study. Chapter Five concludes and summarises what the study sought to achieve, what it found and where it diverges or converges from existing evidence. It goes further to make recommendations and suggests possible areas for further research. Literature cited in the study is listed under 'References', while relevant additional information to this study is listed under the Appendices.

1.9 Summary

This chapter introduced the topic and the subject to be studied. It provides the reader with the background of the study and the problem that prompted the need for the research. The objectives of the study were also provided. The main

objective of this study is to analyse the relationship between financial literacy and the use of financial products and services in Namibia. In the next chapter, the researcher reviews literature from various authors and researchers related to this study. Related theories were also reviewed.

CHAPTER TWO: LITERATURE REVIEW

2.1. Introduction

This chapter presents a review of relevant and related literature on the relationship between financial literacy and the use of financial products. The chapter discusses the meaning of the various terminologies relating to financial literacy and financial products. It also discusses the theoretical and empirical literature on financial literacy and financial behaviour.

2.2. Meaning and Overview of Financial Literacy

Financial inclusion is gaining the attention of many stakeholders, including financial institutions, government agencies, consumers, and international bodies (Organisation for Economic Co-operation and Development (OECD), World Bank and other organisations). For this reason, there is a growing concern about the role of financial literacy in promoting financial inclusion. This study addresses some of these concerns by examining the effects of financial literacy on the use of financial products in Namibia. Thus, several definitions of financial literacy have been highlighted in the existing literature.

The term financial literacy refers to the ability of an individual to make informed judgments and decisions regarding the use and management of money (Australian Securities and Investment Commission (ASIC), 2003; Noctor *et al.*, 1992; Godsted and McCormick, 2007). It can be extended as “enabling people to make informed and confident decisions regarding all aspects of their

budgeting, spending and savings and their use of financial products and services, from everyday banking through to borrowing, investing and planning for the future” (Ray Morgan, 2003).

According to Worthington (2006), financial literacy can be defined broadly or narrowly. A broad definition adopts an understanding of economics and how economic conditions and circumstances affect household decisions. A narrow definition focuses on basic money management tools such as budgeting, saving, investing and insurance (Gallery *et al.*, 2011).

The President’s Advisory Council on Financial Literacy in the US (PACFL, 2008) defines financial literacy as the ability to use knowledge and skills to manage financial resources effectively for a lifetime for one’s financial well-being. It is the knowledge of basic economic and financial concepts, as well as the ability to use that knowledge and other financial skills to manage financial resources effectively for a lifetime of financial well-being.

Financial literacy skills enable individuals to navigate the financial world, make informed decisions about their money and minimise their chances of being misled on financial matters (Beal and Delpachitra, 2003; Commonwealth Bank Foundation, 2004b). It refers to the set of skills and knowledge that allows an individual to make informed and effective decisions through their understanding of finances (Institute of Economic Affairs, 2012). Financial literacy has been described as the ability to make use of financial education (Wiener *et al.*, 2005). It includes the ability to discern financial choices, discuss

money and financial issues without discomfort, plan for the future, and respond competently to life events that affect everyday financial decisions, including events in the general economy (Parrish and Servon, 2006, p. 71).

As observed by Hogarth (2002), there is a consistent theme running through most definitions of financial literacy, including:

- Being knowledgeable, educated and informed on the issues of money and assets, banking, investments, credit, insurance, and taxes.
- Understanding the basic concepts underlying the management of money and assets (e.g., the time value of money in investments and the pooling of risk in insurance).
- Using that knowledge and understanding to plan and implement financial decisions.

Based on these definitions, it is evident that financial literacy is related to the following terms: personal finances, financial education, and financial capability. These are core issues highlighted by different authors that have provided explanations on financial literacy, and the empirical review in this study focuses on these issues.

2.3 Empirical Literature Review

This section reviewed the empirical literature on the relationship between financial literacy and the use of various financial products. Clancy *et al.* (2011) examined the relationship between financial education and savings outcomes in Individual Development Accounts (IDAs). The data was obtained from 14 IDA

programs that are part of the American Dream policy Demonstration (ADD) across the United States; 2,364 participants aged 13-72 were selected, 80% being female. A Heckman two-step regression was used to analyse the data. One regression was run with Average Monthly Net Deposit (AMND) as the dependent variable, and the other was run with deposit frequency as the dependent variable.

The first step of the Heckman two-step regression predicts exit from the IDA program (and thus a high likelihood of a low opportunity for attendance for financial education). The second step predicts the savings outcome measure for those participants who did not exit, controlling for length of participation and a wide range of other factors that might affect AMND and deposit frequency. The results showed that a few hours of general financial education increases the level of saving, although the effects may diminish or reverse as hours increase.

Clark and D'Ambrosio (2012) evaluated the effects of seminars in providing financial information that would assist individuals in the retirement planning process using a pre-test, post-test survey. Their empirical analysis is based on information obtained in three surveys: participants completed the first survey prior to the start of a seminar, a second survey at the end of a seminar and a third survey several months later. Respondents were asked whether they had changed their retirement goals or revised their desired levels of retirement income following attendance at a seminar. They find changes for both retirement goals and stated savings behaviour, particularly for women. The

study concluded that exposing workers to retirement seminars does influence their desire to save.

Lusardi (2013) used survey data to examine the impact of attending retirement seminars on savings behaviour among older households in the American Health Retirement Survey (HRS). Data was collected through questionnaires from the Rand ALP in a survey of respondents aged 18 and above recruited by the University of Michigan. The study found positive effects on saving behaviour, suggesting that those with lower financial education have low initial savings.

Bernheim and Garrett (2013) use a household survey to analyse the effects of employer-based financial education on the use of financial products of employees in general and for retirement in the US. Data were collected from a nationally representative sample of respondents between ages 30-49. Their cross-sectional analysis finds positive correlation between educational programs and the use of financial products, with sufficient controls to suggest that the relationship is causal.

Nyamhute and Monyoncho (2018) conducted a case study on the effects of financial literacy on the personal financial management of employees of finance and banking institutions. The population of the study consisted of financial institutions listed on the Nairobi Securities Exchange (NSE). Data were obtained from a sample of 192 employees using structured questionnaires. This sample was divided into two, with one sample targeting employees with financial knowledge while the other sample targeted employees without a

financial background. SPSS was used to analyse the data. Likert scale questions were used in the research instrument. The results of the study showed that one can still practice financial management behaviour whether they are financially literate or not; this is due to the availability of other channels of acquiring financial knowledge. The results of the study also showed a significant difference in the behaviour of the financially literate versus the financially illiterate. The student t-test gave a p-value of 0.029086 which implies that financially literate people were in a better position to apply the principles of proper financial management at the 5% level of significance.

Kibui (2013) performed a cross-sectional descriptive survey to determine the relationship between financial literacy and the use of financial products among youths in the Konoin constituency, Kenya. A total of 250 participants were selected using the random sampling technique. Data was collected using non-structured and structured questionnaires and analysed by regression analysis and descriptive statistics. The findings showed that there is a direct relationship between financial literacy and the use of financial products. Olima (2013) investigated the effects of financial literacy on personal access to financial services of the employees of the Kenya Revenue Authority (KRA); 100 employees were selected from a target population of 2,000 respondents. Primary data was collected using semi-structured questionnaires. Analysis of quantitative data was done using descriptive statistics and multiple regression analysis. The findings of the study indicated that financial literacy impacts personal access to financial services positively.

Njehia (2014) explored the effect of financial literacy on personal investment decisions among the employees of Mumias Sugar Company in western Kenya and determined the level of financial literacy among the employees. The study used primary data collected from semi-structured questionnaires. Two hundred employees were selected from a target population of 2000 employees using a random sampling technique. The data were analysed using regression analysis and descriptive statistics, mean correlation, standard deviation, and percentages. The findings revealed that most of the employees of Mumias Sugar Company had a good background in financial knowledge. Generally, it was observed that the employees employed their financial knowledge and skills to make sound investment decisions.

2.3.1 Relationship between financial literacy and financial decision-making

There is vast evidence that suggests that financial literacy influences financial decision-making (Brown, 2009; Katarachia & Konstantinidis, 2014; Lusardi, 2010, 2011; Lusardi & Mitchell, 2013, 2014). Additionally, other studies examined the relationship between financial education and financial decision-making (Eugster, 2013; Lusardi and Mitchell, 2007, 2011c; Lusardi and Tufano, 2008, 2009; Lusardi and Scheresberg, 2013; Moore, 2003; van Rooij, Lusardi and Alessie, 2011). These studies have documented a strong positive correlation between financial literacy and financial decisions. For example, Eugster (2013) found a positive correlation between financial literacy and individuals' readiness to participate in a risky asset market.

Moore (2003) found that financially knowledgeable individuals and households are more likely to make informed decisions to avoid consequential predatory lending practices than the financially illiterate. The study surveyed two participatory groups, the “victim pool” and the focus group and established that the victim pool was more likely to exhibit a higher rate of risky, negative, and non-productive behaviours than the focus group. The victim pool was considered the less financially educated group.

The decision to create wealth through stock market participation and retirement contributions is shown to be a function of financial enlightenment (Lusardi and Mitchell, 2007, 2011c; Van Rooij, Lusardi, & Alessie 2011). Lusardi and Mitchell’s (2007, 2011c) and Van Rooij *et al.*, (2011) studies confirmed that being financially enlightened increases the probability of participating in the stock market and promote better retirement planning behaviours.

Different measures of financial literacy have been found to have a positive influence on the ability to make financial decisions (Huston, 2010; Massimo and Ornella, 2011). However, Massimo and Ornella (2011) cited that some previous studies failed to establish a strong correlation between financial literacy and financial decision-making. Massimo and Ornella (2011) thus argued that socio-demographic features, financial maturity, practical experience from daily use of financial products, and the amount and quality of information available at the time of decision making are important for better financial decisions.

Huston (2010) questioned the positive correlation between financial literacy and financial behaviour, arguing that while financial literacy can be a good predictor of financial behaviour outcome, other behavioural tendencies such as impulsiveness, unusual preferences, and unexpected circumstances may reverse this relationship. Evidence indicates that the level of financial literacy tends to vary with education and income levels (Lusardi, Michaud, & Mitchell, 2011), but some consumers with high education and income levels tend to be ignorant about financial issues than their counterparts (OECD, 2006).

2.3.2 Financial Literacy and Financial Efficiency

Financial literacy results in financial efficiency (Capuano and Ramsay, 2011). Financial efficiency refers to the use of financial products and investing without waste and unnecessary cost. Financial efficiency includes selecting the best valued financial products or services at the lowest possible price. Financial efficiency is achieved by comparison shopping, an attribute of financially literate consumers. Comparison-shopping leads to savings by purchasing the best value products.

The European Commission (2010) noted that people who understand financial issues make better choices of financial services for their needs. They are less likely to purchase products they do not need, be tied into products they do not understand, or take risks that could drive them into financial difficulty. Financial literacy prevents people from making poor consumer decisions (Grable and Joo, 1998). Increasing financial literacy is a way to financially empower people and improve their quality of life (Knapp, 1991; Voydanoff,

1990). Thus, when people gain more knowledge and more positive attitudes toward money, they make better decisions, saving resources and improving their livelihood (Knapp, 1991).

2.3.3 Financial Literacy and Participation in the Financial Markets

Financially literate consumers have been seen to possess more financial products and be productive investors (Capuano and Ramsay, 2011). Thus, limited financial market participation or inertia may be a consequence of low level of financial literacy. Van Rooij *et al.* (2007) finds that people with low levels of financial literacy are significantly less likely to hold shares and stocks.

Financial literacy does not only enhance participation but also encourages sound investment strategies such as diversification. The assumption is that financial illiteracy causes anxiety when dealing with financial products. Accordingly, financially illiterate people avoid financial products which are perceived to be difficult to understand. That is, the optimal approach for a person who is financially illiterate is to abstain from market participation and avoid purchasing costly products or borrowing.

A financially literate consumer is more confident when making decisions about finance, thereby increasing participation in the market. Consumers benefit from investment in financial products because their stock of financial knowledge allows them to increase the returns on their wealth (Jappelli and Padula, 2013). Financial literacy can influence the types of products selected and the types of investments made. The fast-moving nature of financial markets means that

individuals who understand product features and market environments are best placed to make informed decisions about their financial needs.

2.3.4 Financial Literacy and Use of Quality Products

According to Capuano and Ramsay (2011), Alessie *et al.* (2011), Worthington (2006) and Braunstein and Welch (2002), financially literate consumers are more financially efficient. That is, financially literate individuals are more likely to seek and purchase better, cheaper, and more appropriate financial products and services. Knowledge of consumer rights and contracts also allows consumers to evaluate products more carefully and, as a result, demand more from suppliers.

Hall (2008) promotes the view that financial literacy bolsters market discipline, which is the collective consumer influence on institutional financial behaviour, making these institutions “more likely to operate in a safe, sound and efficient manner”. As a result, better-informed consumers are collectively able to influence the ways that financial institutions are managed and thus reward those institutions which offer better quality products and services at the best value.

2.3.5 Financial Literacy and Financial Inclusion

Greater financial knowledge allows members of society who are otherwise excluded from the mainstream financial sector to get the opportunity to use financial products and services (Capuano and Ramsay, 2011). Financial literacy provides the understanding required to access specific financial products, which allows people to borrow and become financially active. The European

Commission (2010) notes that those who have received some form of education on financial matters are far more likely to be engaged with the mainstream financial industry and not rely on informal, costly and higher risk fringe providers. It can encourage citizens, even those on low incomes, to plan and save some of their incomes.

2.3.6 Dangers of being Financially Illiterate

Those with low level of financial literacy are likely to make costly financial planning decisions. A study by Schlomit (2018) finds that 30% of people in the lowest quartile of financial literacy thought they had a fixed-rate mortgage when in fact, they had an adjustable rate. In their work, Lusardi and Tufano (2008) find that people with lower debt literacy end up paying higher fees and generally have higher borrowing costs. People fail to make correct decisions because they have not received sound personal financial education (Hira, 1993; O'Neill, 1993).

Financial literacy deficiencies can affect an individual's or family's day-to-day money management and ability to save for long-term goals such as mortgage decisions, seeking higher education, or financing retirement. In addition, those with low financial literacy are more likely to have problems with debt (Lusardi and Tufano, 2009) and are also less likely to participate in the stock market (Van Rooij *et al.*, 2007) and less likely to choose investment products with lower fees (Hastings and Tejada-Ashton, 2008).

Financially illiterate people are less likely to accumulate wealth and manage wealth effectively (Stango and Zinman, 2007; Hilgert, Hogarth, and Beverly, 2003) and less likely to plan for retirement (Lusardi and Mitchell, 2006, 2007a, 2009). Youths with limited financial knowledge have increased financial difficulties that continue into later years (Danes and Hira, 1987; Hira, 2002). Chen and Volpe (1998) find that students with less financial knowledge had more negative opinions about finances and made more incorrect financial decisions. Having a low level of financial knowledge limits the ability of individuals to make informed decisions (Jorgensen, 2007). Thus, the consequences of financial illiteracy cannot be downplayed since it has negative effects on both the individual consumers and the nation.

2.4 Theoretical Framework

The theoretical paradigm mostly used by researchers when studying financial decisions and how resources are managed is the systems theory (Goldsmith, 2005). Systems theory looks at the input, throughput, output, and feedback in a flow chart model. Financial management is a concept grounded in human ecology and utility theories which are quite related to family resource management theory, which is embedded in the systems theory (Bubolz and Sontag, 1993). This study adapted the family resource management theory to understand and appreciate the financial literacy level of the participants and how their financial knowledge shapes their financial decisions, opinions, and practices. The Social Learning Theory postulated by Bandura (1977) is used to complement the family resource management theory.

According to Goldsmith (2005) family, resource management theory was advanced by Deacon and Firebaugh (1981) as a management process with an orientation where management is “the process of using resources to achieve goals”. The four steps in the family resource management model explain how people make financial decisions and develop financial behaviours. The steps are inputs, throughputs, outputs, and feedback loop, as depicted in Figure 2.1. These steps are explained in line with how they fit the model designed for this study.

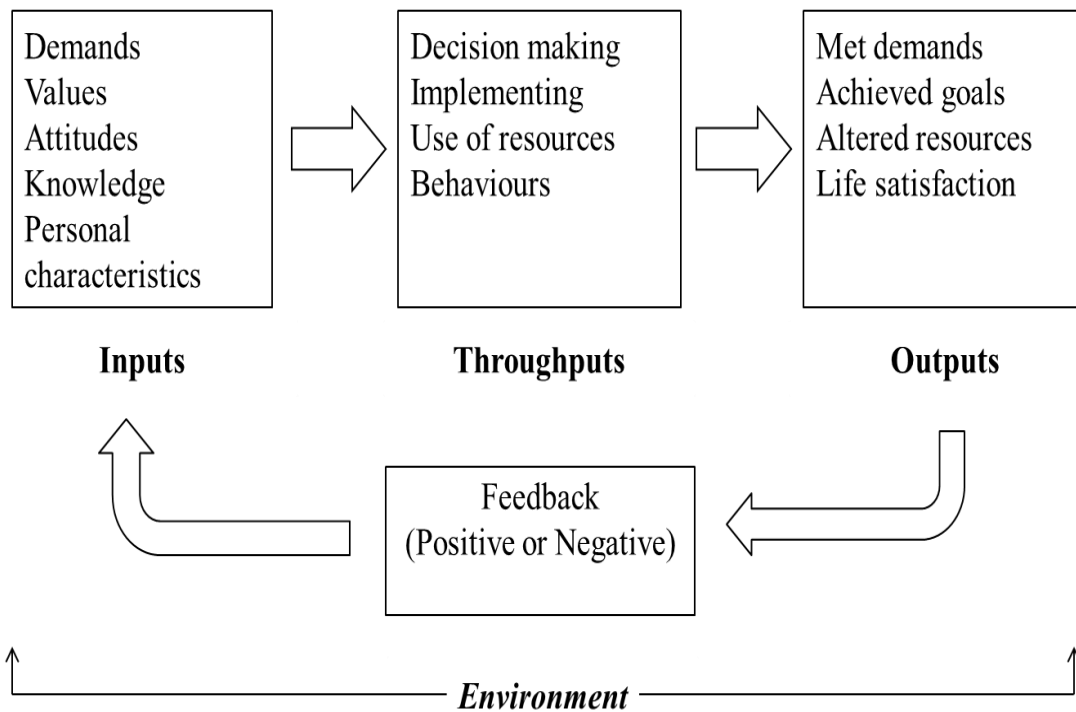


Figure 2.1: Family Resource Management Model

Source: Jorgensen (2007)

2.4.1 Inputs

The first phase of the family resource management model, which is the input stage, depicts the resources the individual has at any given time (Goldsmith, 2005; Hayhoe, Leach, Allen, & Edwards, 2005). These resources include demands, values, attitudes, knowledge (including financial knowledge) and personal characteristics needed for sound decision-making, including making the right decision among alternatives financial products and services. Among these is financial knowledge which is a basic resource needed for sound personal financial practices. Thus, financial literacy is critically examined as an input for this study.

2.4.2 Throughput

The second phase of the model is throughput, where decisions are made based on the resources available to the individual. Throughputs include planning, implementing, decision-making, communicating, and using resources (Goldsmith, 2005). In this study, the throughput phase reflects the financial opinions, decision making and personal financial management practices of individuals because it epitomizes the use of resources (financial knowledge) from the inputs phase.

2.4.3 Output

Output, which is the third phase, looks at whether the preferred goal was achieved. It is the recognized outcome that emanates based on the decisions made by the individual (Jorgensen, 2007). According to Rice and Tucker (1986, p.65) “the final output is the satisfaction or dissatisfaction with the quality of

life produced by the solutions generated in response to demands and resource inputs”. Longitudinal data is required to measure outputs (Jorgensen, 2007). Since this study is cross-sectional rather than longitudinal, the outputs phase is excluded.

2.4.4 Feedback

The feedback loop is the fourth stage. Rice and Tucker (1986) posit that feedback is incessantly used in all phases of the resource management system. Feedback ensues once there is an imbalance in the individual’s life (Hayhoe *et al.*, 2005 and Goldsmith, 2005). This can be as a result of goals not being achieved and feedback relays to input by means of increased knowledge. The fresh resources offered allow the process to occur again as the individual uses the new resources to make decisions with the expectations of a better output that ensures equilibrium and satisfaction with the output (Goldsmith, 2005). This phase is excluded from this study since it requires the use of longitudinal data to measure it (Jorgensen, 2007).

2.4.5 Determinants of the Financial Knowledge Model

The first objective of this study is to examine the determinants of financial literacy, and this requires one step back of the family resource management theory presented in Figure 2.1. The one-step help highlight the determinants of inputs listed in the family resource management model, the determinants of financial literacy in the case of this study (see Figure 2.2). Based on the social

learning theory, exposure characteristics were included as part of the determinants of financial knowledge.

The social learning theory posits that learning is a cognitive process that takes place in a social context and can occur purely through observation or direct instruction, even in the absence of motor reproduction or direct reinforcement. The social learning theory helps to explain how people acquire financial knowledge through environmental influences (family influence, financial inclusion, individual and residential characteristics). These variables are important since many people learn through social interaction. According to Bubolz and Sontag (1993), family, school, church, and media all shape the knowledge of individuals.

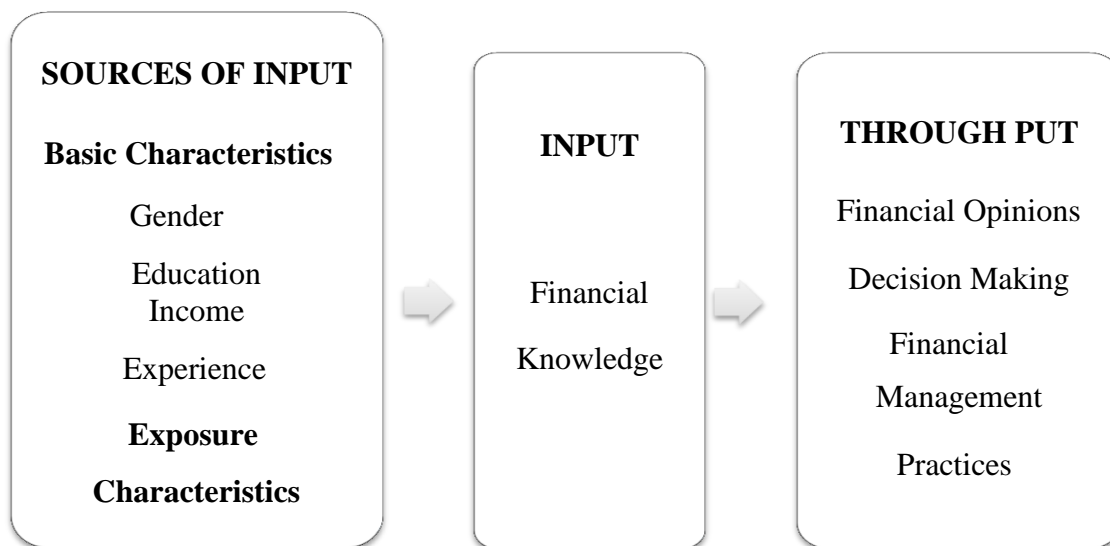


Figure 2.2: Model of the Study – Financial Literacy Impact Model

Source: Hayhoe et al. (2005)

2.5 Summary

This chapter reviewed the literature on financial literacy and the use of financial products. The study started by providing an overview of financial literacy. This was followed by compiling and reviewing empirical studies related to the topic. Literature on the relationship between financial literacy and the use of financial products was also reviewed. The dangers of financial illiteracy were also discussed, and it concluded by outlining the theoretical framework that will guide the study. The next chapter presents the methodology that was used to collect and analyse data.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This chapter presents the methods used in analysing the stated objectives. It presents the empirical model, definition and measurement of variables, sources of data and data analysis. The study employs different methodological approaches, the ordinary least squares (OLS) model, the Probit model, and a variable instrumental technique. The OLS model enabled the researcher to obtain estimates of the determinants of financial literacy, whereas the Probit and instrumental variable techniques were used to examine the effects of financial literacy on the use of financial products and services.

3.2 Data Type and Sources

The study used secondary data from the Namibian Financial Inclusion Survey (NFIS) of 2017. The 2017 NFIS is the only latest national dataset known to date to provide detailed information on financial literacy and the use of financial services in Namibia. This is a national representative survey data-set collected by the Namibian Statistics Agency (NSA) and funded by the Bank of Namibia and the World Bank Group. The survey is designed to provide information on individual and household characteristics, financial knowledge, access and use of financial services.

The survey considered individuals aged 16 years and older. This is the legal age that allows individuals to own formal financial products in Namibia. A three-

stage stratified sampling procedure was used in the data collection process. In the first stage, individuals were classified according to their Constituencies of residence. In the second stage, households were selected from each constituency, and in the third stage, eligible individuals that have resided in the selected household for at least 6 months prior to the survey were selected. The survey used the Constituency enumeration areas (EAs) created during the 2011 Population and Housing Census.

Data was collected from 151 constituencies selected from all the 14 regions of Namibia. A sample of 2,114 households was drawn from these constituencies. Power allocation procedures were adopted to distribute the samples across the regions so that the smaller regions get adequate samples. The survey collection information on the measures of financial literacy, adoption and use of financial products, individual and household socioeconomic and demographic characteristics.

3.4 Measurement of Financial Literacy and Financial Products

3.4.1 Financial Products

The focus of this study is to investigate the effects of financial literacy on the adoption and usage of financial products. The study employed several measures of financial products and services. This includes the decision to savings, ownership of a bank account, access to credit and insurance. The saving decision is binary and equivalent to one if an individual saved when they could and zero otherwise. However, savings cannot only be regarded as a simple

binary outcome since individuals have the options or an array of products to choose from, which can be saving with formal financial institutions such as a bank and micro-finance institutions and informal savings in unregistered financial institutions (Dupas and Robinson, 2013; Karlan *et al.*, 2014; Klapper and Singer, 2014). Thus, saving portfolios as a dependent variable is specified in three levels: (a) none; (b) formal savings and (c) informal savings (Klapper and Singer, 2014; Murendo and Mutsonziwa, 2017). Regarding bank account ownership, access to credit and insurance, they are all dummy dependent variables recorded as one if an individual had each of them at the time of the survey (Table 3.1).

3.4.2 Financial Literacy

Several definitions of financial literacy have been used in literature; however, these definitions can be summarised to represent the ability of individuals or households to obtain, understand and evaluate information required to make future and best possible financial decisions (Huston, 2010; Despard and Chowa, 2014; Fernandes *et al.*, 2014). Based on the data used and financial literacy literature, a series of questions have been used to measure financial literacy. The questions provide information on individual financial attitude, financial confidence, financial awareness, and financial knowledge (Table 3.1).

The questions on financial attitude measured by perception of finances were based on how individuals manage money daily. A total of six questions were used to understand the extent to which individuals track their income and

expenditures. The response to each question was coded on a scale of one if the individual strongly disagreed; to five if the individual strongly agreed. Based on these six questions, a composite score measuring financial attitude was constructed using the Min-Max rescaling transformation presented in Equations 3.1 and 3.2.

The questions on the knowledge of different financial products were used to measure the level of financial knowledge of individuals. A total of twelve financial products listed in Table 3.1 were used to track the level of financial knowledge of individuals. The response to each question was coded on a scale of one if the knowledge was rated very poor and ten if very good. Based on these twelve financial products, a composite score measuring financial knowledge was constructed using the Min-Max rescaling transformation.

Perception of financial matters was measured using nine questions that capture the extent to which individuals' belief in financial planning and in making provisions for the future. The responses are measured using a coded scale of one if strongly disagreed, and five if strongly agreed. A composite score measuring perception on financial matters was constructed using the Min-Max rescaling transformation based on these nine questions.

Financial confidence, measured by perception of saving and awareness of financial terms, is based on six questions, coded as one if strongly disagreed and five if strongly agreed. Based on these questions, a composite score

measuring financial confidence was constructed using the Min-Max rescaling transformation.

Table 3.1: Description of variables used in the analysis

Variables	Description
Age	Age of individual in years
Gender	1: if the individual is male and 0: otherwise
Household size	Number people residing in the household
Education	1: if at least secondary education and 0: otherwise
Household income	monthly Household per capita income (monthly) in N\$
Location	1: if the individual is from an urban area and 0: otherwise
Marital status	1: if the individual is married and 0: otherwise
Radio	1: if household own radio and 0: otherwise
Television	1: if household own television and 0: otherwise
Mobile phone	1: if individual own mobile phone and 0: otherwise
Saving club	1: if a member of a savings club and 0: otherwise
Distance	1: if less than an hour to financial service and 0: otherwise
Financial decision	1: participate in household financial decisions and 0: otherwise
Measures of financial literacy	
Financial attitude (perception of finances index)	You like to be in control of your finances and money matters. You consider yourself organised when it comes to managing money. It is easy to keep up with your financial commitments. Dealing with finances is stressful. How frequently do you keep a record of the money you get? How frequently do you keep a record of your spending?
Financial knowledge (knowledge of financial products index)	On a scale of 1 to 10, individuals are asked to rate their knowledge of the following products: banking, life insurance, short term insurance, medical aid fund, pension fund, provident fund, investment, friendly society, unit trust, micro lender, saving bank and mobile money.
Financial matters (perception of financial matters index)	When you buy something on credit, you find it more expensive than you first thought. You avoid borrowing money if you can. If you borrow money, it is okay to pay a little later than agreed. It is okay to borrow to pay outstanding debt. Have an idea of the amount of interest to pay when you borrow money. Being able to borrow when in need is important than the amount to pay. It is better to have debt than to sell something to pay it. You buy things even if you cannot afford them. You would rather buy something on credit than wait to save enough money to buy the item you want. You are impulsive in terms of spending money. When you get money, do you plan how you are going to spend the money to make sure that it lasts until you get money again?
Financial awareness (perception about saving index)	You will go without certain things to be able to save. You believe that you have to save for difficult times, even with low income. You believe it is better to save where your money is safe than to take risks to make more. You consider yourself a saver rather than a spender. You often have to spend more money than what you have available. Better to keep your

Combined index for financial literacy	saving than used to pay off debt. This is the average of financial attitude, financial knowledge, financial matters, and financial awareness indices.
Dependent Variables	
Bank account	1: if the individual owns a bank account and 0: otherwise
Access credit	1: if the individual has access to credit and 0: otherwise.
Insurance	1: if the individual has insurance and 0: otherwise
Saving account	1: if the individual has a saving account and 0: otherwise
Formal savings	0: no saving, 1: informal savings and 2: formal savings

This study uses the composite scores for financial attitude, financial knowledge, financial matters, and financial confidence independently to estimate their separate effects on the use of financial products. The study further uses the questions of financial attitude, financial knowledge, financial matters and financial confidence to construct a composite index (score) for financial literacy.

The Min-Max rescaling transformation is used to construct the composite index for financial literacy. The method decomposes each variable into an identical range between zero and one, with a score of one being the worst outcome for a specific question and a score of five or ten, depending on the question being the best outcome. In this study, the questions of financial attitude, financial matters and financial confidence in Table 3.1 are coded one if strongly disagreed, and five if strongly agreed, and the questions for financial knowledge are coded one if very poor knowledge and ten if very good knowledge. According to Yoon (2012), the scaling procedure ultimately subtracts the minimum value (X_{min}) and divides by the observed difference between the maximum value (X_{max}) and the minimum value (X_{min}), as illustrated as follows:

$$C_i = \frac{X_i - X_{min}}{X_{max} - X_{min}} \quad (3.1)$$

With this approach, differentially scaled questions of financial literacy can be standardized into indices. The questions used in computing the financial literacy indices are presented in Table 3.1. This approach has been used by several scholars to aggregate variables and create composite scores (Bernard 2007; Cutter *et al.* 2010; UNDP, 2014). To free the questions from assuming their initial measurement units, the indices generated were standardized between 0 and 1. Since there are more than one question for each of the different measures of financial literacy, the standardization is obtained by calculating the average values of the different questions as follows:

$$FI_i = \frac{\sum_{i=1}^n IndexA_i}{n} \quad (3.2)$$

Where $IndexA_i$ is the question(s) that makes up a given index, and n is the number of questions in each measure of financial literacy. The composite indices ranges were between 0 and 1, with high values denoting a higher level of financial literacy.

3.5 Estimation Strategy

3.5.1 Determinants of Financial Literacy

This study employs the Ordinary Least Squares (OLS) to estimate the determinants of financial literacy. This estimation approach chosen is dictated by its suitability and applicability to the objective, theory and the structure or

nature of the dependent variable. The financial literacy indices are continuous and can be estimated by OLS specified as follows:

$$Flit = \beta_0 + \beta_i X_i + \varepsilon \quad (3.3)$$

Where *Flit* is the composite score for financial literacy, X_i is a vector of factors influencing the level of financial literacy and β_i is a vector of parameters to be estimated. The selection of the determinants of financial literacy is strictly based on literature and data availability. These variables include the quadratic for age, household size, household income, gender, location, education, marital status, participation in the household financial decision, access to information (radio, television and mobile phone), saving club membership and distance to nearest financial institutions (See Table 3.1 and studies by Jappelli and Padula, 2013; Murendo and Mutsonziwa, 2017).

3.5.2 The Effect of Financial Literacy on Adoption and Use of Financial Products

The decision to adopt a formal financial product is represented by the binary response variable *Fpdt* defined as a function of financial literacy and a vector of explanatory variables X_i , by the following model:

$$Fpdt = \beta_0 + \varphi Flit + \beta_i X_i + \varepsilon \quad (3.4)$$

Where *Fpdt* is a dummy variable measuring whether an individual has a given formal financial product or not. *Flit* is financial literacy, and φ measures the

effect of financial literacy on a given financial product. X_i is a vector of factors influencing the level of financial literacy and β_i is a vector of parameters to be estimated.

Evidence suggests that the incentives to invest in financial literacy may affect the relationship between financial literacy and the use of financial services (Fernandes *et al.*, 2014). This suggests the possibility of endogeneity between financial literacy and the use of financial products, and thus, the estimated effect of financial literacy on the use of financial products requires an estimation technique that accounts for potential endogeneity (Murendo and Mutsonziwa, 2017). A number of studies have used an instrumental variable (IV) estimation approach to estimate the impact of financial literacy on financial behaviour and purge the potential biased (Lusardi and Mitchell, 2014; Murendo and Mutsonziwa, 2017).

Therefore, this study estimates as per Equation (3.4) using an instrumental variable probit (IVprobit) regression. While finding an appropriate instrument is a challenge in empirical research, the literature suggests the use of an average regional financial literacy as an instrument for financial literacy (Fernandes *et al.*, 2014; Murendo and Mutsonziwa, 2017). In this study, both the probit and the IV probit are used to estimate the impact of financial literacy on financial behaviour.

Average financial literacy at regional level is used as an instrument for financial literacy in the IV probit model. A Wald test for exogeneity suggests the

existence of endogeneity of financial literacy with respect to financial behaviour in many of the specifications (Table 4.4). As indicated earlier, saving portfolios as a dependent variable is specified in three levels: (a) none; (b) formal savings and (c) informal savings and is estimated using a multinomial logit model (Klapper and Singer, 2014; Murendo and Mutsonziwa, 2017).

The selection of the independent variables is based on existing literature (Klapper and Singer, 2014; Prina, 2015; Murendo and Mutsonziwa, 2017) and data availability. These variables include the quadratic for age, household size, household income, gender, location, education, marital status, participation in the household financial decision, access to information (radio, television and mobile phone) and distance to nearest financial institutions. Finally, the variance inflation factors (VIFs) are used to test for multicollinearity between the explanatory variables.

3.6 Research ethics

The research endeavoured to respect professional integrity. The study acknowledged all sources and avoided plagiarism. Furthermore, the data used in the study was not distorted, fabricated or falsified in any manner.

3.7 Summary

This chapter detailed the methodology the researcher used to collect data. It started by defining the research approaches that were used, which are the ordinary least squares (OLS) model and the Probit model. The chapter also highlighted the sources of data that was used in this study which is the

Namibian Financial Inclusion Survey (NFIS) of 2017 report. The chapter further explained the data analysis methods as well as describing the ethical considerations taken. The next chapter presents and discusses the results of the data collected from NFIS.

CHAPTER FOUR: RESULTS AND DISCUSSIONS

4.0 Introduction

The focus of this study was to examine the relationship between financial literacy and the use of formal financial products in Namibia. This chapter presents the results and their interpretations in line with the intended purpose of the study, following the methodology laid out in Chapter 3. The first part of this chapter presents the descriptive statistics of the key variables used in the analysis. The second and third part of the chapter presents the results of the probit and the instrumental variable (IV) probit analysis for the different measures of financial literacy and formal financial products identified in the literature and data used.

4.1 Descriptive statistics

Table 4.1 presents summary statistics of the key variables used in the study. The table provides the mean, standard deviation and estimates of the student t-test for differences in mean characteristics by saving status. Four key indicators of formal financial products, including ownership of a formal bank account, formal savings account, access to credit and insurance, are used as dependent variables.

The main independent variable is financial literacy and is classified into financial attitude (perception of finances), financial knowledge (knowledge of financial products), financial confidence (perception of financial matters) and financial awareness (perception about saving). The indicators of financial attitude, financial knowledge, financial confidence, and financial awareness are used to construct financial literacy indices (see Table 3.1)

Table 4.1: Descriptive statistics of variables used

Variable	Description	Mean	Std. Dev.	Mean by saving status		
				Saved	Not save	Diff
Age	Age of respondent (years)	38.76	16.34	39.4	35.9	3.50***
Household size	Number of individuals	4.147	3.014	4.09	4.44	-0.35**
Monthly income	Household per capita income (monthly)	3,487	45,450	3977	769	3208
Gender	Gender of respondent (male =1)	0.432	0.495	0.44	0.42	0.02
Location	Location of individual (urban = 1)	0.470	0.499	0.46	0.50	-0.04
Marital status	Individual is married (married = 1)	0.331	0.471	0.35	0.26	0.08***
Education	Secondary education and above	0.644	0.479	0.65	0.61	0.05**
Radio	Household own radio (dummy)	0.293	0.455	0.30	0.27	0.03
Television	Household own television (dummy)	0.382	0.486	0.40	0.31	0.08***
Mobile phone	Individual own mobile phone	0.884	0.320	0.90	0.82	0.08***
Saving club	Membership in savings club	0.022	0.147	0.03	0.01	0.02**
Distance	Less than 1 hour to financial services	0.618	0.486	0.63	0.57	0.05**
Financial decision	Making financial decisions in household	0.425	0.494	0.43	0.41	0.01
Financial attitude	Perception of finances index	0.487	0.152	0.46	0.39	0.06***
Financial knowledge	Knowledge of financial products index	0.249	0.219	0.50	0.43	0.07***
Financial confidence	Perception of financial matters index	0.455	0.111	0.26	0.18	0.08***
Financial awareness	Perception about saving index	0.588	0.143	0.46	0.45	0.004
Financial literacy	Combined index for financial literacy	0.445	0.098	0.61	0.51	0.10***
Dependent variables						
Bank account	Individual has an account with the bank	0.700	0.458	0.76	0.46	0.30***
Access credit	Individual has access to credit	0.111	0.314	0.13	0.05	0.08***
Insurance	Individual has insurance services	0.299	0.458	0.33	0.17	0.16***
Financial products	Have other formal financial products	0.232	0.422	0.26	0.09	0.17***
Saving account	Individual own a saving account	0.817	0.387			
Informal saving	Savings in the informal financial institutions	0.203	0.403			
Formal saving	Savings in a formal financial institution	0.624	0.485			

*, **, *** indicates that the corresponding mean differences (diff) are significant at 10%, 5% and 1% level respectively

The results in Table 4.1 depict that the average age of individuals in the sample is 39 years, and on average, there are 4 members in each household. The average monthly household income per capita is N\$3,487, and 43% of the

respondents are males. About 47% of the individuals reside in urban areas, 33% are married, and 64% have completed secondary education. Over 29% of the individuals have radio access, and 38% have access to television. The majority of individuals in the sample own a mobile phone (88%), live near a financial institution (62%), and less than half (43%) are involved in household financial decisions. Concerning the use of financial products, about 82% have a saving account, 62% in a formal financial institution compared to 20% in an informal financial institution. About 70% have an account with the bank, and only 11% and 30% have access to credit and insurance services, respectively.

The average financial literacy score is 0.45. The average score for the different measures of financial literacy is 0.49 for financial attitude, 0.25 for financial knowledge, 0.46 for financial confidence and 0.58 for financial matters. A disaggregated financial literacy assessment is performed to gain insight into the relationship between financial literacy and savings decisions.

The study briefly reviews evidence of financial literacy by saving status. Individuals that saved have, on average, a financial literacy index of 0.61, which is significantly higher compared to the index score of 0.51 for those who did not save. The mean difference is statistically significant for all the different measures of financial literacy. The results suggest that individuals with higher financial literacy are more likely to save than those with the low level of financial literacy.

The mean difference for explanatory variables by saving status suggest that individuals with favourable socioeconomic status are more likely to save relative to those with an unfavourable socioeconomic status. On average, individuals who save reside in households with relatively more access to radio and television. There are also significant differences with respect to age, marital status, educational level, saving club membership, ownership of a mobile phone and distance to the nearest financial institution. Older individuals, better-educated individuals, members of a savings club, those with better access to radio, television, and financial institutions, and those who are married are more likely to save. Individuals who save are more likely to have a bank account, savings account, access to credit and insurance.

4.2 The Determinants of Financial Literacy

The OLS regression estimates for the different measures of financial literacy are reported in Table 4.2. In Column 1 an index that combines all indicators of financial literacy (financial attitude, financial knowledge, financial confidence, and financial awareness indicators) is used as the dependent variable. In Column (4) to (5) estimates of the individual measures of financial literacy such as financial attitude (perception on finances), financial knowledge (knowledge of financial products), financial confidence (perception of financial matters) and financial awareness (perception about savings) are respectively used as the dependent variable.

The coefficient of age squared is negative, suggesting that the level of financial literacy increases with age but at a decreasing rate. Thus, older individuals have

a low level of financial literacy. Men have a high level of financial literacy relative to their female counterparts. This is in line with previous evidence that found women and the elderly to have a lower level of financial literacy (Jappelli and Padula, 2013; Murendo and Mutsonziwa, 2017). Those living in urban areas have higher financial literacy than their counterparts in rural areas. Thus, to enhance the level of financial literacy in Namibia, policies should target women and individuals living in rural areas.

Table 4.2 Determinants of financial literacy – OLS regression

Variables	(1)	(2)	(3)	(4)	(5)
Age	0.003*** (0.001)	0.003*** (0.001)	0.003** (0.001)	0.001 (0.001)	0.004*** (0.001)
Age squared	- (0.000)	- (0.000)	- (0.000)	-0.000** (0.000)	- (0.000)
Household size	-0.001** (0.001)	- (0.001)	-0.000 (0.002)	0.001 (0.001)	-0.002* (0.001)
Household per capita income	-0.000 (0.000)	-0.000* (0.000)	-0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
Individual is male	0.014*** (0.004)	0.018** (0.007)	0.024*** (0.009)	0.008 (0.006)	0.008 (0.007)
Urban residence	0.036*** (0.005)	0.053*** (0.009)	0.059*** (0.010)	0.010 (0.007)	0.020** (0.009)
Individual is married	-0.003 (0.005)	-0.002 (0.009)	-0.006 (0.010)	0.005 (0.007)	-0.010 (0.009)
Secondary education	0.025*** (0.005)	0.022** (0.009)	0.079*** (0.011)	-0.000 (0.007)	0.000 (0.009)
Household has radio	-0.004 (0.004)	-0.016** (0.008)	0.005 (0.010)	0.007 (0.006)	-0.010 (0.008)
Household has television	0.029*** (0.005)	0.028*** (0.009)	0.068*** (0.011)	0.018** (0.007)	0.003 (0.009)
Access to mobile phone	0.014** (0.007)	0.015 (0.013)	0.045*** (0.015)	-0.004 (0.010)	0.000 (0.013)
In a saving club	0.036*** (0.013)	0.072*** (0.024)	0.082*** (0.028)	-0.004 (0.018)	-0.006 (0.024)
Distance to financial institution	-0.010** (0.005)	-0.014* (0.008)	0.004 (0.010)	-0.006 (0.007)	- (0.008)
Participate in household financial decisions	0.014*** (0.005)	0.009 (0.008)	0.011 (0.010)	0.016** (0.006)	0.021** (0.008)
Have a bank account	0.021*** (0.005)	0.011 (0.010)	0.042*** (0.011)	0.015** (0.007)	0.016* (0.010)
Have a credit account	0.023*** (0.007)	0.015 (0.013)	0.041*** (0.015)	0.018* (0.010)	0.016 (0.013)
Have insurance	0.031***	0.029***	0.083***	0.000	0.012

	(0.005)	(0.009)	(0.011)	(0.007)	(0.009)
Have a saving account	0.041***	0.043***	0.017	0.010	0.092***
	(0.006)	(0.010)	(0.012)	(0.008)	(0.010)
Have other formal financial products	0.023***	0.026***	0.096***	-0.012*	-0.017*
	(0.005)	(0.009)	(0.011)	(0.007)	(0.009)
Constant	0.277***	0.318***	-0.048	0.403***	0.435***
	(0.015)	(0.028)	(0.033)	(0.021)	(0.028)
Observations	1,471	1,471	1,471	1,471	1,471
R-squared	0.414	0.188	0.460	0.056	0.091

Note: Robust standard errors in parenthesis. Estimates of the determinants of financial literacy are presented in Columns (1) to (5). In Column (1), an index for all indicators of financial literacy (financial attitude, financial knowledge, financial confidence, and financial awareness indicators) are used while Column (4) to (5) present estimates for the individual measures of financial literacy such as financial attitude (perception on finances), financial knowledge (knowledge of financial products), financial confidence (perception of financial matters) and financial awareness (perception about savings) respectively. *, **, *** indicates the corresponding coefficients or marginal effects are significant at 10%, 5% and 1%, respectively.

With regards to education and access to television, educated individuals and those who own televisions have higher levels of financial literacy. A number of studies have reported education attainment and access to television as significant and positively correlated with financial literacy (Murendo and Mutsonziwa, 2017; Bucher-Koenen & Lusardi, 2011). Those who participate in household financial decisions, those with a mobile phone and those in a saving club have a higher level of financial literacy than their respective counterparts. However, it is surprising that those close to a financial institution have lower levels of financial literacy.

Access to formal financial products is important in explaining the level of financial literacy. For instance, those with bank accounts, saving accounts, access to credit and insurance and other formal financial products have higher levels of financial literacy. This suggests that as people start using financial products, they become more familiar and knowledgeable about them through learning by doing, thereby increasing the level of financial literacy.

Table 4.3 reports the marginal effect estimates of the effect of financial literacy on the use of the financial product. The marginal effect estimates are obtained from a probit model. Estimates of bank account and saving account ownership are presented in Panel A. The results suggest that financial literacy increases the probability of using formal financial products. A one index point increase in financial literacy, financial attitude, financial knowledge, and financial awareness increases the probability of having a saving account by 96%, 32%, 15% and 55% , respectively. A one index point increase in financial literacy, financial attitude, financial knowledge, financial confidence, and financial awareness increases the probability of having a bank account by 89%, 21%, 41%, 16% and 26%, respectively.

Table 4.3: Marginal effect estimates of financial literacy on use of financial products

Variables	Have a saving account					Have a bank account				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Panel A: Own a bank and saving account										
Financial literacy	0.96** *					0.89** *				
	(0.12)					(0.13)				
Financial attitude		0.32** *					0.21** *			
		(0.07)					(0.07)			
Financial knowledge			0.15** *					0.41** *		
			(0.06)					(0.06)		
Financial confidence				0.13					0.16*	
				(0.09)					(0.09)	
Financial awareness					0.55** *					0.26** *
					(0.06)					(0.09)
Observations	1,471	1,471	1,471	1,471	1,471	1,471	1,471	1,471	1,471	1,471
Panel B: Access to credit and insurance										
Variables	Have access to credit					Have insurance				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Financial literacy	0.52** *					0.89** *				
	(0.08)					(0.12)				
Financial attitude		0.17** *					0.27** *			
		(0.05)					(0.07)			
Financial			0.20**					0.45**		

knowledge									*
			(0.04)						(0.05)
Financial confidence			0.12*						0.07
			(0.07)						(0.09)
Financial awareness				0.11**					0.15**
				(0.06)					(0.07)
Observations	1,471	1,471	1,471	1,471	1,471	1,471	1,471	1,471	1,471

Note: Robust standard errors in parenthesis. Estimates of financial literacy on saving decisions and bank account ownership are presented in Panel A; Columns (1) to (5) and (6) to (10), respectively. Estimates of financial literacy on access to credit and insurance are presented in Panel B; Columns (1) to (5) and (6) to (10), respectively. In each column, individual and household covariates including the quadratic of age, household size, household per capita income, gender and location of the respondent, marital status, education, access to radio, television and mobile phone, member of saving club, distance to the nearest financial institution and participation in the household financial decision. *, **, *** indicates the corresponding coefficients or marginal effects are significant at 10%, 5% and 1%, respectively.

Estimates of the effect of financial literacy on access to credit and insurance are presented in Panel B of Table 4.3. The results show that a one index increase in financial literacy, financial attitude, financial knowledge, financial confidence, and financial awareness increases the probability of having access to credit by 52%, 17%, 20%, 12% and 11%, respectively. In addition, a one index point increase in financial literacy, financial attitude, financial knowledge, and financial awareness increases the probability of having access to insurance by 89%, 27%, 45% and 15%, respectively. Estimates of other individual and household determinants of use of financial products are presented in Table A1 and A2 of the appendix.

The results of the instrumental variable (IV) Probit are reported in Table 4.4. In all specifications, financial literacy has a positive and significant effect on the use of formal financial products. Because of the possible endogeneity between financial literacy and the use of financial products, estimates from the Probit

models are likely to be biased. There is the possibility of reverse causality between financial literacy and financial products since those who use financial products acquire financial knowledge (Murendo and Mutsonziwa, 2017; Fernandes *et al.*, 2014; Bucher-Koenen & Lusardi, 2011). Thus, the financial literacy estimates are biased upward. Other potential sources of endogeneity include omitted variables and measurement errors in the financial literacy indicators.

Evidence suggests that the overall bias from the Probit estimation could be positive or negative, and thus, an IV estimation technique is required to address this potential problem. This study uses mean financial literacy at the regional level as an instrument for financial literacy. This has been used by many scholars, including Murendo and Mutsonziwa (2017), Fernandes *et al.* (2014) and Bucher-Koenen & Lusardi (2011). In the IV Probit, estimates of the Wald test for the majority of the specifications are significant, indicating that financial literacy is endogenous, suggesting the need to rely on the IV Probit estimates. Some studies did not find evidence of endogeneity or selection of unobservable, suggesting that estimates of the Probit regression are likely unbiased. However, since the Wald test shows endogeneity for many of the specifications in this study, both the Probit and IV Probit are discussed (Table 4.3 and Table 4.4 for comparisons).

Table 4.4: IV Probit estimates of the effect of financial literacy on use of financial products

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Panel A: Own a bank and saving account										
	Have a saving account					Have a bank account				

Financial literacy	0.89** *					0.84** *				
	(0.10)					(0.12)				
Financial attitude		0.72** *					0.26** *			
		(0.07)					(0.09)			
Financial knowledge			0.34** *					0.56**		
			(0.08)					(0.24)		
Financial confidence				0.40** *					0.24** *	
				(0.07)					(0.09)	
Financial awareness					0.78** *					0.43** *
					(0.12)					(0.11)
Constant	0.11** *	-0.01	- 0.17** *	0.06	-0.02	0.21** *	0.02** *	0.22** *	0.17** *	0.13** *
	(0.03)	(0.04)	(0.04)	(0.06)	(0.06)	(0.09)	(0.01)	(0.09)	(0.04)	(0.01)
Wald chi ²	47***	44***	52***	58***	47***	307***	329***	401***	320***	290***
						*	*	*	*	*
Wald test (endogeneity)	0.01**	0.01**	0.13	0.08*	0.00** *	0.20	0.01** *	0.25** *	0.11	0.39
Observations	1,471	1,471	1,471	1,471	1,471	1,471	1,471	1,471	1,471	1,471

Panel B: Access to credit and insurance

	Access to credit					Have insurance				
Financial literacy	0.40** *					0.54** *				
	(0.07)					(0.26)				
Financial attitude		0.19**					0.23**			
		(0.09)					(0.09)			
Financial knowledge			0.24** *					0.12** *		
			(0.09)					(0.01)		
Financial confidence				0.14** *					0.40** *	
				(0.03)					(0.11)	
Financial awareness					0.21**					0.49**
					(0.09)					(0.25)
Constant	0.11** *	-0.01	- 0.17** *	0.06	-0.02	0.21** *	0.02** *	0.22** *	0.17** *	0.13** *
	(0.03)	(0.04)	(0.04)	(0.06)	(0.06)	(0.09)	(0.01)	(0.09)	(0.04)	(0.01)
Wald chi ²	47***	44***	52***	58***	47***	307***	329***	401***	320***	290***
						*	*	*	*	*
Wald test (endogeneity)	0.01**	0.01**	0.13	0.08*	0.00** *	0.20	0.01** *	0.25** *	0.11	0.39
Observations	1,471	1,471	1,471	1,471	1,471	1,471	1,471	1,471	1,471	1,471

Note: Robust standard errors in parenthesis. Estimates of financial literacy on saving decisions and bank account ownership are presented in Panel A; Columns (1) to (5) and (6) to (10), respectively. Estimates of financial literacy on access to credit and insurance are presented in Panel B; Columns (1) to (5) and (6) to (10), respectively. In each column, individual and household covariates including the quadratic of age, household size, household per capita income, gender and location of the respondent, marital status, education, access to radio, television and mobile phone, member of saving club, distance to the nearest financial institution

and participation in the household financial decision. *, **, *** indicates the corresponding coefficients or marginal effects are significant at 10%, 5% and 1%, respectively.

The IV probit estimates show that financial literacy has a positive and significant impact on financial behaviour. The results show that a one index point increase in financial literacy increases the probability of saving, owning a bank account, accessing credit and insurance by 89%, 84%, 40% and 54%, respectively. An increase in financial attitude by one index point increases the likelihood of saving, owning a bank account, accessing credit and insurance by 72%, 26%, 19% and 23%, respectively. An increase in financial knowledge by one index point increases the likelihood of saving, owning a bank account, accessing credit and insurance by 34%, 56%, 24% and 12%, respectively. Generally, IV probit estimates of the different measures of financial literacy suggest positive and significant effects, consistent with estimates of the probit model.

In Table 4.5, the study further analyses the gender-disaggregated effects of financial literacy on the use of financial products by estimating Equation (3.4) separately for the female and male sub-sample. The results show that financial literacy has a positive effect on savings and bank account ownership. The magnitude of the effects is higher in the male than in the female sub-sample. For instance, a one index point increase in financial literacy increases the likelihood of saving and bank account ownership by 109% and 96% for the male sample and 85% and 66% for the female sample, respectively. A one index point increase in financial knowledge increases the likelihood of saving

and bank account ownership by 16% and 41% for the male sample and 13% and 35% for the female sample, respectively.

Table 4.5: Marginal effect estimates of financial literacy on use of financial products by gender

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Panel A: Male sub-sample										
	Have a saving account					Have a bank account				
Financial literacy	1.09** *					0.96** *				
	(0.18)					(0.18)				
Financial attitude		0.30** *					0.28** *			
		(0.10)					(0.11)			
Financial knowledge			0.16*)					0.41** *		
			(0.08)					(0.09)		
Financial confidence				0.13)					0.18)	
				(0.13)					(0.14)	
Financial awareness					0.61** *					0.28** *
					(0.08)					(0.09)
Observations	652	652	652	652	652	652	652	652	652	652
Panel B: Female sub-sample										
	Have a saving account					Have a bank account				
Financial literacy	0.85** *					0.66** *				
	(0.16)					(0.18)				
Financial attitude		0.34** *					0.12)			
		(0.09)					(0.10)			
Financial knowledge			0.13*)					0.35** *		
			(0.08)					(0.09)		
Financial confidence				0.12)					0.12)	
				(0.12)					(0.13)	
Financial awareness					0.49** *					0.17*)
					(0.09)					(0.09)
Observations	814	814	814	814	814	814	814	814	814	814

Note: Robust standard errors in parenthesis. Estimates of financial literacy on saving decisions and bank account ownership are presented in Columns (1) to (5) and (6) to (10), respectively. Estimates from the male and female sub-sample are presented in Panel A and Panel B, respectively. In each column, individual and household covariates including the quadratic of age, household size, household per capita income, location of the respondent, marital status, education, access to radio, television and mobile phone, member of saving club, distance to nearest financial institution and participation in the household financial decision. *, **, *** indicates the corresponding coefficients or marginal effects are significant at 10%, 5% and 1%, respectively.

In Table 4.6, the study further analyses the location disaggregated effects of financial literacy on financial behaviour by estimating Equation (3.4) separately

for the rural and urban sub-sample. The results show that financial literacy has a positive effect on savings and bank account ownership. The magnitude of the effects is higher among the rural than the urban sub-sample. For instance, a one index point increase in financial literacy increases the likelihood of saving and bank account ownership by 73% and 71% for the urban sample and 121% and 101% for the rural sample, respectively. A one index point increase in financial attitude increases the likelihood of saving and bank account ownership by 23% and 21% for the urban sample and 39% and 21% for the rural sample, respectively.

Table 4.6: Marginal effect estimates of financial literacy on use of financial products by location

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Panel A: Urban sub-sample										
	Have a saving account					Have a bank account				
Financial literacy	0.73** *					0.71** *				
	(0.16)					(0.15)				
Financial attitude		0.23** *					0.21* *			
		(0.10)					(0.09)			
Financial knowledge			0.09 *					0.21** *		
			(0.08)					(0.07)		
Financial confidence				0.02 *					0.19 *	
				(0.13)					(0.12)	
Financial awareness					0.55** *					0.30** *
					(0.08)					(0.08)
Observations	688	688	688	688	688	664	664	664	664	664
Panel B: Rural sub-sample										
	Have a saving account					Have a bank account				
Financial literacy	1.21** *					1.01** *				
	(0.18)					(0.20)				
Financial attitude		0.39** *					0.21* *			
		(0.10)					(0.11)			
Financial knowledge			0.19* *					0.64** *		
			(0.09)					(0.10)		
Financial				0.25* *					0.12 *	

confidence				*						
				(0.12)					(0.15)	
Financial awareness					0.54**					0.16
					*					(0.11)
Observations	772	772	772	772	772	783	783	783	783	783

Note: Robust standard errors in parenthesis. Estimates of financial literacy on saving decisions and bank account ownership are presented in Columns (1) to (5) and (6) to (10), respectively. Estimates from the urban and rural sub-sample are presented in Panel A and Panel B, respectively. In each column, individual and household covariates including the quadratic of age, household size, household per capita income, gender of respondents, marital status, education, access to radio, television and mobile phone, member of saving club, distance to the nearest financial institution and participation in the household financial decision. *, **, *** indicates the corresponding coefficients or marginal effects are significant at 10%, 5% and 1%, respectively.

4.3 Summary

In this chapter, the results and findings of the study were presented and discussed. The chapter started by presenting and discussing descriptive statistics of the variables used by using means and standard deviations computed. It further presented and discussed determinants of financial literacy using regression analysis. The marginal effect estimates of financial literacy on the use of financial products were also discussed. Using Probit, estimates of the effect of financial literacy on the use of financial products using various variables such as gender, location, etc., were also presented and discussed. The next chapter provides the conclusion and recommendations of the study.

CHAPTER FIVE: CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter provides with the conclusion and recommendations of the study. It summarizes the preceding 4 chapters as well as providing the summary of findings. It also indicates how the study has answered the research objectives.

5.2 Summary of the study

Chapter one introduced the topic and the subject to be studied. It provides the reader with the background of the study and the problem that prompted the need for the research. The objectives of the study were also provided. The main objective of this study is to analyse the relationship between financial literacy and the use of financial products and services in Namibia.

Chapter two reviewed the literature on financial literacy and the use of financial products. The study started by providing an overview of financial literacy. This was followed by compiling and reviewing empirical studies related to the topic. Literature on the relationship between financial literacy and the use of financial products was also reviewed. The dangers of financial illiteracy were also discussed, and it concluded by outlining the theoretical framework that guided the study.

Chapter 3 detailed the methodology the researcher used to collect data. It started by defining the research approaches that were used, which are the ordinary least squares (OLS) model and the Probit model. The chapter also

highlighted the sources of data that was used in this study which is the Namibian Financial Inclusion Survey (NFIS) of 2017 report. The chapter further explained the data analysis methods as well as describing the ethical considerations taken.

In chapter four, the results and findings of the study were presented and discussed. The chapter started by presenting and discussing descriptive statistics of the variables used by using means and standard deviations computed. It further presented and discussed determinants of financial literacy using regression analysis. The marginal effect estimates of financial literacy on the use of financial products were also discussed. Using Probit, estimates of the effect of financial literacy on the use of financial products using various variables such as gender, location, etc., were also presented and discussed.

5.3 Summary of findings and conclusions

In recent decades, researchers have focussed on examining financial literacy and its implications on financial behaviour and well-being (Lusardi and Mitchell, 2007; Cole *et al.*, 2011; Sevim *et al.*, 2012; Jappelli and Padula, 2013; Karlan *et al.*, 2014; Gaudecker, 2015). For example, Jappelli and Padula (2013) found that financial literacy is strongly correlated with wealth and Cole *et al.* (2011) found that financial literacy is a strong determinant of the use of financial products and services.

While there is extensive evidence on the impact of financial literacy on financial behaviour (Lusardi and Mitchell, 2007; Bucher-Koenen and Lusardi,

2011; Jappelli and Padula, 2013; Landerretche and Martinez, 2013; Gaudecker, 2015), there is also an upsurge of such evidence in some developing countries (Doi *et al.*, 2014; Karlan *et al.*, 2014; Murendo and Mutsonziwa, 2017). The growing literature in developing countries is limited, as most of these studies did not consider the independent role of the different measures of financial literacy on the financial behaviour of individuals and households. Murendo and Mutsonziwa (2017) cited that due to preference heterogeneity of individuals, there is needs disaggregate the analysis further to understand the effects of financial literacy on financial behaviour.

This study contributes to the growing evidence of financial literacy using the 2017 Namibia Financial Inclusion Survey (NFIS). The study contributes to the literature in the following ways: First, the study examines the determinants of financial literacy with the aim of understanding the segments of the population that requires specific interventions. Second, the study investigates the effect of financial literacy on the use of financial products to promote the choice of profitable financial products by consumers. Finally, the analyses of the effect of financial literacy on financial decisions are further disaggregated to understand the location and gender-specific effects. The estimation approaches used in this study include the Ordinary Least Squares (OLS) Probit Model, the Instrumental Variables Probit (IV probit) and the Multinomial Logit Models.

The results suggest that age, gender, location, formal education, access to television, participation in household financial decisions, access to mobile phone and being a member of a savings club significantly influences the level

of financial literacy. The study further confirms that financial literacy is an important determinant of financial behaviour. Consistent with previous studies (Doi *et al.*, 2014; Karlan *et al.*, 2014; Murendo and Mutsonziwa, 2017), the results indicate that financial literacy increases the probability of saving, having a bank account, having access to credit and insurance services. Specifically, a one index point increase in financial literacy increases the probability of having a savings account by 96% and having a bank account by 89%.

For the individual measures of financial literacy, the results suggest that a unit index point increase in financial attitude, financial knowledge, and financial awareness increases the probability of having a savings account by 32%, 15% and 55% and the probability of having a bank account by 21%, 41%, and 16% respectively. Similarly, a one index increase in financial literacy increases the probability of having access to credit by 52% and the probability of having access to insurance by 89% .

For the individual measures of financial literacy, a unit index increase in financial attitude, financial knowledge, financial confidence, and financial awareness increases the probability of having access to credit by 17%, 20% and 11% and the probability of having access to insurance by 27%, 45% and 15% respectively. The instrumental variable (IV) Probit results are consistent with estimates from the Probit model, suggesting that financial literacy has a positive and significant effect on financial behaviour.

5.4 Policy Recommendations

In conjunction with the Financial Literacy Initiative and various stakeholders and experts, the Government of Namibia should work on developing a national policy on financial literacy. The policy should provide a framework and a plan to improve financial literacy in the short, medium and long term. The policy should provide mechanisms through which consumers can obtain sound financial education through being financially inclusive. Improved financial literacy can promote high financial inclusion.

Since having a bank account is associated with financial literacy, financial institutions have a significant role to play in the quest to improve the financial knowledge of people. Financial Institutions should make a conscious effort to educate their consumers on basic financial matters. They can provide financial tips on their information screens, ATMs, internet banking platforms, and mobile messages. They should continually design products that will provide incentives to customers to use financial products. The researcher, therefore, recommends that consumer rights advocacy groups like the consumer advocacy centre, as a matter of urgency, include financial education in their advocacy activities.

Xu and Zia (2012) find that one potentially effective and natural way of improving financial literacy in developing countries might be through the existing educational system. Therefore, the researcher recommends that the educational authorities of Namibia (both secondary and tertiary) should

collaborate to add a mandatory course or subject on financial education to the course structure of schools from basic school to tertiary level. Financial literacy education from the high school level may be the key to improving financial decision-making in the population (Cameron *et al.*, 2014).

5.5 Further Research

This study analysed the relationship between financial literacy and the use of financial products in Namibia. The study could not consider all aspects of financial literacy of consumers and all types of formal financial products due to the limited or unavailability of information and data. For example, the study could not measure participants' financial literacy and understanding of financial products such as bonds/securities, stock markets, commodities, and derivatives as they were not included in the Namibia Financial Inclusion Survey used in the study. Thus, it is recommended that future surveys and studies should include such variables.

6.0 REFERENCES

- Alessie, R., Van Rooij, M., & Lusardi, A. (2011). Financial literacy and retirement preparation in the Netherlands. *Journal of Pension Economics and Finance*, 10 (4), 527–545.
- ASIC (2003). Summary of stakeholder responses to financial literacy in schools. *ASIC discussion paper*. Australian Securities and Investments Commission, Sydney.
- Bandura, A. (1977). Social learning theory.
- Bauer, J. W., Braun, B., & Olson, P. D. (2000). Welfare to Well-Being Framework for Research, Education, and Outreach. *Journal of Consumer Affairs*, 34(1), 62-81.
- Beal, D. J., & Delpachitra, S. B. (2003). Financial literacy among Australian university students. *Economic Papers: A journal of applied economics and policy*, 22(1), 65-78.
- Bell, C., Gorin, D., & Hogarth, J. M. (2009). Does Financial Education Affect Soldiers’ Financial Behaviours? In *Federal Reserve System Community Affairs Research Conference*.
- Bernard, G. (2007). *Measuring social vulnerability in Caribbean States, Paper presented at 8th SALISES Annual Conference Crisis, Chaos and Change: Caribbean Development Challenges in the 21st Century*, Trinidad and Tobago.
- Bernheim, D. & Garrett, D. (2013). The effects of financial education in the workplace: Evidence from a survey of households. *Journal of Public Economics*, 87, 1487-1519.
- Braunstein, S., & Welch, C. (2002). Financial literacy: An overview of practice, research, and policy. *Fed. Res. Bull.*, 88, 445.
- Brown, M. & Graf, R. (2013). Financial literacy and retirement planning in Switzerland. *Numeracy*, 6(2), 6.
- Bubolz, M. M., & Sontag, M. S. (1993). Human ecology theory. In *Sourcebook of family theories and methods* (pp. 419-450). Springer US.

- Bucher-Koenen, T. & Lusardi, A. (2011). Financial literacy and retirement planning in Germany. *Journal of Pension Economics and Finance*, 10, 565–584.
- Cameron, M. P., Calderwood, R., Cox, A., Lim, S., & Yamaoka, M. (2014). Factors associated with financial literacy among high school students in New Zealand. *International Review of Economics Education*, 16, 12-21.
- Campbell, J. (2016). Household finance. *Journal of Finance*, 61(4), 1553-1604.
- Capuano, A., & Ramsay, I. (2011). What Causes Suboptimal Financial Behaviour? An Exploration of Financial Literacy, Social Influences and Behavioural Economics. *University of Melbourne Legal Studies Research Paper*, (540).
- Chang, Y., & Lyons, S. (2008). Consumer credit search behaviour. *International Journal of Consumer Studies*, 16(3), 207-227
- Chen, H., & Volpe, R.P, (1998). An analysis of personal financial literacy among college students. *Financial services review*, 7(2), 107-128.
- Clancy, M., Weiss, M., G., & Schreiner, M. (2011). *Financial Education and Savings Outcomes in Individual Development Accounts*. Working Paper 01-2, Washington University of St. Louis, Centre for Social Development
- Clark, R. & D 'Ambrosio, M. (2022). *Saving for Retirement: The Role of Financial Education*. Working Paper 4-070102-A, TIAA-CREF Institute.
- Cole, S., Sampson, T. & Zia, B., (2011). 'Prices or knowledge: What drives demand for financial services in emerging markets?' *Journal of Finance* 66(6), 1933-1967.
- Commonwealth Bank Foundation (CBF, 2004b). Improving Financial Literacy in Australia: Benefits for the Individual and the Nation, *Research Report*, Commonwealth Bank Foundation, Sydney.

- Christelis, D., Tullio J. and Padula, M. (2010). Cognitive abilities and portfolio choice. *European Economic Review*, 54, 18-38.
- Currie, I. (2005). Using Canadian Government Procurement to Improve Technology Diffusion, Adoption and Adaptation: Maximising Benefits and Managing Risks. A Discussion Paper prepared for the Prime Minister's Advisory Council on Science and Technology (PMACST), June 12.
- Cutter, S.L., Burton, C., & Emrich, C. (2010). Disaster resilience indicators for benchmarking baseline conditions. *J Home Secur Emerg*. doi:10.2202/1547-7355.1732
- Danes, S. M. (1994). Parental perceptions of children's financial socialization. *Financial Counselling and Planning*, 5, 127–146.
- Danes, S. M. & Hira, T. K. (1987). Money management knowledge of college students. *Journal of Student Financial Aid*, 17(1), 4-16.
- Deacon, R. E., & Firebaugh, F. M. (1981). *Mary Winter Instructor's Manual to Accompany Family Resource Management: Principles and Applications*. Allyn and Bacon.
- Doi, Y., David, M., & Bilal, Z. (2014), Who You Train Matters: Identifying Combined Effects of Financial Education on Migrant Households, *Journal of Development Economics*, 109, 39-55.
- Edwards, R., Allen, M. W. & Hayhoe, C. R (2007). Financial attitudes and family communication about students' finances: The role of sex differences. *Journal of Women and Aging*, 7, 37–53
- Easterby-Smith, M., Thorpe, R. & Lowe, A. (1991). *Management Research: An Introduction*. Sage, London.

- European Microfinance Network (EMN, 2010). *Financial Education*. Retrieved: http://www.europeanmicrofinance.org/financial-education_en.php#Benefits as at 12 August 2020.
- Feng, P, Sun, D1 and Gong, Z. (2019). *A Case Study of Pyramid Scheme Finance Flow Network Based on Social Network Analysis*, Nanjing, MDPI
- Fernandes, D., Lynch, J.G. & Netemeyer, R.G. (2014) Financial literacy, financial education, and downstream financial behaviours. *Management Science*, 60, 1861–1883
- Gale, W.G., Harris, B.H. & Levine, R. (2012). Raising household saving: does financial education work? *Social Security Bulletin*, 72(2), 39-48.
- Gallery, N., Newton, C., & Palm, C. (2011). Framework for Assessing Financial Literacy and Superannuation Investment Choice Decisions. *Australasian Accounting Business and Finance Journal*, 5(2), 3-22
- Garman, E. T. (1997). Personal finance education for employees: Evidence on the bottom-line benefits. *Financial Counselling and Planning*, 8(2), 1-8.
- Godsted, D., & McCormick, M. H. (2007). National K-12 Financial Literacy Research Overview. *Networks Financial Institute at Indiana State University Report*, 3.
- Goldsmith, E. B. (2005). *Resource management for individuals and families*. Cengage Learning.
- Grable, J. E., & Joo, S. (1998). Does financial education affect knowledge, attitudes, and behaviour? An empirical analysis. *Personal Finances and Worker Productivity*, 2(2), 213-220.
- Greenspan, A. (2003). Remarks at the 33rd Annual Legislative Conference of the Congressional Black Caucus on September 26, 2003. Washington, D.C.: Federal Reserve.

- Greenspan, A. (2002). Statement of the Chairman of the Board of Governors of the Federal Reserve, Before the S. Comm. on Banking, Housing, & Urban Affairs, hearing on S. 969 (The State of Financial Literacy and Education in America), Washington, D.C.
- Hall, K. (2008). The Importance of Financial Literacy. Speech delivered to the Conference on Deepening Financial Capacity in the Pacific Region, Sydney, 25 August 2008.
- Hasheela, E., T. (2013). Access to Finance and Financial Inclusion in Namibia, *Master's Thesis*, University of Stellenbosch
- Hastings, J. S., and Tejada-Ashton, L. (2008). *Financial literacy, information, and demand elasticity: Survey and experimental evidence from Mexico* (No. w14538). National Bureau of Economic Research.
- Hayhoe, C. R., Leach, L. J., Allen, M. W., & Edwards, R. (2005). Credit cards held by college students. *Journal of Financial Counselling and Planning*, 16(1).
- Hilgert, M. A., Hogarth, J. M., and Beverly, S. G. (2003). Household financial management: The connection between knowledge and behaviour. *Fed. Res. Bull.*, 89, 309.
- Hira, T. (1993). Financial management knowledge and practices: Implications for financial health. *Paper presented at the Personal Economic Summit '93*, Washington, D.C.
- Hira, T. K. (2002). Current financial environment and financial practices: implications for financial health. *Journal of Family and Consumer Sciences*, 94(1), 1-4.
- Hogarth, J. M. (2002). Financial literacy and family and consumer sciences. *Journal of Family and Consumer Sciences*, 94, 15-28.
- Jappelli, T., & Padula, M. (2013). Investment in financial literacy and saving decisions. *Journal of Banking & Finance*, 37(8), 2779-2792.
- Joo, S., Grable, J. E. & Bagwell, D. C. (2003). Credit card attitudes and behaviours of college students. *College Student Journal*, 37(4), 405-419.

- Jorgensen, B. L. (2007). *Financial literacy of college students: Parental and peer influences* (Doctoral dissertation, Virginia Polytechnic Institute and State University).
- Karlan, D., Aishwarya, L. R. and Jonathan, Z. (2014), Savings by and for the Poor: A Research Review and Agenda. *Review of Income and Wealth*, 60(1), 36-78.
- Kempson, E. (2010). Measuring levels of financial literacy at an international level. *Working Paper*. OECD
- Kirkman, B. C., Lee, T. R., Lown, J. M., & Allgood, S. M. (2000). Financial management, financial problems and marital satisfaction among recently married university students. *Financial Counselling and Planning*, 11(2), 55-65.
- Kibui, M. (2013). *Financial Literacy and Financial Management of The Youth Enterprise Development Fund in Konoin Constituency Kenya*. The University of Nairobi. Unpublished MBA Project.
- Knapp, J. P. (1991). *The benefits of consumer education: A survey report*. Ypsilanti, MI: Eastern Michigan University, Consumer Education Centre.
- Lusardi, A & Mitchell, O.S. (2007). Financial Literacy and Retirement Preparedness: Evidence and Implications for Financial Education. *Business Economics*, 35–44.
- Lusardi, A., & Mitchell, O. S. (2007). Financial literacy and retirement planning: New evidence from the Rand American Life Panel. *Michigan Retirement Research Centre Research Paper No. WP, 157*.
- Lusardi, A, Mitchell, O.S, & Curto, V. (2009). *Financial literacy among the young: evidence and implications for consumer policy*. National Bureau of Economic Research. Working Paper 15352.
- Lusardi, A. (2008). *Financial literacy: an essential tool for informed consumer choice?* (No. w14084). National Bureau of Economic Research.

- Lusardi, A. (2012). *Numeracy, financial literacy, and financial decision-making* (No. W17821). National Bureau of Economic Research.
- Lusardi, A. (2013). The economic importance of financial literacy for students. Retrieved from http://annalusardi.blogspot.com/2013_04_01_archive.html
- Lusardi, A. & Mitchell O. S. (2006). Financial Literacy and Planning: Implications for Retirement Well-being. *Working Paper*, Pension Research Council, Wharton School, University of Pennsylvania.
- Lusardi, A. & Mitchell, O (2011). Financial Literacy and Retirement Planning in the United States. *Journal of Pension Economics and Finance*, 10(4), 509 - 525
- Lusardi, A. & Mitchell, O. S. (2009) Financial Literacy: Evidence and Implications for Financial Education. Trends and Issues NBER TIAA-CREF Institute Fellow
- Lusardi, A. & Mitchell, O., (2008). *Planning and Financial Literacy: How Do Women Fare?* Working Paper, No W13750, National Bureau of Economic Research, 2008.
- Lusardi, A. & Mitchell, O.S. (2007a), Baby Boomer Retirement Security: The Role of Planning, Financial Literacy, and Housing Wealth. *Journal of Monetary Economics*, 54, 205–224.
- Lusardi, A. & Tufano, P. (2009). *Debt Literacy, Financial Experiences, and Over-indebtedness*. NBER Working Paper n. 14808.
- Lusardi, A., (2009). *The Importance of Financial Literacy*. National Bureau of Economic Research
- Lusardi, A. & Tufano, P. (2008). Debt Literacy, Financial Experience, and Over-indebtedness. *Mimeo*, Harvard Business School.
- Lusardi, A., Mitchell, O. S., & Curto, V. (2010). Financial literacy among the young. *Journal of Consumer Affairs*, 44(2), 358-380.

- Mandell, L. & Klein, L. S. (2009). The Impact of Financial Literacy Education on Subsequent Financial Behaviour. *Association for Financial Counselling and Planning Education: 15*
- Moore, D. (2003). *Survey of financial literacy in Washington State: Knowledge, behaviour, attitudes, and experiences*. Technical Report 03-39. Washington State University, Social and Economic Sciences Research Centre.
- Morton, H. (2005). Financial Literacy: A Primer for Policy Makers, National Conference of State Legislatures, Denver, Colorado. 3rd International Conference of Contemporary Business 2006 Leura, 21-22 September
- Murendo, C. and Mutsonziwa, K., 2017. Financial literacy and savings decisions by adult financial consumers in Zimbabwe. *International journal of consumer studies, 41*(1), pp.95-103.
- NFCS (2017). *Namibia Financial Capability Survey*, Windhoek, FLI.
- Noctor, M., Stoney, S., & Stradling, R. (1992). Financial literacy: a discussion of concepts and competencies of financial literacy and opportunities for its introduction into young people's learning. *National Foundation for Educational Research*.
- NSA (2017). *Namibia Financial Inclusion Survey (NFIS) 2017*. Windhoek. NSA.
- Nyamhute W. & Monyoncho, M.J.K. (2088). Effect of financial literacy on personal financial management practices: A case study of employees of finance and banking institutions. *Paper presented at African International Business and Management (AIBUMA) conference, Nairobi*.
- Olima, B. (2013). *Effects of financial literacy on personal financial management on Kenya Revenue Authority employees in Nairobi*. University of Nairobi, Nairobi: Unpublished MBA Project.
- O'Neill, B. (1993). Assessing America's financial IQ: Reality, consequences, and potential for change. *Paper presented at the Personal Economic Summit '93*, Washington, D.C

- OECD (2016). *Measuring Financial Literacy: Core Questionnaire in Measuring Financial Literacy: Questionnaire and Guidance Notes for conducting an Internationally Comparable Survey of Financial literacy*. Paris: OECD. Retrieved from <https://www.oecd.org/finance/financial-education/49319977.pdf>
- Organisation for Economic Co-operation and Development. (2013). *Improving financial literacy and capability: Analysis of issues and policies*. Paris, France: OECD.
- Parrish, L., & Servon, L. (2006). Policy options to improve financial education: Equipping families for their financial futures. *POLICY*.
- Ray Morgan Research (RMR; 2003). *ANZ Survey of Adult Financial Literacy in Australia: Final Report, May 2003*. Melbourne: Ray Morgan Research.
- Rice, A. S., & Tucker, S. M. (1986). *Family Life Management*. New York: Macmillan.
- Shaanika, A. (2018). Students' Attitudes Toward Personal Financial Planning: A Case Study of Master of Business Administration Students at The University of Namibia. *Masters' Thesis* Windhoek, University of Namibia.
- Schlomit, A. (2018). Crypto Securities: On the Risks of Investments in Blockchain-Based Assets and the Dilemmas of Securities Regulation, *American University Law Review*, 68 (1)
- Sevim, N., Temizel, F., & Sayılır, Ö. (2012). The effects of financial literacy on the borrowing behaviour of Turkish financial consumers. *International Journal of Consumer Studies*, 36(5), 573–579
- Smith, B., & Stewart, F. (2009). *Learning from the experience of OECD countries: Lessons for policy, programs, and evaluations*. In A. Lusardi (Ed.), *Overcoming the saving slump: How to increase the effectiveness of financial education and saving programs*. Chicago, IL: University of Chicago Press.
- Thakur, K., K. & Banik, G., G. (2018). Cryptocurrency: Its Risks and Gains and The Way Ahead, *IOSR Journal of Economics and Finance*, 9, (2), 38-42

UNDP (2014). Human development report 2014 (technical note). New York United Nations Development Program.

Van Rooij, M., Lusardi, A., & Alessie, R. (2007). *Financial literacy and stock market participation* (No. w13565). National Bureau of Economic Research.

Vitt, L. A., Anderson, C., Kent, J., Lyter, D. M., Siegenthaler, J. K., & Ward, J. (2000). *Personal finance and the rush to competence: Financial literacy education in the U.S.* Middleburg, VA: Institute for Socio-Financial Studies.

Volpe, R. P., Chen, H., & Pavlicko J. J. (1996). Personal investment literacy among college students: A survey. *Financial Practice and Education*, 6(2), 86-94.

Voydanoff, P. (1990). Economic distress and family relations: A review of the eighties. *Journal of Marriage and the Family*, 52, 1099-1115.

Wiener, R. L., Baron-Donovan, C., Gross, K., and Block-Leib, S. (2005). Debtor education, financial literacy, and pending bankruptcy education. *Behavioural Sciences and the Law*, 23, 347-366.

World Bank, (2016). Financial Inclusion in Namibia: *Summary Note*, World Bank.

World Bank (2012). *The Case for Financial Literacy in Developing Countries*. Washington: World Bank, DFID and OECD.

World Bank. (2012). *Building trust: Developing the Russian financial sector*. Washington, D.C.: World Bank.

Worthington, A.C. (2006). Debt as a source of financial stress in Australian households, *International Journal of Consumer Studies*, 30, 2-15.

Yoon, D.K. (2012). Assessment of social vulnerability to natural disasters: a comparative study. *Natural hazards*, 63(2), 823-843.

7.0 APPENDICES

Table A1: Marginal effect estimates of the determinants of the use of financial products

	Have a Bank account					Have a saving account				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Financial literacy	0.89*** (0.13)					0.96*** (0.12)				
Financial attitude		0.21*** (0.07)					0.31*** (0.07)			
Financial knowledge			0.41*** (0.06)					0.15*** (0.06)		
Financial confidence				0.16* (0.10)					0.13 (0.09)	
Financial awareness					0.26*** (0.07)					0.55*** (0.06)
Age	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.01* (0.00)	0.00 (0.00)	-0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	-0.00 (0.00)
Age squared	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	-0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	-0.00 (0.00)	-0.00 (0.00)	0.00 (0.00)
Household size	-0.00 (0.00)	-0.00 (0.00)	-0.01* (0.00)	-0.01 (0.00)	-0.00 (0.00)	-0.00 (0.00)	0.00 (0.00)	-0.00 (0.00)	-0.00 (0.00)	0.00 (0.00)
HH per capita income	0.00*** (0.00)	0.00*** (0.00)	0.00*** (0.00)	0.00*** (0.00)	0.00*** (0.00)	0.00*** (0.00)	0.00*** (0.00)	0.00*** (0.00)	0.00*** (0.00)	0.00*** (0.00)
Individual is Male	-0.03 (0.02)	-0.03 (0.02)	-0.03 (0.02)	-0.03 (0.02)	-0.03 (0.02)	-0.03 (0.02)	-0.02 (0.02)	-0.02 (0.02)	-0.02 (0.02)	-0.02 (0.02)
Urban resident	-0.00 (0.02)	0.02 (0.02)	0.00 (0.02)	0.03 (0.02)	0.03 (0.02)	-0.10*** (0.02)	-0.09*** (0.02)	-0.08*** (0.02)	-0.07*** (0.02)	-0.08*** (0.02)
Individual is married	0.01 (0.02)	0.01 (0.02)	0.01 (0.02)	0.01 (0.02)	0.01 (0.02)	0.03 (0.02)	0.03 (0.02)	0.03 (0.02)	0.03 (0.02)	0.03 (0.02)
Completed at secondary	0.15*** (0.02)	0.17*** (0.02)	0.14*** (0.02)	0.18*** (0.02)	0.18*** (0.02)	-0.01 (0.02)	0.01 (0.02)	0.00 (0.02)	0.02 (0.02)	0.01 (0.02)
Have access to radio	0.05** (0.02)	0.06** (0.02)	0.05** (0.02)	0.05** (0.02)	0.05** (0.02)	0.03 (0.02)	0.03 (0.02)	0.03 (0.02)	0.03 (0.02)	0.03 (0.02)
Have access television	0.09*** (0.03)	0.11*** (0.03)	0.08*** (0.03)	0.11*** (0.03)	0.12*** (0.03)	-0.02 (0.02)	-0.00 (0.02)	-0.00 (0.02)	0.01 (0.02)	0.01 (0.02)
Have access to phone	0.19*** (0.03)	0.20*** (0.03)	0.18*** (0.03)	0.21*** (0.03)	0.20*** (0.03)	0.02 (0.03)	0.03 (0.03)	0.03 (0.03)	0.04 (0.03)	0.03 (0.03)
Member of saving club	0.29** (0.15)	0.33** (0.15)	0.33** (0.15)	0.34** (0.15)	0.35** (0.15)	0.04 (0.08)	0.06 (0.08)	0.07 (0.08)	0.09 (0.08)	0.09 (0.08)
Distance less than 1 hour	0.07*** (0.02)	0.07*** (0.02)	0.06*** (0.02)	0.07*** (0.02)	0.07*** (0.02)	0.03 (0.02)	0.03 (0.02)	0.02 (0.02)	0.03 (0.02)	0.03 (0.02)
Make financial decisions	-0.03 (0.02)	-0.01 (0.02)	-0.02 (0.02)	-0.02 (0.02)	-0.02 (0.02)	0.00 (0.02)	0.02 (0.02)	0.02 (0.02)	0.02 (0.02)	0.01 (0.02)
Observations	1,471	1,471	1,471	1,471	1,471	1,471	1,471	1,471	1,471	1,471

Note: Robust standard errors in parenthesis. Estimates of financial literacy on bank account ownership and saving decisions are presented in Columns (1) to (5) and (6) to (10), respectively. *, **, *** indicates the corresponding coefficients or marginal effects are significant at 10%, 5% and 1%, respectively.

Table A2: Marginal effect estimates of the determinants of the use of financial products

	Have access to credit					Have access to insurance				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Financial literacy	0.52*** (0.08)					0.89*** (0.12)				
Financial attitude		0.17*** (0.05)					0.27*** (0.07)			
Financial knowledge			0.21*** (0.04)					0.45*** (0.05)		
Financial confidence				0.12* (0.07)					0.07 (0.10)	
Financial awareness					0.11** (0.05)					0.15** (0.07)
Age	0.01*** (0.00)	0.02*** (0.00)	0.01*** (0.00)	0.02*** (0.00)	0.02*** (0.00)	0.01*** (0.00)	0.01*** (0.00)	0.01*** (0.00)	0.01*** (0.00)	0.01*** (0.00)
Age squared	-0.00*** (0.00)	-0.00*** (0.00)	-0.00*** (0.00)	-0.00*** (0.00)	-0.00*** (0.00)	-0.00*** (0.00)	-0.00*** (0.00)	-0.00*** (0.00)	-0.00*** (0.00)	-0.00*** (0.00)

Household size	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
HH per capita income	0.00	0.00	0.00	0.00	0.00	0.00***	0.00***	0.00***	0.00***	0.00***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Individual is Male	-0.00	0.00	0.00	0.01	0.01	-0.03	-0.02	-0.03	-0.02	-0.02
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Urban resident	0.02	0.03*	0.03*	0.04**	0.04**	0.03	0.05*	0.03	0.06**	0.06**
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Individual is married	0.03*	0.03*	0.03*	0.03*	0.03*	0.04	0.04	0.04	0.04	0.04
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Completed at secondary	0.10***	0.12***	0.10***	0.13***	0.13***	0.11***	0.14***	0.10***	0.15***	0.15***
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Have access to radio	0.00	0.01	0.00	0.00	0.00	-0.00	0.00	-0.00	-0.00	-0.00
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Have access television	0.09***	0.11***	0.09***	0.11***	0.11***	0.08***	0.11***	0.08***	0.12***	0.12***
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Have access to phone	0.06	0.08	0.06	0.08	0.08	-0.02	-0.01	-0.03	-0.00	-0.00
	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)
Member of saving club	0.02	0.03	0.02	0.05	0.04	0.09	0.11*	0.09	0.14**	0.13**
	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)
Distance less than 1 hour	0.05**	0.04**	0.04*	0.04**	0.05**	0.06***	0.06**	0.05**	0.05**	0.05**
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Make financial decisions	0.00	0.00	0.01	0.01	0.00	-0.04*	-0.03	-0.03	-0.03	-0.03
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Observations	1,471	1,471	1,471	1,471	1,471	1,471	1,471	1,471	1,471	1,471

Note: Robust standard errors in parenthesis. Estimates of financial literacy on access to credit and access to insurance are presented in Columns (1) to (5) and (6) to (10), respectively. *, **, *** indicates the corresponding coefficients or marginal effects are significant at 10%, 5% and 1%, respectively.

Appendix 3: LANGUAGE EDITING CERTIFICATE



The Rev. Dr. Greenfield Mwakipesile

ThD, MBA, HBS | mwakipg@outlook.com

CONTACT

PO Box 99539,
UNAM,
Namibia

LANGUAGE & COPY-EDITING CERTIFICATE

11th September 2021

RE: LANGUAGE, COPYEDITING AND PROOFREADING OF TIOFILIA JENTZSCH'S THESIS FOR THE MASTER OF BUSINESS ADMINISTRATION DEGREE OF THE NAMIBIA BUSINESS SCHOOL OF THE UNIVERSITY OF NAMIBIA

This certificate serves to confirm that I copyedited and proofread **TIOFILIA JENTZSCH's** Thesis for the **MASTER OF BUSINESS ADMINISTRATION DEGREE** entitled: **ANALYSING THE RELATIONSHIP BETWEEN FINANCIAL LITERACY AND THE USE OF FINANCIAL PRODUCTS IN NAMIBIA**

I declare that I professionally copyedited and proofread the thesis and removed mistakes and errors in spelling, grammar, and punctuation. In some cases, I improved sentence construction without changing the content provided by the student. I also removed some typographical errors from the thesis and formatted the thesis so that it complies with the University of Namibia's guidelines.

I am a trained language and copy editor and have edited many Postgraduate Diploma, Masters' Thesis, Dissertations and Doctoral Dissertations for students studying with universities in Namibia, Zimbabwe, Eswatini, South Africa and abroad. I have also copy-edited company documents for companies in the region and abroad.

Please feel free to contact me should the need arise.

Yours Sincerely,

A handwritten signature in black ink, appearing to read "Dr. Greenfield Mwakipesile".

The Rev. Dr. Greenfield Mwakipesile



greenfield.mwakipesile



[@mwakipg](https://twitter.com/mwakipg)



+264813901701



Dr. Greenfield
Mwakipesile