

DURBAN UNIVERSITY OF TECHNOLOGY

**THE LEVEL OF FINANCIAL LITERACY OF AGRIBUSINESS
ENTREPRENEURS IN ZIMBABWE**

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NOVEMBER 2022



**THE LEVEL OF FINANCIAL LITERACY OF AGRIBUSINESS
ENTREPRENEURS IN ZIMBABWE**

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ABSTRACT

Agribusiness is the cornerstone of the Zimbabwean economy as most people survive on agricultural related activities, and it is regarded as the first step to fighting poverty among the rural population. However, the sector has not been performing well in terms of productivity due to various factors, which include poor management of borrowed funds, higher loan defaults, and financial exclusion. The study sought to assess the level of financial knowledge, financial behaviours, and financial attitudes of agribusiness entrepreneurs. Pragmatism research philosophy guided this research. The study made use of the mixed method approach and sequential mixed method research design. Quantitative data was first collected using a questionnaire, followed by interviews that were conducted to build upon quantitative results. Multistage cluster sampling and convenience sampling were used to select research participants. The study also sought to determine the major factors affecting the financial literacy of agribusiness entrepreneurs and the nature of financial products demanded by agribusiness entrepreneurs. Research findings established that agribusiness entrepreneurs: (1) have low financial knowledge, (2) exhibit poor financial behaviours, and (3) have good financial attitudes except for diverting a portion of business loans for personal use. The general level of financial literacy was very low among agribusiness entrepreneurs but extremely low among women, low-income earners, those with low levels of education, and those living with several dependants below 18 years. Most smallholder agribusiness entrepreneurs earned very low incomes of less than US\$500 per month due to lower yields and, therefore, could not afford bank loans usually charged at very high interest rates. Agribusiness entrepreneurs usually relied on non-financial products like rotational savings (*mukando* in Shona), selling something owned and family and friends to make ends meet. There was a disassociation between financial products needed by agribusiness entrepreneurs and the products offered by financial institutions. The study developed and recommended a financial literacy operationalisation model for agribusiness entrepreneurs for consideration by policy makers.

DECLARATION

I, Lilian Gumbo, student number 21856725, hereby declare that:

- (i) The research report in this thesis, except where otherwise indicated, is my original research.
- (ii) This thesis has not been submitted for any degree or examination at any other university.
- (iii) This thesis does not contain other persons' data, pictures, graphs, or other information, unless specifically acknowledged as being sourced from other persons.
- (iv) This thesis does not contain other persons' writing, unless specifically acknowledged as being sourced from other researchers.

Where other written sources have been quoted, then:

- a) Their words have been re-written, but the general information attributed to them has been referenced; and
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- (v) This thesis does not contain text, graphics or tables copied and pasted from the internet, unless specifically acknowledged, and the source being detailed in the thesis and in references sections.

Signed



Date: April 13 2023

DEDICATION

This research is dedicated to my mother, Vongai Gumbo, who emphasised the importance of education to a woman during adversity and inequalities.

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“Trust in the Lord with all thine heart; and lean not unto thine own understanding. In all thy ways acknowledge him, and he shall direct thy paths (Proverbs 3:5-6).

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LIST OF ABBREVIATIONS

BPG	Breusch-Pagan-Godfrey test
FCI	Financial choice influences
FL	Financial literacy
FPH	Financial Products Held
MLARFS	Ministry of Lands, Agriculture, Fisheries, Water and Rural Development
OECD	Organisation of Economic Cooperation and Development
RBZ	Reserve Bank of Zimbabwe
SMR	Standard multiple regression model
ZDI	Zimbabwe Democratic Institute
ZEPARU	Zimbabwe Economic Policy Analysis Research Unit

CHAPTER ONE

INTRODUCTION

1.1 Introduction

The aftermath of the previous global financial crisis and the COVID-19 pandemic has compelled the need for financial literacy around the globe as it has become important for avoiding future financial crises by attaining financial stability (Bottazzi 2021). However, previous efforts to educate individuals have failed to instil desired financial behaviour (Klapper and Lusardi 2020) since financial literacy programs need to be tailored for each group of the society according to daily experiences and the current level of financial literacy of the specific group (Lusardi 2019).

Previous research in developed countries showed evidence that many individuals were not well-equipped to make sound savings and financial decisions (Bucher-Koenen *et al.* 2016; Lusardi 2019; Tinghög *et al.* 2021). OECD (2020) survey of 26 countries in Asia, Africa, and Europe during the COVID-19 pandemic revealed that individuals' poor borrowing behaviours, failure to plan for retirement, and lack of participation in financial markets were linked to ignorance of basic financial concepts. Hence, this affected individuals' financial wellbeing and financial resilience. A study of financial literacy is vital due to the importance of financial literacy in financial decision-making (Klapper and Lusardi 2020), wealth accumulation (Behrman *et al.* 2012), retirement planning, stock market participation, and financial inclusion (Lusardi and Mitchell 2014).

This study prioritised an assessment of financial literacy of agribusiness entrepreneurs since the performance of the Zimbabwean agricultural sector directly influences overall national economic performance (FinScope 2011), household food security, and the general standards of living (Zimbabwe Ministry of Finance and Economic Development 2020). The sector has not been performing well, and the country consistently experiences food insecurity among various districts due to significantly below-average crop production (Famine Early Warning System 2022). The government and financial institutions made various financing programmes available, to boost farm production to restore the agribusiness sector. However, agribusiness entrepreneurs with access to loans lacked faithfulness in loan payments (Mutambara 2016).

Over 45% of the 50000 farmers contracted to produce maize under the command agriculture in the 2016/2017 season failed to pay back the loans on the appointed time (Zimbabwe Democratic Institute 2019). Availing credit is crucial for developing the agricultural sector, but are agribusiness entrepreneurs well-equipped to make proper financial decisions after receiving financial loans? Do they possess adequate financial literacy skills to participate on the financial front without making fundamental mistakes? If not, what can be done to determine their financial literacy level and equip them since this is a vital sector of the Zimbabwean economy?

The aim of this study was to develop a financial literacy operationalisation model for agribusiness entrepreneurs in Zimbabwe. To achieve this aim, the study sought to assess the level of financial literacy of agribusiness entrepreneurs, determine the factors that affect financial literacy, and investigate the nature of financial services needed by agribusiness entrepreneurs. This chapter introduces the research aim, provides a background to the study, and stipulates research delimitations and limitations. The chapter also provides the rationale for this study and its contribution.

1.2 Background of the study

This section presents an overview of various events that signify the need for financial literacy. First, the past global financial crisis characterised by the mortgage crisis, household bankruptcy, and over-indebtedness, supports the need for financial literacy to make better financial decisions (Bottazzi 2021). Before the crisis, individuals purchased houses through subprime mortgages and continued to exhaust their credit limits without a proper understanding of future obligations. According to Gerding (2009), a subprime loan is offered at a high-interest rate to individuals with low credit ratings and a high probability of default. Subprime mortgages were offered to individuals with poor repayment ability since they were not qualifying for a loan at the prime rate. Subsequently, widespread defaults on these subprime residential mortgages paralysed bank liquidity and led to bank runs that had contagion on the whole financial sector.

The crisis became an agent wake for the need for financial literacy since financially illiterate consumers made financial mistakes that destabilised financial markets through irrational financial behaviours (Ameliawati and Setiyani 2018). Global leaders realised the dangers of a financially illiterate population. They stimulated policies like innovative financial inclusion,

national strategies for financial education, and financial consumer protection policies that could improve global human financial capabilities (Atkinson, Monticone and Mess 2016).

Secondly, globally, financial markets have become complex, and individuals are faced with complex financial decisions with economic repercussions (Lusardi 2019). For instance, pension plans shifted from defined benefits to defined contribution plans. Defined benefit plans promise to pay retirees a definite income stream after retirement (Lusardi and Mitchell 2014). However, defined contribution pension plans do not promise set benefits, but the employer risks paying the future pension benefit to retirees should investment performance be poor, or should the employee be unable to make adequate contributions to the plan. Still, employees' benefits depend on the size of the contributions made to the pension fund and the returns earned on the fund's investments (Mitchell and Lusardi 2015). The plan's risk is borne by the employees, unlike a defined benefit plan. Individuals need financial literacy to make such retirement decisions (Hastings and Mitchell 2020).

Moreover, recent financial innovations associated with the COVID-19 pandemic new normal, demands more financial expertise, otherwise, individuals can lose lifetime investments through cyber-attacks (Fessler, Jelovsek and Silgoner 2020). Most banks have restructured their operations from traditional physical ways of delivering financial services to virtual banking and digitalised financial services (Rahman, 2022). Yet, users of these virtual platforms need to be aware of security issues associated with these platforms. Apart from technological innovations, the pandemic also revealed the need for financial literacy and financial resilience during periods of a pandemic (Akinleye *et al.* 2020; Chhatwani and Mishra 2021a; Sampson *et al.* 2021). Chhatwani and Mishra (2021a) established that individuals and households were not financially prepared for the adverse effects caused by the pandemic due to a lack of savings for emergencies and low financial literacy. Most households fail to meet basic needs like food and medical expenses (Akinleye *et al.* 2020).

Third, there are high levels of information asymmetry between financial consumers and financial institutions ((Shimray 2018). Financial service users need basic knowledge of the services they utilise to make informed financial decisions. Apart from increased regulatory monitoring and the availability of financial advisors, nothing can replace the need for individual financial knowledge necessary to make informed decisions (Fairfax 2018).

Finally, literature documented financial literacy as one of the most crucial competencies vital for the creation and development of entrepreneurship endeavours (Bongomin *et al.* 2017b; Mutengezanwa 2018; Thomas and Subhashree 2020). Thomas and Subhashree (2020) argues that financial literacy promotes the general entrepreneurial culture and entrepreneurial activities by promoting confidence in making financial transactions. Specifically, financial literacy promotes good financial management skills of entrepreneurs and improves the adoption of financial services (Cole, Sampson and Zia 2009; Priyadarshini *et al.* 2017; Morgan and Long 2020). Financial literacy competencies such as financial planning, saving, budgeting, debt management, money management, and fund mobilisation are vital entrepreneurial skills that cannot be ignored (Bayar *et al.* 2017; Fairfax 2018; Morgan and Long 2020). Poor financial decisions by agribusiness entrepreneurs in Zimbabwe, like the, diversion of business loan funds to personal use and reluctance to honour debt (Masiyandima, Chigumira and Bara 2011) could be a signal that agribusiness entrepreneurs lack the basic financial literacy competences vital for the growth of their entrepreneurial endeavours.

1.2.1 Zimbabwean agribusiness sector

The performance of the Zimbabwean agricultural sector directly influences overall national economic performance (FinScope 2011), household food security and the general standards of living. Agriculture is the lifeblood of the Zimbabwean economy, contributing 15-18% of gross domestic product, 40% of national export earnings and 60% of agro-industry raw materials (Ministry of Lands, Agriculture, Fisheries, Water and Rural Resettlement 2018). Most of the population in rural areas derives their livelihoods mainly from agricultural activities, whilst the urban populace supplements their inflation-eroded salaries from agriculture-related activities, therefore, the Government must ensure that this sector remains productive and functional. Moreover, agriculture-related employment supports a third of the formal labour force and contributes towards poverty reduction. Therefore, the agricultural sector performance directly determines the overall level of people's living standards and the development of the Zimbabwean economy (Zimbabwe, Ministry of Lands, Agriculture, Fisheries, Water and Rural Development 2018), therefore, the need to improve financial literacy capabilities of agribusiness entrepreneurs.

The favourable Zimbabwean climatic conditions enable the country to grow a large variety of food, cash crops and livestock. Zimbabwean cash crops include tobacco, cotton, soya beans and

tea. Major food crops include maize (the staple food), sorghum, groundnuts, wheat, sweet potatoes, and finger millet. Livestock comprises poultry, beef, goats, dairy and sheep. However, Zimbabwe has become a net food importer during the past decade due to low farm production (Zimbabwe Ministry of Finance and Economic Development 2020). The national requirement for maize is 1 800 000 tonnes per annum (Zimbabwe Ministry of Lands Agriculture Fisheries Water and Rural Resettlement 2022) however, since 1997 maize production has been below this consumption need. Mutambara (2016) established that financial exclusion affects farmers' access to finance, which is crucial for buying farm inputs and implements and, thereby low productivity. Wheat consumption ranges from 35 000 – to 450000, and production has also been below national requirements. However, the production of smaller food supplements grains like groundnuts, soya beans, and sorghum has experienced growth over the years. Tobacco is the country's major foreign currency earner among agricultural products, and Zimbabwe is second to South Africa in sugarcane production in the southern and east African region (Ministry of Lands Agriculture Fisheries Water and Rural Resettlement 2018).

The Zimbabwean government after gaining independence in 1980 embarked on several programmes that sought to eliminate land ownership inequalities and imbalances. Initially, the willing-buyer, willing-seller programme was implemented in 1980-1990, followed by the 1990-1997 land acquisition act and in the year 2000, the fast-track land reform programme. This resulted in 145000 new A1 (37 hectares), and 18000 new A2 (318 hectares) farmers added to old communal and old resettlement farmers. Figure 1 shows the transformation of Zimbabwean land ownership.

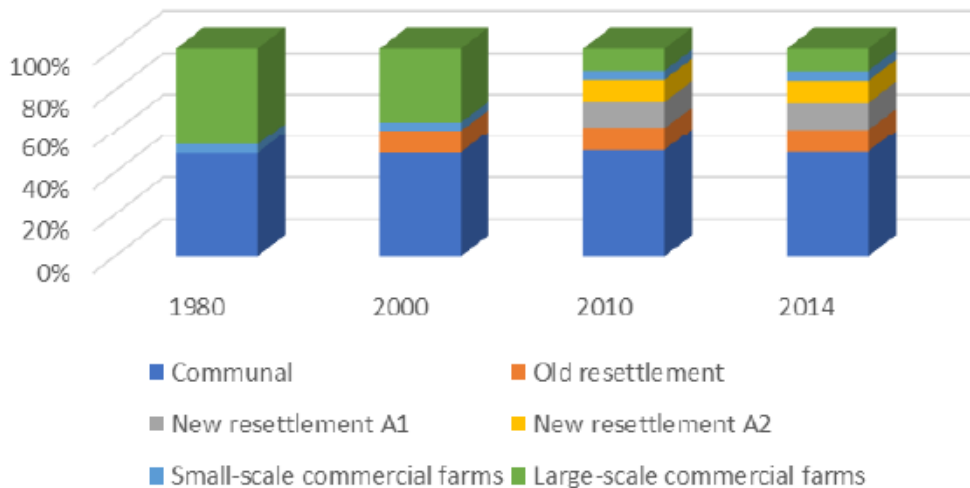


Figure 1: Zimbabwe farm type distribution by year

Source: Zimbabwe, Ministry of Lands, Agriculture, Fisheries, Water and Rural Development (2018)

The number of large-scale farmers were reduced from 6000 to 4500 while smallholder farmers increased to 1.3 million. Consequently, the land redistribution programme resulted in most farmers being small-scale indigenous farmers with little commercial farming business experience. Hence, the need for new policy options that address these different farm categories to resuscitate the sector.

1.2.2 The state of financial inclusion in Zimbabwe

Financial inclusion is usually related to financial literacy, since financially knowledgeable individuals are the ones who utilise more financial services (Ngwenya, Pelsler and Chivaura 2018; Morgan and Long 2020; OECD 2020). FinScope surveyed financial inclusion in Zimbabwe in 2011 (FinScope 2011) and documented that 65% of the country's population lived in rural areas whilst 35% lived in urban areas. The study established that most of the rural population was financially excluded compared to urban areas. Formal institutions banked only 24% of the entire population, whilst 14% was banked informally as shown in figure 2. Barriers to financial inclusion cited included high cost of financial services, lack of financial knowledge, low income, long distances, lack of trust, cumbersome requirements, and insufficient documentation.

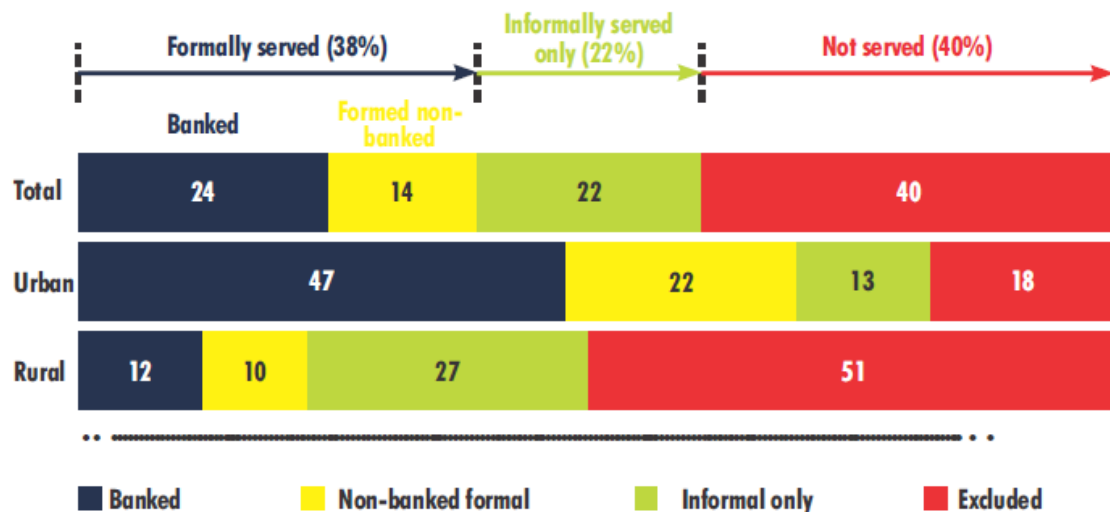


Figure 2: Level of Financial Inclusion in Zimbabwe

Source: FinScope (2011)

Financial inclusion is defined as customer access to a range of formal financial services and having access to more than one financial service provider (Morgan and Long 2020). The majority of agribusiness farmers reside in newly resettled farms and in communal land which is far away from banks. These farmers rely on their own savings for farming investments. Having a formal bank account serves as an entry point into the financial sector as such an account facilitates access to credit, transfer of wages to employees, transfer of remittances and makes saving easier (Priyadarshini *et al.* 2017).

Financial exclusion is worrisome as agricultural finance is considered vital for short-term financial requirements such as the planting of crops, cultivation of crops, and post-harvest expenses (Gaffney *et al.* 2019). Finance is also required for marketing farm produce, consumption requirements of farm households and investment in farm machinery (Aggarwal, Gupta and Singh 2014; Twumasi *et al.* 2021). However, there is limited private sector funding in Zimbabwe due to agricultural sector high failure risk, lack of collateral by smallholder farmers, inappropriate loan portfolios and transactional cost (Masiyandima, Chigumira and Bara 2011). Therefore, the government remains the major financier of this sector.

Priyadarshini *et al.* (2017) argues that a one size fits all approach for financial literacy education is not ideal as different target groups have different levels of financial literacy, therefore the

need for different kinds of financial education. In line with that notion, the Reserve bank of India (2018) developed customised financial literacy content for five target groups: farmers, small entrepreneurs, school children, self-help groups (SHGs), and senior citizens. The Reserve Bank of India facilitated the issuance of credit cards to farmers, which cater to farm short term credit requirements, revolving loan accounts and crop insurance was also availed. Members were also educated and advised not to divert a lot of funds to household expenses since this would not have the productive capacity to repay the loan unlike income from farm activities (Reserve bank of India 2018). Loan restructuring and a moratorium period of at least one year were also insured for farmers during bad seasons.

Agricultural finance in Zimbabwe has failed in the last decade, and private banks perceive the sector as too risky and un-bankable (Masiyandima, Chigumira and Bara 2011). State-funded programmes such as lending to rural farmers, smallholder farmers, lending to farmer co-operatives and lending to youth in agriculture have dismally failed in the past. Literature documented that beneficiaries of such programmes have less pressure to repay the loans whilst banks, due to political pressure to speed up the loan approvals, failed to conduct proper credit scoring and recover outstanding loans (Masiyandima, Chigumira and Bara 2011; Mutambara 2016).

Literature has documented financial behaviours to include: lack of faithfulness in loan repayment by smallholder farmers (Mutambara 2016), diverting agricultural loans to non-productive purposes, lack of confidence in formal banks loans but borrowing from loan shacks at higher interest rates (Mutambara 2016), difficulty in understanding financial language presented in bank loans and conditions contracts (Ngwenya, Pelsler and Chivaura 2018), and low utilisation of financial products (Mutambara 2016). Poor financial decisions by agribusiness entrepreneurs provides evidence of poor financial capabilities. Collection rates for agricultural loans remain substantively low, even considering government extended loan grace periods, low interest rates and government grant rollovers on loans (Masiyandima, Chigumira and Bara 2011). Therefore, agriculture remains a significant cost of the fiscal budget in Zimbabwe (Zimbabwe Ministry of Finance and Economic Development 2020).

Financial behaviours and financial mistakes documented in literature show evidence that agribusiness entrepreneurs are not well equipped to make sound financial decisions, and financially including them will not serve the intended purpose (Aggarwal, Gupta and Singh

2014). There is an urgent need for personal financial management education programmes for Agribusiness Entrepreneurs. However, determining the current level of financial literacy is a prerequisite for an effective educational programme (Lusardi 2019). A financial literacy operationalisation model will also recommend strategies and policies required for improving financial capabilities of agribusiness entrepreneurs. The level of financial literacy is determined by setting an assessment score for each and every entrepreneur (OECD 2020) which will assist in differentiating financially literate and illiterate entrepreneurs.

1.3 Statement of the problem

There is a remarkable increase in government spending to support agriculture in Zimbabwe amidst various macro-economic challenges and budget deficits. The Zimbabwe Democratic Institute (2019) Democratic Institute (2019) documented an increase in government funding to agriculture from USD105 million in 2016, to USD439 million in 2017, and USD 238 million in 2018. Of the total funding allocated, non-payment rates by agribusiness entrepreneurs increased from 54% in 2017 to 81% in 2018.

Despite the huge sum of money used for the development of agribusiness, there is low agricultural productivity, and a growing number of individuals are placing increasing demand for food assistance. The 2020 national budget indicated that more than six (6) million people needed food assistance in rural areas and an additional two million (2) in urban areas (Zimbabwe Ministry of Finance and Economic Development 2020). Despite various government efforts to resuscitate the agribusiness sector and ensure food security in the country, farmers produce below national requirement and the country rely on imported food which contributes to balance of payment deficit.

The current literature does identify high default rates (Zimbabwe Democratic Institute 2019), a lack of faithfulness in loan repayment, diversion of business loans for personal use and reluctant to participate in formal financial systems by agribusiness farmers (Masiyandima, Chigumira and Bara 2011; Mutambara 2016; Chiromo 2019) but does not investigate the major causes of such financial behaviours. There are very few efforts by government and other supporting organisations to investigate the financial literacy competences of agribusiness farmers or to develop financial education programmes. Global empirical studies posit that without proper

financial literacy skills, the rewards of financial access cannot be realised leading to financial mistakes that will negatively affect individuals' well-being (Nanziri and Leibbrandt 2018). Thus, the continual provision of financial assistance to individuals without the proper skill of utilising the money can increase an individual's indebtedness (Amoah 2016).

The need for financially literate entrepreneurs, including agribusiness farmers, is a universal objective unlikely to be disputed; it stands to reason that those in business should have financial skills. However, what is unclear is the level of financial knowledge of agribusiness entrepreneurs. How are they financially behaving? Which factors influence their level of financial literacy? What are their financial service preferences? A model for agribusiness entrepreneurs in Zimbabwe is required to map out the financial competencies for these entrepreneurs, to provide a foundation from which their financial literacy capabilities can be improved. As such, this study develops a financial literacy operationalisation model to assess the level of financial literacy of agribusiness entrepreneurs and investigate their financial needs, with the aim to improve agribusiness entrepreneurs' financial literacy capabilities.

1.4 Aim of the study

The aim of the study was to develop a financial literacy operationalisation model for agribusiness entrepreneurs in Zimbabwe.

1.4.1 Research specific objectives

To achieve the study's main aim, the following specific objectives will be investigated:

1. To assess the level of financial knowledge of entrepreneurs in agribusiness.
2. To determine the financial behaviours of agribusiness entrepreneurs.
3. To establish factors influencing the financial literacy of entrepreneurs in agribusiness.
4. To explore financial service preferences of agribusiness entrepreneurs.

1.5 Research questions

1. What is the level of financial knowledge of agribusiness entrepreneurs?
2. How are the agribusiness entrepreneurs financially behaving?
3. Which factors influence the financial literacy of entrepreneurs in agribusiness?

4. What are the financial service preferences of agribusiness entrepreneurs?

1.6 The rationale of the study

Due to the increasing complexity of financial markets, many authors concur that financial literacy is a vital human capital-skill for all individuals (Norman 2010; Amoah 2016; Lusardi, Michaud and Mitchell 2017). Past experiences like the mortgage crisis, household bankruptcy, and over-indebtedness provided developed countries with evidence that supports the need for financial literacy to make better financial decisions (Huston 2010). There is, therefore, a sense of the urgency in developed countries to enhance the financial literacy of individuals. A number of financial literacy studies among women (Bucher-Koenen *et al.* 2017), senior citizens (Lusardi and Mitchell 2014), University students (Ansong and Gyensare 2012), young people (Mandell 2008), and investors (Alessie, Van Rooij and Lusardi 2011), have been done in these countries.

Although financial literacy is a necessary human capital-skill for all individuals, assessment of financial literacy capabilities has not been of priority among Zimbabwean researchers and policy makers. This research will only target agribusiness entrepreneurs, who are key to reviving the Zimbabwean economy. The Zimbabwean Agribusiness sector contributes 15-18% of national gross domestic product, 23% of total formal employment, 63% of industrial raw materials, 30% of export earnings, and 70% of the rural population survives from agriculture-related activities (Ministry of Lands, Agriculture, Fisheries and Rural Resettlement 2018).

Generally, the COVID-19 pandemic has aggravated the urgency of financial literacy around the world as the financial system is currently evolving in relation to the new normal brought about by the pandemic (Chhatwani and Mishra 2021a). In Zimbabwe, banks are restructuring their traditional banking services to virtual banking, payment systems have changed from traditional cash transactions to electronic and mobile money payments. Hence the need to equip agribusiness entrepreneurs with the required financial expertise required in utilising financial markets.

Financial literacy is important in improving entrepreneurial capabilities (Morgan and Long 2020), personal saving (Alessie *et al.* 2021), household budgeting (Norman 2010), sourcing of good debt (Amoah 2016), the financial wellbeing of an individual (Ravikumar *et al.* 2013),

quality of financial products held (Nanziri and Leibbrandt 2018), wealth accumulation, and retirement planning (Alessie, Van Rooij and Lusardi 2011). A financially literate agribusiness sector will result in improved loan repayment, a good savings culture, increased demand for financial products, retirement planning, quality choice of appropriate loan facilities, and access to better markets and profitability.

There is, however, disagreements in how financial literacy is measured and how best to devise a financial education program that can influence consumer behaviour (Haslem 2014). The research assesses the level of financial literacy of agribusiness entrepreneurs and provides literature on how financial literacy of agribusiness entrepreneurs is measured in relation to their daily and seasonal financial activities. A financial education programme will be recommended depending on the current financial literacy gap.

The study develops a novel financial literacy operationalisation model for agribusiness entrepreneurs. The model operationalises (1) financial literacy into crucial dimensions, (2) provides the current level of financial literacy of agribusiness entrepreneurs through quantitative and qualitative research methodologies, and (3) recommends strategies that policymakers can use to improve financial literacy capabilities of agribusiness entrepreneurs.

1.7 Delimitations of the study

The geography of the study was the major delimitation since only a sample of the total population participated as respondents of this study. Multi-stage cluster sampling was used to choose research respondents from different clusters according to Zimbabwean agricultural regions (Region One to Region Five). Result generalisations from such a sample may not be an exact mirror of all agribusiness entrepreneurs' views.

There is no consensus in the literature concerning how financial literacy should be defined and measured as alluded to in the literature review chapter. This research combines all major financial literacy components, namely, financial knowledge, financial attitude, and financial behaviours, to measure the level of financial literacy. Both actual and perceived financial literacy will be considered to explain the level of financial literacy of agribusiness entrepreneurs.

Agribusiness entrepreneurs range from farm entrepreneurs to retailers of the final produce. This research was mainly biased towards farm entrepreneurs who own a piece of land and are involved in various sectors of agriculture, poultry, livestock, cash crops, and cereals.

1.8 Limitations of the study

Travel restrictions and COVID-19 healthy guidelines necessitated minimal human interaction and unnecessary travel and thus the study was conducted under strict COVID-19 healthy guidelines. Information concerning farmers is considered highly sensitive and political and hence the need for ensuring confidentiality and following research ethics.

The study sample was drawn from five out of sixty-two agricultural districts across Zimbabwe. However, the views of other regions should also be considered for further research studies. The study mainly considered registered farmers for assessment and, hence, excluding micro-agribusiness entrepreneurs who are not registered but vital for consideration.

1.9 Contribution of the study

Financial literacy is crucial in developing entrepreneurial endeavours. The study operationalised financial literacy into three dimensions and developed an agribusiness financial literacy operationalisation model. The model provides detailed information on financial behaviour, financial attitudes and financial knowledge of agribusiness entrepreneurs and recommends operational strategies that can be implemented to improve financial literacy among agribusiness entrepreneurs.

The study was conducted when Zimbabwe was in pursuit of new national development goals to foster economic recovery and the resuscitation of the agribusiness sector is key to economic recovery. The research determines the level of financial literacy of agribusiness entrepreneurs, the level of financial inclusion and determine investments preferences of agribusiness entrepreneurs. All these factors can assist policymakers in developing a well-informed financial literacy strategy and develop educational programs that suit an identified knowledge gap. It is hoped that recommendations and findings from this research can provide valuable input in the

development of developing a comprehensive financial literacy strategy for agribusiness entrepreneurs.

This research supports the smallholder farmer by providing guidance on financial needs demanded by agribusiness entrepreneurs and highlighting financial knowledge gaps if any such that financial advisors' supplements and advise these entrepreneurs effectively. Financial service providers can also consider providing financial information in light of their clients' financial literacy level if possible.

Moreover, the research develops a new measure of financial literacy which aggregates a more effective and complete set of financial literacy questions. Measuring financial literacy should consider the daily experiences of the respondents and this research draws data from a unique microeconomic group, agribusiness entrepreneurs which have not been researched before.

A financially literate agribusiness entrepreneur can make informed borrowing decisions, repay loans on time, save more, accumulate more wealth, make rational financial decisions, plan for retirement on time, grow their business ventures, provide employment, and increase food production in the country. Hence, the need for this research to pave the way for the development of a financial literacy strategy and financial education programs to improve farmers financial capabilities.

Financial literacy has a direct impact on sustainable financing options for farmers. This research was conducted during a period when various government efforts to finance the sector has failed to improve farm productivity. The current command agriculture that was launched in 2017 is still under review. The level of financial literacy and investment preferences of agribusiness entrepreneurs can provide valuable input on sustainable financing options for the sector and help reduce improve farmers financial service utilisation.

Specifically, the study

- ❖ Develops a financial literacy operationalisation model for agribusiness entrepreneurs
- ❖ Develops financial literacy measuring toolkit for agribusiness entrepreneurs, specifically as a sector which receive inconsistent income vs a salary, with unique retirement periods compared to formal employment and with unique financial needs which have not been explored by previous studies.

- ❖ Provides an input in the development of a national comprehensive financial literacy strategy for agribusiness entrepreneurs.
- ❖ Measures financial literacy capabilities for agribusiness entrepreneurs and highlight financial capabilities that might need urgent improvement.
- ❖ Determines agribusiness bankability in terms of financial knowledge, financial attitude, and financial behaviours.
- ❖ Contributes towards Zimbabwean National Development Goals NDS-1 and vision 2030.

1.10 The organisation of the study

This chapter (Chapter One) introduced the research by providing the background of the study, research objectives, research questions that this research should answer and the delimitations of the research. The chapter provided arguments and evidence that a problem exists that requires an investigation in the form of an assessment of the level of financial literacy of agribusiness entrepreneurs.

Chapter Two contextualised the term agribusiness and entrepreneurship. The chapter provided the background of the Zimbabwean agribusiness sector and covered the role of agribusiness. Chapter Three covered the importance of financial literacy to individuals and economies. The chapter outlines the importance of this study on the level of financial literacy of agribusiness entrepreneurs.

Chapter Four operationalised the term financial literacy and categorised financial literacy into three measurable dimensions. The chapter covered theoretical approaches related to financial literacy and its three components. A conceptual theoretical framework of the study was developed to guide the study.

Chapter Five critique empirical research that was done previously and review various methods that were previously used to measure financial literature. The major determinants of financial literacy were identified, discussed, and connected to the current study. Chapter Six stipulated the research methodology of the research. Specifically, the chapter explained the research approach, research design, the methodology used to sample the research population and explains strategies used to measure financial literacy.

Chapter Seven covered data analysis and discussion of the level of financial literacy of agribusiness entrepreneurs. The level of financial knowledge, financial attitude and financial

behaviour was discussed. Chapter Eight covered data analysis of the factors affecting financial literacy and financial service preferences of agribusiness entrepreneurs.

Chapter Nine presented research findings, conclusions, and recommendations. A financial literacy operationalisation model for agribusiness entrepreneurs was developed and recommended in the chapter taking into consideration the major research findings. Figure 3 below presents a visual representation of the structure of the thesis.

Study context and conceptualisation of financial literacy	Chapter 1 Introduction	Chapter 2 Role of agribusiness	Chapter 3 Importance of financial literacy
Theoretical framework and operationalisation of the level of financial literacy	Chapter 4 Theoretical review of financial literacy	Chapter 5 Empirical literature review of financial literacy	
Research methodology	Chapter 6 Research methodology		
Data analysis and presentation	Chapter 7 Results of the level of financial literacy	Chapter 8 Factors that affect financial literacy and financial services required by agribusiness entrepreneurs	
Summary and conclusions	Chapter 9 Summary conclusions and recommendations		

Figure 3: Structure of the thesis

Source: Authors compilation (2022)

CHAPTER TWO

ROLE OF AGRIBUSINESS

2.1 Introduction

Agriculture remains the cornerstone of the Zimbabwean economy as it the most direct route of reducing poverty, hunger, unemployment, and malnutrition. The previous chapter provided the background of the research problem and outlined the objectives of the study. This chapter explains the role of the agribusiness sector, as the population of this study are agribusiness entrepreneurs. The chapter also highlights the various programs that the government has implemented to support agribusiness. It also provides a definition of agribusiness and entrepreneurship.

2.2 Definition of agribusiness

The definition of agribusiness is usually associated with the study of economics, history and industrial development of a country. This section provides the definition of agribusiness internationally and in the Zimbabwean context. The sector has not been spared from innovation and technological improvements happening in economies.

2.2.1 International definition of agribusiness

First, the concept of agribusiness was formulated by Davis and Goldberg (1957) who opined that agribusiness is a sum of all operations involved in manufacturing and distribution of farm supplies, production operations in the farm and storage, processing and distribution of farm commodities and items (Oppong-Boakye and Kansanba 2013). The definition introduces the concept of interlinkages of agriculture with suppliers of farm inputs and consumers of farm products.

Second, Lee (1976) introduced the concept of inseparability between agribusiness and agriculture. He argued that agribusiness is the blend of traditional agriculture and business. Agribusiness involves all of the services and activities involved in producing plants and animals, and their products, and in getting them to the consumer (Lee 1976). Consequently, agribusiness was defined as the business and manufacturing activities involved in (1) supplying

the inputs needed for farming, (2) daily farming activities and (3) marketing the products grown on farms. The author opined that agriculture and agribusiness were inseparable and that agribusiness is a part of agriculture and supportive of production agriculture.

Third, Edwards and Shultz (2005) introduced a customer or market centric agribusiness concept and defined agribusiness as an evolution from farm to market centric, where activities are orchestrated for customers, markets, and systems in which they function. They argued that nowadays agribusiness is focused on systemic nature of value chains entrepreneurs are involved in, multiple stakeholders, natural scarce resources, new technologies, globalisation, branding and brand equity (Edwards and Shultz 2005). Unlike the traditional family subsistence farming Edwards and Shultz (2005) argued that 21st Century agribusiness is characterised by larger, diversified conglomerates that offer a portfolio of products, complex, strategic management of scarce resources, political pressures (zoning, ecology) and globalisation where grains, dairy products, meat and other agricultural products are exported worldwide. They concluded that agribusiness should be defined as a dynamic and systemic endeavour that serves consumers globally and locally through innovation and management of multiple value chains that deliver valued goods and services derived from the sustainable orchestration of food, fibre, and natural resource (Edwards and Shultz 2005).

2.2.2 Zimbabwean definition of agribusiness

Zimbabwean agribusiness cannot be separated from developments in the history and economics of the country. The government through AGRITEX is working on commercialising the bulky of subsistence farming into business. Subsequently the defining of agribusiness as the sum total of services and activities involved in producing plants and animals, and their products, and in getting them to the consumer.

2.2.3 International definition of an entrepreneur

The term entrepreneur was developed from a French verb ‘entreprendre’ and a German word ‘unternehmen’ which mean to undertake or to go between (Oseifuah, Gyekye and Formadi 2018). Entrepreneurs are individuals who create value in an economy by going between and shifting resources from areas of low productivity to areas of higher productivity (Say 1803).

This is usually done by combining the four factors of production land, labour, and capital to develop profit-making projects that meet identified needs and wants in a society. Entrepreneurs are defined as managers who make entrepreneurial decisions (Wickham 2004), catalyst for economic growth (Say 1803) and innovators who brings something new (Drucker 2004).

Related to the term entrepreneur is the term entrepreneurship. Generally, entrepreneurship is defined as the process of bringing together creative and innovative ideas and combining these with management and organizational skills to combine people, money and other resources to meet an identified need and thereby create wealth. Oseifuah, Gyekye and Formadi (2018) defines entrepreneurship as the recognition of an economic, social, public, or corporate opportunity to create value, and the process of acting on this opportunity, whether or not it involves the formation of a new entity.

2.2.4 Zimbabwean definition of an entrepreneur

Zimbabwean entrepreneurship emanated from the precolonial era where states in the country exchanged unique products and minerals with other nations. Entrepreneurs during that period included iron smiths, potters, farmers, hunters, brewers among others. Although colonisation brought about mechanisation, it negatively affected entrepreneurial activities in the country. The Land Apportionment Act, Land Husbandry Act and the Land Tenure act restricted farming activities among the indigenous locals (Bolding, Mutimba and Van der Zaag 2003). Farming activities were restricted, and livestock's stocking were reduced in reserves and mining legislations were repressive to miners. Post the colonisation era, access to factors of production has been improving especially through the Fast Track Land Reform Program, Indigenization and Empowerment Act, youth empowerment programs, among others, and this facilitated entrepreneurial activities.

This study defines entrepreneurs are individuals who create value in an economy by shifting resources from areas of low productivity to areas of higher productivity The research identified farmers as entrepreneurs involved in the combining of the four factors of production land, labour and capital to develop profit-making projects that meet identified needs and wants in a society.

2.3 An overview of the Zimbabwean agribusiness sector

Agriculture has always been a major driver of economic growth in Zimbabwe. When the pioneer column of 1890 failed to find the mineral deposits that the British South African Company has hoped to discover, agriculture became the mainstay of the settlers (Bolding, Mutimba and Van der Zaag 2003). In 1930, the Land Apportionment Act divided the country into the reserves, alienated land and native purchase areas. Reserves comprised of unfertile land conserved purely for natives' occupation, alienated land was land exclusively conserved for White occupation (natives could live only as employees) and native purchase areas, which was land where African farmers could gain limited ownership of farms. African Agriculture in the reserves was constrained by rationalisation of land, forced destocking and other coercive extension services. However white commercial farming began to thrive, and output increased tremendously. Agriculture research boards and agricultural related authorities that provided extension services to white commercial farmers were established (Bolding, Mutimba and Van der Zaag 2003).

The Land Husbandry Act of 1951, the Tribal Trust Land Act of 1965 and the Land Tenure Act of 1969, among others, pushed local farmers to unfertile land and restricted them to owning not more than 5 herds of cattle. This led to a consistent cycle of poverty among locals. To survive majority of locals worked for food in farms owned by white commercial farmers (Bolding, Mutimba and Van der Zaag 2003).

After independence in 1980, the government reoriented agriculture to the small holder agricultural sector, as the sector remained vital for equitable development of native Zimbabweans and redistribution of land remained of great importance as there was need to resettle natives from reserves. Amongst the various post-colonial efforts by the government to redistribute land, such as the Lancaster House Agreement, land reform and resettlement program funded by the British government, the Fast Track Land Reform Program (FTLRP) brought about a radical change in the agrarian structure. The FTLRP resulted in the reduction of large-scale commercial farms from 6000 to 4500 farms and increased small holder farmers by 1.3 million as shown in the table below (Scoones, Marongwe, Mavedzenge, Murimbarimba, Mahenehene and Sukume, 2011). The government is currently undertaking a land audit and is preparing to issue 99-year leases to farmers as these aggregate figures remain estimates considering that farmers continue to subdivide land amongst themselves.

Table 1: Changes in the national distribution of land, 1980-2009

Land category	1980	2000	2009
	Area (million ha)	Area (million ha)	Area (million ha)
Communal areas	16.4	16.4	16.4
Old resettlement	0.0	3.5	3.5
New resettlement: A1	0.0	0.0	4.1
New resettlement: A2	0.0	0.0	3.5
Small scale commercial farms	1.4	1.4	1.4
Large scale commercial farms	15.5	11.7	3.4*
State farms	0.5	0.7	0.7
Urban land	0.2	0.3	0.3
National parks and forest land	5.1	5.1	5.1
Unallocated land	0.0	0.0	0.7

Source: Scoones, Marongwe, Mavedzenge, Murimbarimba, Mahenehene and Sukume (2011)

Agriculture remains a major driver of economic growth in Zimbabwe (Government of Zimbabwe, 2020) as it contributes 15-18% of the economy's Gross Domestic Product, 63% of industrial raw materials, 30% in export earnings and 23% of total formal employment (MLARR, 2020). The majority of the population in Zimbabwe live in communal rural areas and survive on agriculture related activities. However, the continued decline in agricultural production levels especially for cereals like maize, soya bean and wheat shown on the figure below, weighs pressure on the national budget as government will need to import food using foreign currency. Considering the scarcity of foreign currency in the country and inflationary pressures in the Zimbabwean and the Global markets due to the COVID-19 pandemic, the revival of the agribusiness sector is of urgent and paramount importance.

Table 2: Cereal grain, tubers and pulses production compared to national requirements

Crop	Requirement (MT)	Available Food Production (MT)	Surplus/ Deficit (MT)
Cereal (Maize, sorghum, pearl and finger millet)	1777782	1060142	-717639
Ground nut	103704	87479	-16225
Round nut	133334	23832	-109502
Sugar bean	103704	12650	-91054
Cowpeas	88889	18430	-70459
Sweet portato	311112	114558	-196554
Total	2518525	1317092	-1201433

Source: Zimbabwe, Ministry of Lands, Agriculture, Fisheries, Water and Rural Development (2020)

In light of the increasing population, the challenge of food deficit will continue as low productivity in the agricultural sector has direct effect on household nutrition and food security. Agribusiness is the major source of income for the rural population (which constitutes 70% of the population) and these households have no other sources of income (Food and Agriculture Organisation, 2021). Ministry of Lands, Agriculture, Water and Rural Resettlement second round on crop and livestock assessment report 2019/2020 season showed that the harvest for the season was below households’ annual food requirements and most districts will not survive for more than six months from their harvest MLARR (2020) as shown by the Figure 4

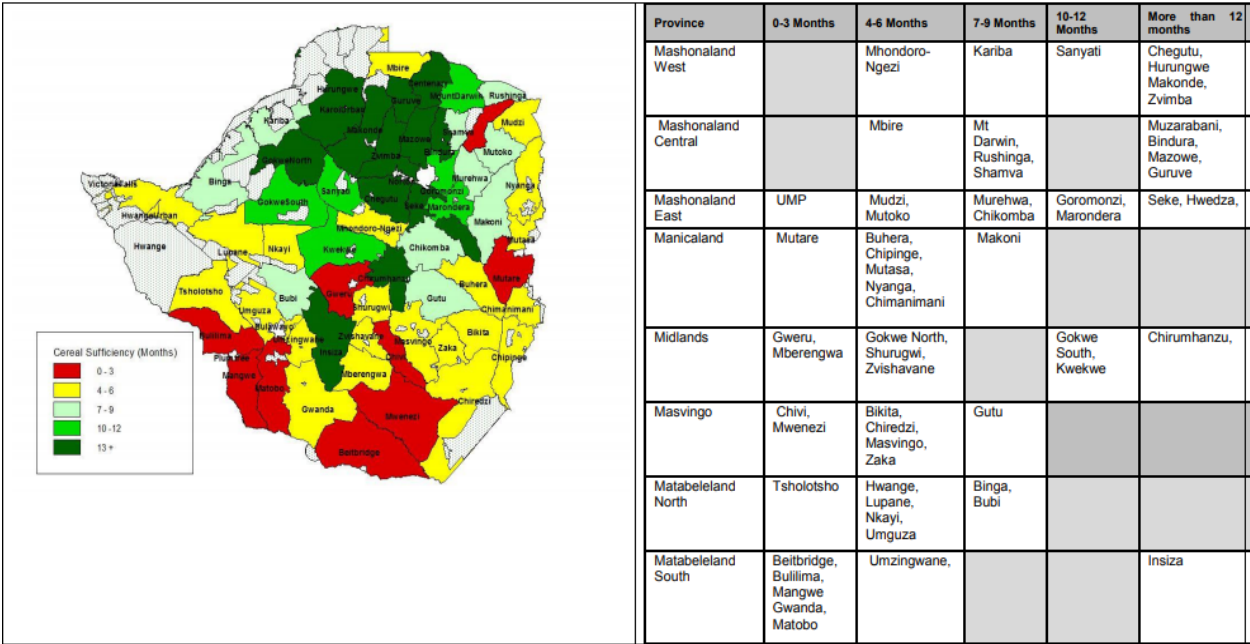


Figure 4: Cereal (maize and traditional grains) sufficiency for provinces

Source: Zimbabwe, Ministry of Lands, Agriculture, Fisheries, Water and Rural Development (2019)

To curb food insecurity and restore the status of the country as the breadbasket of Africa, the government of Zimbabwe introduced various intervention policies to support farmers. Mechanisation, loans, and input programs have been provided previously but surprisingly with no direct improvement to productivity. Over 45% of the 50000 farmers contracted to produce maize under the Command Agriculture in the 2016/2017 season failed to pay back the loans on the appointed time (Zimbabwe Democratic Institute 2019) thereby mounting up debt for the nation. Farmers were provided with seed, fertiliser, and worm pesticide and in return they were supposed to sell 5 tonnes of their produce to the Grain Marketing Board. Among other reasons like poor rainfall, GMB low unattractive prices and the army worm, various authors concur that

some farmers were unwilling to pay back the loans. A consistent trend of farmers' failure to honour government funded loans and the resultant transfer of the debt to the government has been noticed across most of government funded agricultural programs (Zimbabwe Democratic Institute 2019).

Land, agriculture and politics are deeply intertwined in Zimbabwe (Scoones *et al.* 2011). Since Independence the Zimbabwean government sought to transform farmer mindset from subsistence orientation to taking farming as a business, however from 2016/2017 season the government now directly commands the utilisation of land for agricultural purposes and unproductive farmers risk being evicted from their farms. The adoption of command agriculture in cereals, livestock and small grains is an indication that all the beneficiaries of farms are mandated to utilise the land for both household consumption and commercial farming purposes.

2.3.1 Government support programs that support agribusiness

This section explains some of the support programs offered to agribusiness entrepreneurs by the Zimbabwean government. Apart from the low productivity rates in the sector, the Zimbabwean government availed various schemes to support the agribusiness sector.

2.3.1.1 Input support programmes

In the 2016/2017 farming season the Zimbabwean government in a bid to improve production of cereals introduced the command agriculture programme. Under this program the government availed seed, fuel coupons, chemicals, fertilisers and tillage services to farmers and in return farmers were expected to deliver 5 tonnes per hectare to the Grain Marketing Board. The program later extended to other cereal crops like wheat, soya bean and livestock.

The government implemented the climate proofed presidential input support scheme for vulnerable households in 2020 aimed to assist 1.6 million vulnerable households to produce maize. The scheme involved distribution of a 5kg maize seed, 50kg compound D and 50kg top dressing fertiliser. Farmers were also trained on the farming methods they were expected to implement to maximise production.

2.3.1.2 Commercial contract farming programme

The government launched a contract farming programme for commercial farmers which was facilitated by financial institutions. This program availed irrigation kits, farm implements and farm machinery to highly productive commercial farmers with a good credit record. The government relied on financial institutions to select and monitor repayment of the loan from the commercial farmers.

2.3.1.3 Irrigation rehabilitation and development programme

The government through its arm, the Department of Irrigation (DOI) implemented a national irrigation rehabilitation and development programme aimed to develop/ increase functional irrigation schemes through rehabilitation of already set up schemes and development of new irrigation schemes. The irrigation schemes involved the Sakunda/Maka resources facility targeted on the rehabilitation of small to medium farm areas near dams or large water bodies, smallholder irrigation revitalisation program (SIRP), co-funded by non-governmental institutions and the government, and the pedstock facility irrigation programmes. The smallholder irrigation revitalisation program is targeted at rehabilitation of over 100 smallholder irrigations in Manicaland, Masvingo, Matabeleland South and Midlands Provinces. The pedstock centre pivot facility involved the supply and installation of centre pivots in commercial farms.

2.3.1.4 Agriculture mechanisation development

Farm mechanisation involves the use of machinery instead of human and animal power in agricultural processes. Various authors concur that farm mechanisation is vital for improving farm yields, efficiency and productivity. In the 2007/2008 farming season, the Reserve Bank of Zimbabwe implemented the farm mechanisation scheme where loans and farm equipment were loaned to farmers through Reserve Bank of Zimbabwe subsidiary FISCORP (private) limited. The program aimed to support newly resettled farmers and to enhance farm productivity. However, the majority of the beneficiaries of the schemes failed to pay back and the government through the Reserve Bank of Zimbabwe Debt Assumption Act, took over the the debt, thereby imposing a burden on the government and tax payers funds.

There is still a mechanisation gap in Zimbabwe as majority of farmers are still using manual and animal draft power. The government, in a bid to cover this gap in 2020, embarked on another farm mechanisation programme where the government imported tractors, planters, disc harrows, and combine harvesters from John Deere, Belarus and More Food Programme. The programme also involved repair and maintenance of non-functional farm equipment. Local banks were assigned to facilitate the selection process of farmers with capacity to pay back. The government also seeks to invest and promote local manufacture of mechanisation.

2.3.1.5 Capacitation of extension services delivery

The role of extension services dates back from 1950 when the Department of Conservation and Extension Services (CONEX) and the Department of Agricultural Development (DEVAG) was developed to provide technical and extension advice to white farmers. After independence, these two departments were combined to form the Department of Agricultural, Technical and Extension Services (Agritex). The government, since independence, has availed funding, resources to ensure mobility and training programs to equip Agritex staff with knowledge and digital technology skills required for effective coaching of farmers considering new agricultural practices that can help farmers to adapt to climate change. Resources to ensure extension services mobility.

2.4 The role of agribusiness sector

This section explains the role of the agribusiness sector to individual households, the nations, and the world at large. Food is a basic human need which depends on agribusiness success in ensuring food security. Lack of adequate food and recommended nutrition leads to health and poverty consequences that can cripple an economy through the linkages of agriculture across various sectors of the economy. This study contributes by facilitating the improvement of financial literacy competences of agribusiness entrepreneurs and the attainment of Zimbabwe NDS-1 and global SDG-2.

2.4.1 Infrastructure development

Agribusiness generally promotes infrastructural development and improves the living standards of entrepreneurs in agribusiness. Gaffney, Challender, Califf and Harden (2019) established that in Rajasthan, India, agribusiness enabled farmers to replace their mud homes with concrete buildings, invest in local hospitals and schools and allowed the farmers to educate their children. To promote irrigation of farms, water is conserved through the construction of dams and to improve transportation of farm produce from farms to urban markets, roads were built where railway lines were. Bulky and heavy materials like timber and sugarcane facilitated the construction of railway lines in Zimbabwe during the colonial era.

Tersoo (2013) argues that the agribusiness sector has interlinkages with other sectors of the economy which ultimately led to infrastructure and economic development. The author argued that the agribusiness sector was a catalyst to industrialisation in developing countries and produces backward and forward integration synergies which promote infrastructure development.

2.4.2 Agribusiness employment

Agribusiness provides both formal and non-formal employment in the economy. The overall employment depends on the level of industrialization in the economy, where developed countries have reduced agricultural employment through innovation and industrialization whilst developing nations farming activities still depend on manual human labor (Helion 2019). In developing countries, agribusiness provides rural employment to vulnerable groups like women and children whilst men migrate to urban areas for employment (Gaffney *et al.* 2019). Ugwu (2019) noted that women contributed a significant role in providing farm labour.. In Zimbabwe the agricultural sector employs more than 60% of formal labor and non-formal labour (Chiromo 2019) and 70% of the population livelihoods depends from agriculture related activities.

2.4.3 Nutrition

Agricultural products are commonly the main source of various nutrition's required by the human body. The nutrition ranges from carbohydrates provided by cereal products, proteins and fats provided by animal and poultry products, and vitamins provided by fruits and vegetables. Bennet's Law asserts that as incomes of individuals increase, the demand for higher

quality nutritious foods increase. Gaffney *et al.* (2019) established that the demand of nutritious food increased with increases in income as individuals in Ghana shifted from vegetable foods to protein foods as their incomes increased. In China, increases in income resulted in low demands off cereal products and vegetables to an increase in demand for animal protein products.

2.4.4 Food security

The key role provided by agribusiness is to ensure food for the population (Helion 2019). Agribusiness ensures that vulnerable groups like the rural population, women and children secure food for their households (Fonjong and Gyapong 2020). Food security is defined as a situation where all people always have physical and economic access to sufficient, safe and nutritious food that meets standard dietary needs suitable for an active and health life. Western, Mongus, Wenga and Worku (2020) established that inclusive agribusiness improved the nation's food security in terms of availability, quantity, and nutritional quality. Cash crops like coffee and vegetables provided farmers with food and a steady income throughout the year (Western *et al* 2019.).

Food security relates to the attainment of SDG-2 goal which advocates for the ending of hunger, improvement of nutrition, achievement food security and sustainable agriculture by 2030. This research contributes by facilitating improvement of sustainable agriculture and food security through effective utilisation of finance by agribusiness entrepreneurs. Agricultural farming activities produce a wide range of food cereals, vegetables, livestock and fodder for both human and livestock consumption (Fonjong and Gyapong 2020).

2.4.5 Poverty alleviation

About 78% of the world's poorest people live in the rural areas and rely largely on agriculture (World Bank, 2014). Considering that most of the poor in the world survive on agricultural activities, developing the sector could be the starting point of alleviating poverty. World Bank (2014) argues that in the face of population growth, agriculture is core in fighting hunger, malnutrition and in improving food security in the world.

Food is a human need that has to be always available and accessible to an individual. The produce from farming activities provides food, nutrition, income to the world poorest thereby improving the daily lives of the world poorest. Most of the rural population in Zimbabwe and the world over, depend on agricultural activities for survival and hence the importance of the sector in poverty alleviation. To assist the poor and the most vulnerable, the Zimbabwe government introduced the Pfumvudza agricultural scheme where vulnerable farmers are provided with agricultural inputs for both subsistence and commercial purposes. The sector is a pillar in eradicating poverty in the country.

2.4.6 Research and innovation

Agribusiness promotes research and innovations in seed varieties and food processing. Improvements in maize varieties through research and innovations increase farmers' productivity, income, food security and the gross domestic product of the economy (Fonjong and Gyapong 2021). Through innovation, agribusiness has moved from farm centric to market centric where production is driven by consumer demand and needs.

Rao (2018) argued that the previous climatic changes have increased the vulnerability of agriculture production systems and, hence, farmers need to reorient their farming practices through research and innovation. The author advocates for the implementation of innovations like climate smart agriculture and big data analytics in agriculture. Through research and innovation, agricultural practices are improved thereby leading to increase in productivity and income (Rao 2018).

2.4.7 Financial inclusion

Literature documented the role of income and financial market participation to financial inclusion (Priyadarshini *et al.* 2017). To access loans and agricultural input subsidies, farmers are forced to open bank accounts and, hence, begin to explore other financial services. Agribusiness is a crucial sector for promoting the financial inclusion of the rural population since most of the rural population are financially excluded and resides in rural areas. The development of the sector can also translate to the financial inclusion of the rural population.

Priyadarshini *et al.* (2017) argue that lack of financial access by smallholder farmers is a serious threat to economic development since protracted and persistent lack of financial services to a large segment of the populace leads to a decline in national investment which hinder economic development of the country. Considering the bank intermediating role of deposit taking financial institutions, lack of adequate deposits from the surplus savers reduces the amount of loans offered to the deficit sectors of the economy.

Gaffney *et al.* (2019) documented that financially excluded smallholder farmers managed to open bank accounts after receiving income from agribusiness. Income is a major barrier to financial inclusion to most of the rural population therefore by earning income from agricultural activities, the financially literate individuals can open banks accounts. Hence, the contribution of agribusiness in improving financial inclusion and economic development.

2.4.8 Exports and foreign currency

Although there have been limited productivity in the production of maize, wheat, livestock and other cereal food products, Zimbabwe still exports tobacco and other horticultural products. Exports are usually paid in foreign currency and, thus, improves the economy balance of payment. Apart from the exports directly linked to agricultural produce, agribusiness is interlinked with other productive sectors of the economy as the major supplier of raw materials. Hence, promoting exporting activities of other sectors of the economy.

Gaffney *et al.* (2019) argue that agribusiness facilitates public, private, or global partnerships in the farming business which can establish world class agricultural companies. These companies can improve exports of products, income, technology, food security and foreign currency in the world. Gaffney *et al.* (2019) further argued that public-private partnerships in agriculture can improve capital, technology and research needed in agriculture.

2.4.9 Economic growth

Agriculture has a large economic multiplier effect on various sectors of the economy. It provides raw material for other sectors of the economy, source inputs from various sectors of the economy, employment and export produce to other countries (Gaffney *et al.* 2019), thus,

contributing positively to other sectors of the economy and improving the country's gross domestic product.

Chiromo (2019), under the Fletcher School Leadership Program for Financial Inclusion policy memos, reported that in Zimbabwe, 76% of smallholder farmers lived below the poverty line. The author cited lack of access to finance as a major hinderance to sustainable farming and hence the failure of farmers to fully utilize land and generate adequate income. There is an urgent need for policy makers to evaluate all the possible reasons of poor productivity and development of the agribusiness sector. This research contributes by assessing financial literacy capabilities of these agribusiness farmers.

Zimbabwe has experienced economic decline and macroeconomic challenges for the past decades. Economic development is crippled by hyper-inflation, fluctuation in exchange rates and high unemployment rates. Chiromo (2019) argues that despite the improved access to land by smallholder farmers, the farmers continue to struggle with poverty, in contrast to the objective of the land redistribution programme to promote sustainable livelihood. The Zimbabwean economy is agriculturally based and, hence, the poor performance of the agricultural sector translates to economic recession.

2.5 Chapter summary

This chapter provided the definitions of agribusiness, and the agribusiness entrepreneur and explained the role of agribusiness to individuals, households, economies, and the global world. The chapter also provided a brief background of the Zimbabwean agribusiness sector and highlighted the various efforts done by the government to resuscitate the sector. The contribution of this study to the attainment of global SDG-2 and NDS-1 were explained. The next chapter outlines the role of financial literacy and the reason for conducting this research.

CHAPTER THREE

IMPORTANCE OF FINANCIAL LITERACY

3.1 Introduction

The preceding chapter provided the background of the Zimbabwean agribusiness sector highlighting its challenges and accomplishments. The role of the agribusiness sector to individuals, households, and the economy was explained. This chapter examines the role of financial literacy to individuals and to the economy. The chapter also explains the need and contribution of this study.

3.2 Importance of financial literacy

Financial literacy has macro and micro economic implications on the economy due to the interconnectedness of the financial system. Financially literate individuals were more likely to engage in sound financial responsibility behaviours like planning for the future (Bottazzi 2021), balancing monthly income and expenses (Fairfax 2018), saving and managing current financial obligations (Klapper and Lusardi 2020). Such activities significantly affect the broader economy by building wealthy for current financial wellbeing and for passing to the next generations (Fairfax 2018). Financial literacy also improves the adoption and use of financial services by individuals, thereby promoting financial breadth and depth. Subsequent improvement in savings is also a reliable source of funding for banks (Choudhry 2018).

3.2.1 Micro economic implications

OECD/INFE (2020) defined financial literacy as a combination of awareness, knowledge, skill, attitude, and behaviour necessary to make sound financial decisions and ultimately achieve financial wellbeing. A financially literate individual can make financial decisions that improve the individual's financial wellbeing and resilience to financial shocks. This section will discuss the various advantages of financial literacy to individuals and households.

3.2.1.1 Financial resilience

Financially literate individuals were more resilient to financial challenges during the COVID-19 pandemic (OECD/INFE 2020). The COVID-19 pandemic brought about various health, travelling, and business operations restrictions which affected the incomes of various families. However, individuals who were more financially literate were able to take care of their expenditures, could plan for temporary short fall effectively and they have savings to cushion pandemic expenses (OECD 2020). Sampson *et al.* (2021) and Akinleye *et al.* (2020) indicate that households faced, financial hardships and food insecurity during the COVID-19 pandemic. Very few people had savings and the suspension of travelling and business activities affected household incomes negatively.

Klapper and Lusardi (2020) argued that low financial literacy increased consumer financial market risks as consumers fail to utilise new complex financial instruments. The authors argue that financially illiterate individuals were prone to misuse credit products such as credit cards, which usually carry high interest rates. Hastings and Mitchell (2020) note that most women were financially unstable and lived in poverty during their retirement age.

3.2.1.2 Financial wellbeing.

Financial wellbeing is a state where an individual can fully meet current and ongoing financial commitments, can feel secure in their financial future, and is able to make choices that allow them to enjoy life (OECD 2020). Considering the lifecycle hypothesis theory (Reilly and Brown 2011), individuals, during their working lives, allocate their income for both current and future expenditures to maintain financial wellbeing even after retirement. Financial literacy skills and competences are crucial for attaining this financial well-being that individuals strive to achieve or maintain.

Although a financial stress free life is desired by many, Karakara, Sebu and Dasmani (2021) argued that it was the financially literate individuals who were less likely to experience financial distress. Twumasi *et al.* (2021) argued that loans offered to the rural populace have not been adding desired value nor alleviating poverty but worsened the rural populace welfare due to low financial literacy. The authors argued that due to low financial literacy borrowed funds were mismanaged, leading to increased interest and penalties, loss of secured property and

indebtedness. Therefore, the need to associate financial inclusion programs with financial education programs.

Kaplan *et al.* (2009) argues that management of family's household finance or a personal finance was not the same as managing a business's finances as generally businesses maximize profits whilst an individual member's maximises utility. Families want their family members to be happy and they use money as a resource toward making their members happy and hence financial literacy significantly improves financial wellbeing.

3.2.1.3 Wealth accumulation

Literature documents the role of financial literacy in wealth accumulation (Gallery, Newton and Palm 2011; Behrman *et al.* 2012; Jain *et al.* 2022b). Portfolio theory asserts that knowledge of risk, investment and portfolio optimisation were crucial for making investment decisions and wealth accumulation. Fujiki (2020); Hastings and Mitchell (2020); Alessie *et al.* (2021) documented the role of financial literacy in making effective investment decisions in the financial markets. A combination of daily financial behaviours like budgeting, saving and long term planning translates to saving for the purchase of long term assets, investments in long term financial instruments like shares and the ultimate accumulation of wealthy (Kadoya and Khan 2017).

Fujiki (2020) argues that financial literacy was crucial for an individual understanding of investments, profitability in trading and the amount of money invested. The author argues that financial literacy improves the level of an individual's understanding of financial matters which affects the individual's financial decision-making and improve savings, borrowings, investments, and retirement planning (Bhushan 2014). Bayar *et al.* (2017) established that financial literacy aids in improving financial products selected by an individual, directly propel good financial behaviour, such as timely payment of bills/ loan, saving before spending and effective use of the credit card. These behaviours are crucial in wealth accumulation.

3.2.1.4 Retirement planning

Kimiyagahlam, Safari and Mansori (2019) examined the influence of various behavioural factors such as financial literacy, propensity to plan, financial education, future orientation and

materialism on retirement planning. A questionnaire survey of a sample of 900 adults in Kelang valley area Malaysia was conducted. Research findings established that financial literacy, propensity to plan and future orientation have a significant relationship with retirement planning behaviour whilst family education and materialism does not have direct effect on retirement planning. However, the research conducted a cross-sectional study which can only capture a snapshot of the relationship and cannot measure change in variables overtime. Also, the study sample was selected through non-probability quota sampling due to the unavailability of a sampling frame. The research included a sample of five different age groups and three ethnic groups for individual variability to curb these weaknesses.

Hastings and Mitchell (2020) assert that impatience or present bias to immediate gratification of money which is generally measured as financial attitude towards long term use has an impact on retirement planning. Financial literacy is associated with positive financial planning towards long term saving, good financial behaviours, effective application of financial knowledge in financial decision making and long-term retirement planning (Alessie, Van Rooij and Lusardi 2011; Kadoya and Khan 2017).

3.2.1.5 Long term financial planning

Long term financial planning is strongly correlated to positive financial attitudes and financial literacy. Various authors concur that financial literacy is a necessary human capital skill that has an impact on individuals' short term and long-term financial planning and wellbeing (Gallery, Newton and Palm 2011; Bucher-Koenen *et al.* 2017; Fairfax 2018). Financial literacy has a positive and significant contribution to active participation in retirement planning (Alessie *et al.* 2021), participation in the stock market (Gallery, Newton and Palm 2011), financial planning and sound decision making (Lusardi and Mitchell 2011).

Brown and Graft (2013) empirical research in Switzerland, one of the mostly highly ranked country in terms of financial literacy, established that financial literacy is strongly correlated with voluntary retirement saving, financial market participation and mortgage borrowing. Financial literacy was also found to be lower among less-educated, low income and immigrant, non-native-speaking households as well as among women. A financially knowledgeable individual, therefore, plans and save for the future and, thus, creates wealth.

3.2.1.6 Farm productivity

Shimray (2018) conducted a grounded theory analysis of theoretical and empirical literature relating to financial literacy, financial management and farmers performance. The study analysed various methodologies employed by different studies and developed a conceptual framework for maximising farmers financial performance and financial well-being. Focus group discussions and questionnaires were distributed to farmers in the Bang Klam District in Thailand. The research established that financial literacy improves farmers' financial management practises which improves availability of funds for farm activities and resultantly translates to higher productivity.

Financial literacy has an impact on the development of entrepreneurial endeavours through effective financial management (Duobienė 2013). Hence a financially literate farmer can manage finances effectively, budget, save and plan to purchase farm equipment. These financial behaviours are vital entrepreneurial behaviours. There are higher levels of financial exclusion among farmers in Zimbabwe and the lack of access to finance translates to lower productivity as farmers fail to buy the required farm inputs and chemicals (Chiromo 2019). Access to financial services is generally facilitated by having the knowledge of the various financial services offered by financial institutions.

3.2.1.7 Debt management

Sevim, Temizel and Sayılır (2012) conducted a survey of the effects of financial literacy on the borrowing behaviour of Turkish financial consumers, 550 people from Eskisehir city in Turkey were selected as the research sample. The study established that financial literacy has a significant impact on borrowing behaviour as financial consumers with high financial literacy levels did not exhibit excessive borrowing behaviour and showed more informed credit use behaviour. To determine the effect of financial literacy on borrowing behaviour chi-squared test and factor analysis was used. However, the research study was mainly concentrated on one Turkish city, so results may not fully represent the total population of Turkey. Chhatwani and Mishra (2021a) established that financial literacy positively affects mortgage repayment debt management during the COVID-19 pandemic in India.

Financially literate individuals with knowledge of interest rates can choose loan options with lower interest rates than the illiterate (Lusardi 2019). Due to their preference to save for the future, they generally use savings to make ends meet and can reduce unnecessary spending through budgeting. Financially illiterate individuals generally borrow at high rates, have higher probabilities of defaulting due to misuse of money and resultantly pay higher interests and penalties (Bottazzi 2021).

3.2.1.8 Risk tolerance

There is no consensus in literature on the impact of financial literacy on risk tolerance. While most authors posit that financially literate individuals have low risk tolerance; others argue that financially literate individuals take moderate to high risk (Bayar *et al.* 2020; Hermansson and Jonsson 2020; Kawamura *et al.* 2021). Risk tolerance is generally defined as the maximum amount of variability in return that someone is willing to accept when making a financial decision. Differences in risk tolerance emanate from differences in knowledge and understanding of the nature of financial risk associated with investing in a particular financial service.

Hermansson and Jonsson (2020) measured the impact of financial literacy on risk tolerance among Swedish bank customers. The authors concluded that financial literacy is usually associated with lower range risk tolerance. However, other authors argue that financial literacy is associated with higher risk tolerance behaviours and investment in higher risk assets due to individual knowledge and familiarity with the assets. In that vein, Kawamura *et al.* (2021) established that financially literate individuals tend to tolerate high risk assets than illiterate individuals.

3.2.1.9 Risk management

Literature documents that financial literacy positively impacts the diversification of financial assets included in portfolios (Mouna and Anis 2015). Diversification is commonly accepted as a crucial element of risk management. Application of the portfolio theory asserts that investors should combine negatively correlated financial assets in their portfolios to get maximum return (Markowitz 1952). A common theory in finance asserts that one should not put his eggs in one

basket, reflecting that people should invest in different assets. In adverse economic conditions, the investor might make losses in one asset and profit from another. A well-diversified portfolio performs well yield optimal return given risk, therefore rational investors are expected to hold well diversified portfolios. It is crucial for individuals to improve their financial capabilities to be able to diversify their portfolios well (Mouna and Anis 2015).

The stock exchange is a crucial investment and risk diversification platform (Alessie *et al.* 2021). However, due to lower levels of financial literacy, very few individuals participate on the stock exchange (Mouna and Anis 2015; Kadoya, Khan and Rabbani 2017). Risk management refers to the process of identifying, controlling and managing all forms of risk that might affect business operations (Reilly and Brown 2011). Knowledge of how to manage financial risk is a crucial financial literacy skill for entrepreneurs which enables entrepreneurs to hedge against risk or to transfer risk exposures effectively.

3.2.2 Macro-economic implications

Lessons from the previous global financial crisis provided evidence that financially including financially illiterate individuals has far-reaching implications on financial markets (Fairfax 2018). Concurrent defaults can destabilise the whole financial system by making banks illiquid. Financial exclusion of various economic sectors can potentially retard economic growth through financial disintermediation (Chiromo 2019). The following factors explain the macroeconomic implications of financial literacy to the economy.

3.2.2.1 Cash demand and circulation

Financial literacy increases the demand of financial services and improves financial participation of various stakeholders (Atkinson, Monticone and Mess 2016). Fujiki (2020) investigated the effect of financial literate and cash demand in Japan. The author concluded that financially literate individuals tend to hold large amounts of cash holdings and other kinds of financial assets compared to the illiteracy. Hence, financial literacy improves the demand of financial services and economic participation; thereby as the demand of cash and financial services increases in an economy the value of the currency tends to appreciate and competes with other regional and international currencies.

3.2.2.2 Small to medium enterprises growth

Entrepreneurs are faced with fundamental financial decisions daily. Financial literacy and good financial management practices are crucial for the growth of small to medium enterprises (Mutengezanwa 2018; Oseifuah, Gyekye and Formadi 2018). Access to finance and the required financial knowledge to make effective financial decisions is crucial for growth of small to medium enterprises. Chiromo (2019) alluded that there were very low levels of access to finance among SMEs and farmers in Africa which reduced SME growth and farmer utilisation of land. Supply side issues related to formal financial sector less motivation to serve the small-scale farmer, low profitability by the farmers, previous defaults whilst demand-side factors included high account opening cost, lack of trust and awareness, collateral requirements and high account opening cost. Financial literacy positively influences entrepreneurial and SME growth (Mutengezanwa 2018).

3.2.2.3 Financial stability

Financial literacy is a vehicle for maintaining financial stability. Jain *et al.* (2022b) established that financial literacy moderate's investor biases like overconfidence, heading behaviour and disposition in investment decision. A well knowledgeable, and informed individual usually makes informed decisions. Behavioural biases can destabilise the whole financial sector if practised by a significant number of individuals.

3.2.2.4 Stock market participation

There is generally low participation of individuals in the stock markets in both developed and developing countries. Investment on company shares brings long term perpetual benefits to investors. However, despite its role in contributing to an individual financial well-being low participation has been noted. Sivaramakrishman *et al.* (2020) established that financial literacy is crucial in developing intentions to participate in the stock market and these intentions subsequently affect financial behaviour to invest in the stock market. The authors applied the theory of planned behaviour in their analysis. Sivaramakrishman *et al.* (2020) argue that investments in the stock market usually requires a significant outlay therefore individuals give

careful thought and plan before making an investment. It is crucial for policy makers to educate people about how they can invest in the stock markets and the associated benefits to instil intentions of individuals to invest.

The stock market is a platform when companies' source funding for their business ventures. A functional stock market is usually associated with economic growth as the sourced funds are used in the productive sector of the economy. Economies with stock markets that attract investors from various countries around the globe are the most developed economies.

3.2.2.5 Financial inclusion and bank intermediation

Bongomin *et al.* (2017a), argue that financial literacy directly affects the rural population's financial inclusion. Access and use of financial services like loans and savings can help the poor manage their daily finances and reduce poverty. Lusardi (2015) also concurs by asserting that financially literate individuals demand more financial products than the financially illiterate. Financially including more individuals improve the financial intermediation process of banks. Bank intermediation refers to pooling of small depositor funds from the surplus households and lend out large loans to the deficit productive sectors of the economy (Choudhry 2018).

3.3 Consequences of financial illiteracy

Literature documented lower levels of financial literacy as a major cause of the previous 2007-2008 global financial crisis (Fairfax 2018). Financially including the illiterate can cause financial instabilities in the financial sector. Considering the prospect theory and behavioural finance biases, investors can destabilise the financial sector through irrational behaviours. Financial regulation is more concerned with systemic regulations as lack of confidence in the financial sector can cause irrational withdrawal than can become contagious and destroy the whole financial sector (Choudhry 2018).

Financially illiterate individuals fall victim to financial fraud (Lusardi and Tufano 2015), make financial mistakes (Nanziri and Leibbrandt 2018), do not budget appropriately (Oseifuah, Gyekye and Formadi 2018), borrow at high cost, fail to choose financial products effectively,

fall victim of unfair practices (Oseifuah, Gyekye and Formadi 2018), and have challenges coping with emergencies.

3.4 Factors that necessitate financial literacy research

Financial literacy is an important indicator of people's ability to make financial decisions (Lusardi 2019). The following factors indicate the factors that necessitated research in financial literacy of agribusiness entrepreneurs in Zimbabwe.

3.4.1 Constrained fiscal policy budget and the need to support agribusiness.

There is a consistent debate on how the agricultural sector should be financed due to its burden on the fiscal budget. Various allegations from industry representatives and human rights organizations suggest an urgent solution to funding the agribusiness sector. Since the agricultural sector is the cornerstone of the Zimbabwean economy, the Zimbabwean government recently introduced command agriculture, a military-type approach to improve the sector productivity. However, Zimbabwe Democratic Institute (2019) asserted that 45% of the 50000 beneficiaries' farmers contracted to produce maize were struggling to pay back through delivering farm produce to the Grain Marketing Board, thereby accumulating more debt to the government. The apex institution for Industry in Zimbabwe, the Confederation of Zimbabwe Industries (CZI), in a position paper on urgent engagement on the currency situation in Zimbabwe, called for an urgent solution to the funding of agriculture to remove the burden on the fiscal budget. The institution believes that the sector is funded by the seignorage of constantly printing money which resultantly deteriorates the value of the national currency (CZI 2022).

3.4.2 Need to improve sector credit score.

Private financial institutions are reluctant to offer loans to the Zimbabwean farmers due to previous loan default among other reasons (Masiyandima, Chigumira and Bara 2011). Access to finance is vital for the development of this sector, but are agribusiness entrepreneurs financially literate enough to manage finances properly? Improving financial literacy could assist farmers in debt management, improving their credit score and making the sector bankable again.

3.4.3 Financial exclusion of agribusiness entrepreneurs

Chiromo (2019) argues that most farmers were financially excluded and, thus, lacked access to finance. The rural population in Zimbabwe are also highly financially excluded (FinScope 2011). The major reasons cited were lack of financial awareness, poor access to financial institutions and lack of entry requirements (FinScope 2011; Chiromo 2019). Financial literacy improves financial inclusion in an economy by creating individuals' awareness of different financial products (Bongomin *et al.* 2017a). This research has noted high financial exclusion of agribusiness entrepreneurs (Masiyandima, Chigumira and Bara 2011) which can be improved through well informed financial education programs.

3.4.4 Complexity of financial markets

The financial markets are rapidly changing and new more complex financial services are being added to the markets (Lusardi 2019). People need consciously learn and improve their financial capabilities in line with available financial services. The development of the financial sector demands a continuous improvements of individual financial literacy capabilities. This study contributes to existing literature by establishing financial literacy elements which need more emphasis and improvement.

3.4.5 Poverty and food insecurity among smallholder farmers

The agricultural sector is generally regarded as the major source of food and nutrition in every country. There are high levels of food security in the country and imports of food continue to increase government expenditure. Therefore, the need to improve productivity of the sector. Proper financial management is considered a vital element in improving farm productivity. This study will contribute towards eradication of food security by developing a financial literacy operationalisation model with strategies of how financial literacy of agribusiness entrepreneurs can be improved.

Chiromo (2019) reported that 76% of smallholder farmers in Zimbabwe lived in poverty. The author argues that these farmers fail to harvest enough for their families and get very little

income from their farming activities. Various government efforts to support these farmers have failed to resuscitate the sector to its original position.

3.4.6 Need for financial resilience during a crisis.

Financial literacy improves an individual's capability of surviving under a crisis (Klapper and Lusardi 2020). Financial resilience is considered an important outcome of finance. Farmers were affected by the COVID-19 pandemic recently and from time to time their finances are affected by national hazards like drought and hail. Improving agribusiness entrepreneur's financial literacy capabilities can improve their resilience to financial shocks. Lusardi (2019) established that financial literacy contributes to personal savings and retirement planning, thus making an individual more resilient to financial shocks.

3.4.7 Zimbabwe Inflationary economy environment.

Inflation erodes the purchasing power of money. Agribusiness entrepreneurs in Zimbabwean are currently operating their businesses in an inflationary environment. There remains a need for financial education about the time value of money, effect of inflation on purchasing power and the need for effective pricing mechanism to limit losses. The Reserve Bank of Zimbabwe (2020) reported an increase in inflationary pressures in the economy due to parallel trading of foreign currency on the black market. It introduced the Zimbabwean foreign currency auction system allowing the authorities to adjust the rate of the local currency and other currencies according to prevailing market conditions.

3.4.8 Technological advancements

There has been an influx of new technological advancements in the world. Social media and online trading have made the global world one by removing geographic barriers. However, applying new technologies like block chain, cloud computing, and cryptography among others requires a financially knowledgeable individual.

3.4.9 Increase in cybercrime and financial scams.

OECD (2020) argues that users of financial services should be aware of financial scams and phishing techniques of fraudsters in order to protect their invested money and investments. Financially included agribusiness entrepreneurs should understand all security measures in order to secure the money deposited in financial institutions.

3.4.10 Increasing financial responsibility and high levels of unemployment

Due poor macroeconomic conditions in Zimbabwe, there is high unemployment rate, hence individuals survive from entrepreneurial activities. These entrepreneurial endeavours need to be supported as their development will contribute to the development of the country. Most individuals in both rural and urban areas survive through agricultural related activities.

Financial responsibilities like retirement planning have been shifted from government defined benefit programs to individual defined contribution programs (Lusardi 2019). Where individuals received pension pay-outs related to the portfolio of investments their money was invested in. Consequently, there is a need for knowledge in retirement schemes and risk in order to prepare for retirement.

3.5 Chapter summary

This chapter explained the importance of financial literacy to the economy, to individuals and entrepreneurs. The benefits of financial literacy emanated from the ability to make sound financial decisions, which then translates to proper management of money, saving, accumulation of wealth and finally financial wellbeing. Economic benefits of financial literacy entails, economic stability, financial inclusion and small to medium enterprises growth among other reasons. The chapter further explained reasons that propelled research in the level of financial literacy of agribusiness entrepreneurs.

CHAPTER FOUR

THEORETICAL REVIEW OF FINANCIAL LITERACY

4.1 Introduction

The previous chapter explained the importance of financial literacy and highlighted the need for financial literacy for agribusiness entrepreneurs. This chapter defines the concept of financial literacy and reviews central theories that guide financial literacy framework. Specifically, the chapter reviews and critically analyses the theory of reasoned action, theory of planned behaviour, theory of games and economic behaviour, portfolio theory, the trans-theoretical model of behaviour change, the lifecycle hypothesis and behavioural finance prospect theory. Financial behaviour related theories borrowed from human psychology were also applied and reviewed. Finally, the chapter provides a conceptual framework on the level of financial literacy.

4.2 Definition of financial literacy

There is great variability and lack of consensus concerning how financial literacy is defined and measured and thus the purpose of this study to review the literature and provide a proper definition of financial literacy. This section explicates and articulates the conceptual and operational definition of financial literacy by various authors and provides the definition of financial literacy for this research.

4.2.1 Conceptual definitions of financial literacy

General literacy is commonly defined as a person's ability to read and write or how well an individual can understand and use information (Silver-Pacuilla 2008). First, financial literacy is defined as a form of financial knowledge required to make informed decisions (Braunstein and Welch 2002). Authors such as Braunstein and Welch (2002), and Vitt *et al.* (2010) define and measure financial literacy as financial knowledge and used the terms interchangeable (Huston 2010). Defining financial literacy as financial knowledge was quite misleading as various studies failed to associate this financial literacy with good financial behaviours (Kawamura *et al.* 2021). Knowledgeable individuals who scored high financial literacy scores

exhibited financial illiteracy behaviours like excessive borrowing, overspending and poor financial planning, which showed a lack of financial capability (Kawamura *et al.* 2021).

Second, financial literacy is defined as the ability to use/apply financial knowledge and skills to manage financial resources effectively and attain financial wellbeing (Norman 2010; Lusardi and Mitchell 2014; Amoah 2016; Lusardi 2019). This definition considers financial knowledge and resulting financial behaviour as proxies of financial literacy. For instance, (Hung, Parker and Yoong 2009) define financial literacy as the ability to apply knowledge and skills to manage financial resources effectively for a lifetime of financial wellbeing. In this case financial literacy was defined as the ability of an individual to process economic information and make informed decisions about wealth accumulation, financial planning, debt, and pensions. In the same vein, (Hung, Parker and Yoong 2009) further define financial literacy as a combination of financial knowledge literacy, behavioural literacy, and Cognitive literacy. The two authors concur that financial knowledge, combined with an individual's cognitive ability, should be translated to sound financial decisions and behaviour that directly impact an individual's lifetime wealth accumulation and financial well-being.

Third literature documented some individual attitudes and personality traits as inherent influencers of financial decision-making. Independent of financial knowledge, some individuals exhibited irrational investment and financial decision-making decisions that was usually associated with certain groups of people. People living in similar communities, families and cultures exhibited similar financial behaviour which resulted in recognising individual and societal attitudes towards financial concepts. (OECD 2018) added the concept of financial attitude to the definition of financial literacy by defining financial literacy as a combination of awareness, knowledge, skill, attitude, and behaviour necessary to make sound financial decisions and ultimately achieve financial wellbeing. This definition was widely acknowledged and was accepted by the G20 countries (Potrich, Vieira and Mendes-Da-Silva 2016). The concept of financial attitude left out by (Lusardi and Mitchell 2014) and (Hung, Parker and Yoong 2009) is a crucial element that should be considered when measuring financial literacy, since attitude can be a major determinant of behaviour apart from knowledge.

Finally, recent literature suggests that financial literacy is not a constant phenomenon but rather a continuum of abilities depending on demographic variables like gender, age, culture, family and residence (Mandell 2008). Financial literacy is an evolving state of competency that enables

each individual to respond effectively to ever-changing personal and economic circumstances (Kadoya and Khan 2017). During the current COVID-19 pandemic, financial institutions are digitalising their services and operations, leading to the introduction of more complex financial services and a change in the financial landscape to suite the new normal (Fessler, Jelovsek and Silgoner 2020). Consequently, the need for acquiring of new financial competences and recognising financial literacy as an evolving and ever-changing financial capability. This study recognises financial literacy as an evolving concept which should be linked to individuals' daily lives and associated financial services. This definition recognises the need to tailor financial literacy measuring instruments to specific groups and specific financial economies.

4.2.2 Operational definition of financial literacy

Operationalisation of the concept of financial literacy converts the abstract concept of financial literacy into a measurable phenomenon. Based on the conceptual definitions of financial literacy, financial literacy operational definitions fall under the dimensions of financial knowledge, financial behaviour, and financial attitude (Bhushan and Medury 2014; Kadoya and Khan 2017; Fessler, Jelovsek and Silgoner 2020). However, researchers differ in their selection of operational definition and focus on one or two categories. Lusardi (2011, 2016, 2018; 2019) operationalises financial literacy as a form of financial knowledge, although the author defines financial literacy as the ability to apply financial knowledge in decision-making, knowledge of interest compounding, inflation and diversification were used as basic operational variables. OECD (2015, 2016, 2018; 2020) added budgeting, saving, debt management, financial decision-making, financial resilience, and attitude toward long-term saving as crucial operational variables of financial literacy. Financial literacy in this study is defined as a combination of financial knowledge, attitude and behaviour necessary to make sound financial decisions (OECD 2020). The level of financial literacy in this study, relates to a numeric score assigned to an individual financial knowledge, financial attitude, and financial behaviour competences.

4.3 Theoretical framework

Generally, all financial matters involve decision-making. Financial decisions range from simple matters like allocating income to different expenses to complex decisions like investing

company shares and money market instruments. These decisions demand application of simple to complex financial knowledge. First financial decisions were explained by classical and investments theories which posited that individuals are rational investors who seek to maximise their consumption utility and economic returns. The marginal utility theory by Bernoulli Bernoulli (1920) explains that additional positive consumption increases total utility and people allocate their money where there is the highest marginal utility.

Behavioural finance and the role of financial socialization was later introduced as an important theoretical framework that explains financial behaviour. However, various authors argued that a rational investor is only available in theory; in practice individual's financial behaviour is greatly influenced by personal experience, emotions, attitude, and psychology. Hence, the need to apply human psychology to finance.

Psychology in its first phase was defined as the science of the soul, followed by its definition as the science of the mind and consciousness and finally as the science of human behaviour. Theories of human behaviour in psychology explains observable human behaviour and the role of the environment on modifying the behaviour. Behaviour refers to what an individual knows (knowledge), what s/he can do (skill), what s/he thinks (attitude), and what s/he does (Leagans 1961). Financial knowledge should be translated into competent financial decision making in the financial front. Financial behaviour and financial attitudes which are crucial components of financial literacy can be explained well by theories of human behaviour in psychology (Nanziri and Leibbrandt 2018).

Since financial literacy is a combination of various and evolving components as explained above, this study is guided by various theories. The theories provide a theoretical framework for financial literacy, and its separate components, financial behaviour, financial knowledge, and financial attitudes. A conceptual framework of the level of financial literacy was developed based on the theories.

4.3.1 Life cycle hypothesis

Modigliani and Brumberg in the early 1950s developed the theory of lifecycle hypothesis. The theory posits that individuals generally maximise utility subject to available income and

resources. This individual utility was assumed to be a function of aggregate consumption in current and future periods whilst individual's consumption was expressed as a function of resources earned during an individual's entire life depending on age (Modigliani and Brumberg 1954). The life cycle hypothesis was aggregated in three stages. First, a negative net saving in early childhood, second, positive net saving in working years and lastly, dissaving in retirement age. The theory assumes that the utility function was homogeneous with respect to consumption at different points in time, and that individual neither expects to receive nor desires to leave any inheritance (Modigliani and Brumberg 1954). The figure below explains the lifecycle hypothesis.

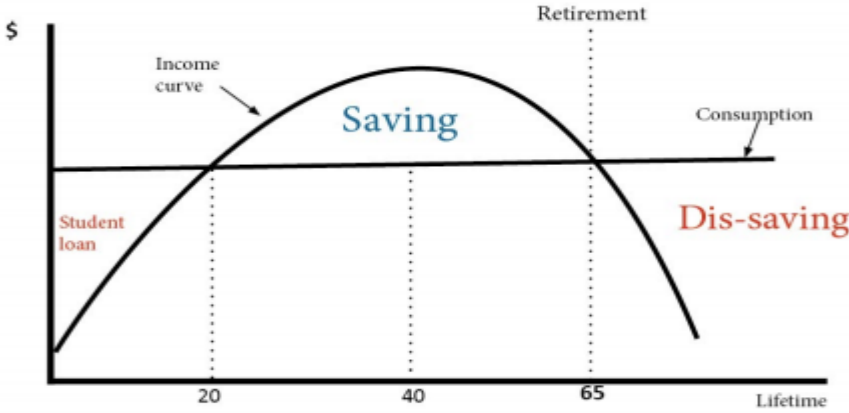


Figure 5: Lifecycle hypothesis

Source: O’grien (2018)

Saving and investing blended in the life cycle hypothesis theory are core competences of financial literacy as individual are expected to save for retirement during their working lives (Lusardi and Mitchell 2014). Wealth accumulation is also considered vital for a sustained financial wellbeing whilst accumulating saving is vital for emergencies and unexpected expenditures (Atkinson and Messy 2013; Atkinson, Monticone and Mess 2016).

Individual financial goals tend to follow the proposed life cycle hypothesis proposed by Modigliani and Brumberg (1954). Financial goals for a young and single person are commonly related to personal growth, the middle aged are more concerned with maintaining a family, accumulating assets and saving for retirement whilst the retired old population are more concerned with maintaining a secure and enjoyable lifestyle (Madura, Casey and Roberts 2014).

The theory of life cycle hypothesis was adopted in this study since a financially literate individual is expected to have knowledge of how to use various financial services in the market and make well informed financial decisions. Individuals are also expected to save for emergencies, save for retirement, save to meet future financial goals and also accumulate wealth. All these components are reflected by the lifecycle hypothesis theory.

The life cycle hypothesis was widely accepted in the field of finance and various authors have applied, developed, and modified the theory. Reilly and Brown (2011) applied the theory to investors in the financial system. The authors aggregated the life cycle hypothesis into three phases, (1) the accumulation phase, (2) consolidation phase, (3) spending and gifting phase and posited that individual investment behaviour changes over lifetime depending on age and state in the life cycle. Figure 6 shows the investment life cycle.

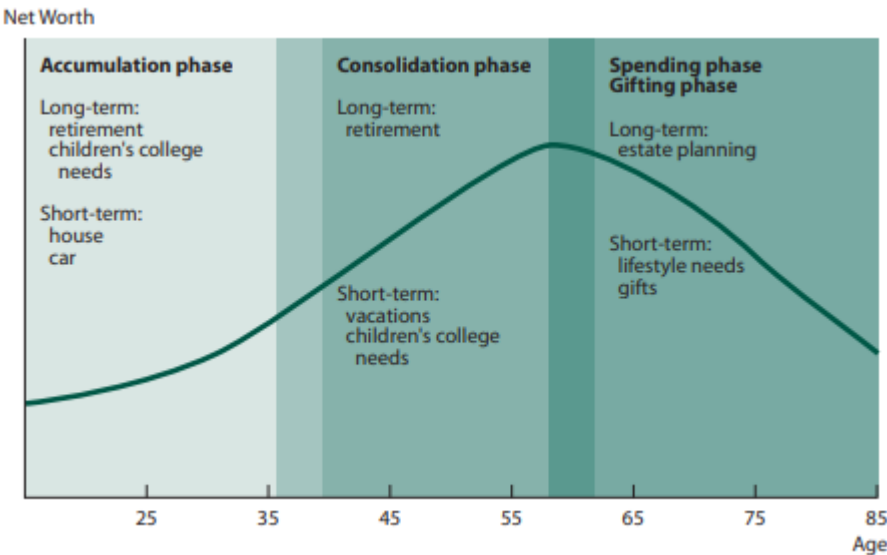


Figure 6: Investment lifecycle

Source: Reilly and Brown (2011)

Reilly and Brown (2011) postulate that individuals in their early to middle years move from a transition of dissaving to accumulation of assets usually for immediate needs, like buying a car, a house or paying school fees. Due to the financial burdens and financial responsibilities related to this group, their net worth is small. This proposition is applicable to young adults and young couples who have just graduated from tertiary institutions. Their priority involves buying

household materials, property, a vehicle, and a house for immediate use. The proposed life cycle is generally the life cycle investment pattern of individuals across nations globally.

Individuals from the age of 35 years to retirement were posited to be in the consolidation stage, where earnings exceed expenses, and the funds are invested for future financial needs. Individuals in this stage take moderate to low risk in order to preserve capital (Reilly and Brown 2011).

Reilly and Brown (2011) further theorize that the spending phase commences at the age of 65 years when individuals retire. In this stage individuals survive from prior investments and pension scheme pay-outs. Those with excess assets usually provide financial assistance to friends, relatives or charitable institutions (Reilly and Brown 2011). In Zimbabwe, due to hyperinflation and adverse economic conditions, most people retire or reach retirement age without adequate wealth or investment. Twumasi *et al.* (2021) applied the life cycle hypothesis theory in their study by acknowledging that individuals generally save a portion of their incomes during their working lives for future use during their life cycle.

Behavioural finance is cited as a major weakness of the life cycle hypothesis. An important fundamental principle of the life cycle hypothesis is the assumption that people make rational, consistent decisions to maximise utility over their lifetime period and save for retirement (Deaton 2005). However, some irrational individuals do not prepare for retirement and reach retirement age without any accumulated wealth (Deaton 2005). Poterba (1994) argued for the retirement of the theory to consider conflicting factors like positive saving during retirement, and individuals who desire to leave an inheritance. The life cycle hypothesis posited that there is dissaving during old age and income will be distributed according to one's lifetime without taking into consideration inheritance issues. Nevertheless, Jappelli and Modigliani (2006) tested Poterba (1994) propositions by considering the income patterns of 46945 households in Italy over 10 years database and further confirmed the relevance of the life cycle hypothesis theory. Deaton (2005) however noted that no theory can fully explain that if people were capable of it, they will not save as explained by Modigliani and Brumberg (1954). Humans are generally constrained by environmental issues, financial constraints and uncertainties to act in rational ways.

4.3.2 Theory of reasoned action

Ajzen (1985) theorised that human behaviour of everyday life are mainly done under volitional control. That is in processes that can be applied consciously, repetitively, or habitually. An individual's intention is a function of personal factors and social influence. That is an individual positive/ negative evaluation of performing the behaviour which is termed attitude towards the behaviour and persons perception of the social pressures put on him to perform or not to perform the behaviour in question, which is termed subjective norm are performed when they evaluate it positively and when they believe that important others think they should perform it (Ajzen and Kruglanski 2019).

First, the theory assumes that humans usually behave in a sensible manner. The importance of these attitudinal considerations and subjective norms/normative considerations depend on the intention under investigation. Hence on other intentions, the normative considerations predominate and on other attitudinal considerations predominate. However, both factors remain important determinants of intention.

Symbolically the theory can be presented as:

$$B \sim 1 \alpha [W_1 A_B + W_2 SN] \quad (1)$$

Where

B represents behaviour of interest

I is persons intention to perform behaviour

A_B is person's attitude toward performing behaviour B

SN is persons subjective norm concerning performing of behaviour B

W_1 and W_2 are weighting parameters that reflect the relative importance of A_B and SN

Mata (2021) applied these propositions to financial planning and retirement intentions of young adults aged between the age of 18 and 35 years who lived in Mexico. The research confirmed that individuals' retirement planning was strongly associated with likely consequences related to the behaviour. Financially knowledgeable individuals actively participate in retirement financial planning and have a positive attitude toward longer term saving.

Secondly, Ajzen (2019) further argues that attitude towards a behaviour is determined by salient beliefs about that behaviour. That is, the evaluation of each salient outcome contributes to the

attitude in proportion to the persons subjective probability that the behaviour will produce the outcome in question symbolically this is presented in the following equation:

$$A_B \propto \sum_{i=1}^n b_i e_i \quad (2)$$

Where

A_B represents attitude toward behaviour B

b_i is the belief (subjective probability) that performing behaviour B will lead and outcome i

e_i represents the evaluation of outcome i summation of salient behavioural beliefs.

Ajzen and Kruglanski (2019) second proposition can be related to the lifecycle hypothesis theory propositions. Generally, individuals accumulate wealth during their working lives in expectation of financial wellbeing during their retirement years. The beliefs that financial investments/ pension schemes invested during the middle age of the lifecycle hypothesis can provide a steady income during retirement incites retirement planning.

Finally, Ajzen and Kruglanski (2019) also postulate that subjective norms were a function of beliefs of a subjective nature or what referent groups think the person should/ should not perform, termed normative beliefs. The relationship between normative beliefs and subjective norm are expressed symbolically as:

$$SN \propto \sum_{j=1}^n b_j m_j \quad (3)$$

Where

SN is the subjective norm

b_j is normative belief concerning referent j

j, m_j is the persons motive to comply with referent j

n is the number of salient normative beliefs

The theory proposition of subjective and normative beliefs could explain the persistent and constant gender gaps between a woman and a man financial literacy. Culturally, women are associated with household duties, whilst men are expected to handle financial matters. Thereby shaping normative beliefs about the need to acquire financial knowledge between males and females. Financial association is a vital predictor of financial behaviour (Kadoya and Khan 2020).

Financial literacy, which is defined as the ability to process economic information and make informed decisions about financial planning, wealth accumulation, debt and pensions (Klapper

and Lusardi 2020), can be related to the theory of reasoned action volitional behaviour as most economic decisions end up being repetitive and habitual. Individuals tend to repeat the same financial decisions continuously. That is, individuals who accumulate excessive debt tend to be habitual borrowers and those who plan their spending tend to accumulate wealth and plan their spending consistently.

The theory traces cause of behaviour to salient beliefs, subjective norms, and attitudes towards intentions. Human attitude and sources of information are major determinants of human economic behaviours in determining the level of individual financial literacy as identified by (Atkinson, Monticone and Mess 2016; OECD 2016). Therefore, this research will incorporate financial attitude in measuring financial literacy and determine sources of financial information of agribusiness entrepreneurs.

4.3.3 Theory of planned behaviour

This theory is an extension of the theory of reasoned action, where non-volitional factors are also included as determinants of individual behaviour (Ajzen 1985). Ajzen (1985) postulated that an individual attempt to perform a behaviour interacts with the degree of his control to determine the likelihood of actual performance of the behaviour. Thus, an individual expects to perform a behaviour if he intends to try it (*It*) and if he has a high subjective probability that he can control it (*bi*). Therefore, behavioural expectations are a function of intention and control, which can be presented symbolically as:

$$BEabi.It \quad (4)$$

According to the theory of planned behaviour, behavioural expectations are more likely to predict actual behaviour more accurately than behavioural intentions. As graphically presented below, behavioural expectations are expected to correlate with attempted behaviour (Bt) as they are both affected by same factors, while actual behaviour is a function of behaviour expectation and attempted behaviour which are affected by persons belief over the behaviour (*bc*) and the degree of his actual control (C). Subjective norms (SN) which is a function of normative beliefs concerning referents (*bi*) and the person's motivation to comply with referent (*mj*) together with attitude towards a behaviour (*At*). As explained in the theory of reasoned action, attitude also affects behaviour intention which directly affects attempted behaviour and expected behaviour.

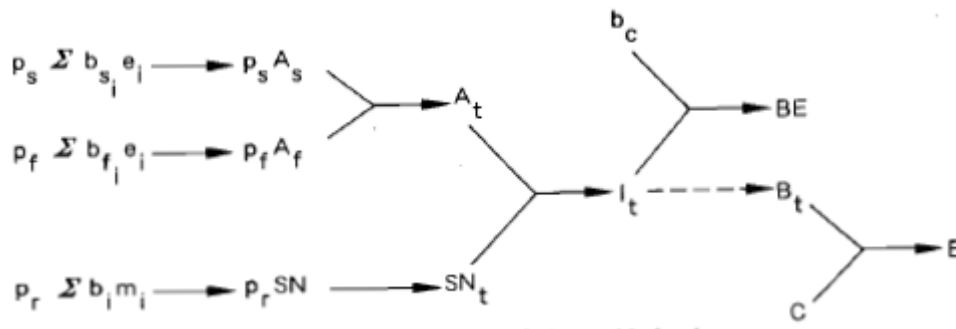


Figure 7: Schematic presentation of the theory of planned behaviour

Source: Ajzen (1985)

Various authors implemented the theory of planned behaviour in measuring financial literacy. Amoah (2016) argues that the theory of planned behaviour proposition that human behaviour is determined by the behaviour intentions which are a function of attitude, subjective norm and perceived control is a direct application to financial literacy as there is a need to analyse individual intention, attitudes in order to measure and improve financial literacy (Amoah 2016).

Sivaramakrishnan, Srivastava and Rastogi (2017) applied and developed the TPB to determine factors affecting stock market participation. The authors sought to investigate the applicability of the theory in explaining people's behaviour. The authors argued that the TPB can only be applied to financial decisions that are rarely influenced by impulse buying like consumption of goods but on financial decisions which require careful thought like saving or stock market participation.

Sivaramakrishnan, Srivastava and Rastogi (2017) concurred that an individual's behaviour is strongly influenced by intentions as propounded by Ajzen's theory and concurred that intentions are influenced by person's attitude, subjective norms and perceived control. Subjective norms could be affected by referent groups like peers, friends, and family financial socialisation whilst perceived control can be affected by availability of resources and environmental contingencies. The authors established that individual's subjective and objective norms influenced intention to invest and consequently investment intentions predicted actual investment in the stock markets. The figure below shows TBP framework as applied and improved by (Sivaramakrishnan *et al.* 2017).

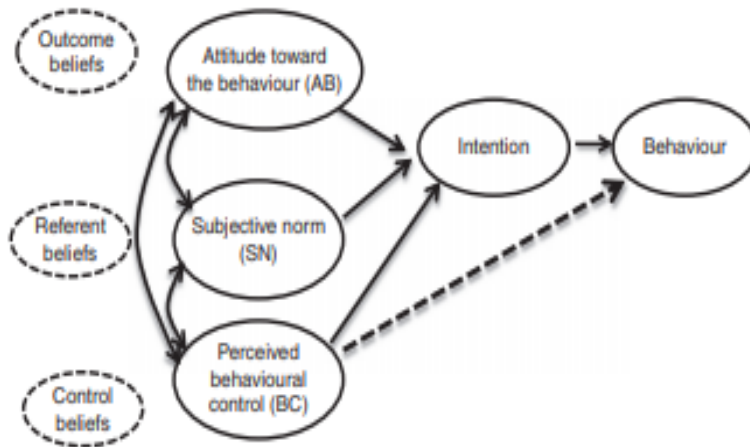


Figure 8 Theory of planned behaviour

Source: Sivaramakrishnan et al. (2017)

This study will apply the theory of planned behaviour in measuring the level of agribusiness entrepreneur's level of financial literacy. Apart from measuring financial knowledge of these entrepreneurs, the research will analyse financial behaviour, financial attitude, and sources of information (referents) as postulated in the theory of planned behaviour. The issue of control will also be factored into this study as most behavioural intentions of individuals are affected by the environments they live in and the unavailability of proper financial services in their microenvironments. Thus, control is a major factor to consider when measuring financial literacy.

Despite its contribution in explaining intentional behaviour, the theory is much criticised on its sufficiency and the need to add some external variables beyond the three-component model which can help improve the prediction of human behaviour. Conner and Armitage (1998) argued that the theory was too narrow and should also include additional six constructs namely moral norms, past behaviour habit, belief, self-efficacy, anticipated regret, self-identity and effective beliefs. Sparks and Guthrie (1998) advocated for the addition of self-identity in his research of low-fat diet consumption. However, the theory serves as a flexible framework for other additional constructs (Hagger 2019).

4.3.4 Theory of games and economic behaviour

Von Neumann and Morgenstern (2007) postulate that economic theories are mainly centred on mechanics of prices, production, gaining and spending of income and that all participants in the economic system aim is to gain money in its quantitative sense or through utility. Von Neumann and Morgenstern (2007) argue that major economic problems can be solved by an analysis of the behaviour of individuals which constitute the economic community and not only on economic statics. The theory of games and economic behaviour acknowledges utility theories which explains that additional positive consumption increases total utility and people allocate their money where there is the highest marginal utility (Grant, Rich and Stecher 2022). However, they extended their theory from utility theory to rationality.

Von Neumann and Morgenstern (2007) endeavoured to develop a mathematically complete principles which define rational behaviour for participants in a social economy and to derive from them (partial set) the general characteristics of that behaviour. Assuming a game of fixed number of 'n' participants in a social economy, where each participant gains certain quantitative amounts (utility) by behaving rationally and where each participants selects his own strategy governing his assets their theory moved from the traditional economics to a new model theory of games and economic behaviour. Where human financial behaviour is not only affected by economic satisfaction or utility but by trading games of the conventional variety mainly dominated by illustrations from Chess, Matching Pennies, Poker, and Bridge and not from the structure of cartels, markets, and oligopolies.

Financial behaviour cannot be explained by rationality in the economic set up, but according to the social setup in which the person is operating and also depending on the trading norms and beliefs in the prevailing market (Nguyen *et al.* 2022). Rules of thumb, heading behaviour and gambling are signs that financial behaviour of individuals is beyond the economic sense (Barrafrem, Västfjäll and Tinghög 2020). This study implicitly recognises this theory by acknowledging human behaviour beyond economic sense.

4.3.5 Portfolio theory

Markowitz (1952) developed the modern portfolio theory with borrowed concepts from dividend discount models, marginal utility theory and microeconomics. Markowitz (1952)

postulated that an investor interested in maximising utility should maximise the discounted value of investments future returns. However, since the future is not known with certainty, the authors argued that expected/anticipated returns should be discounted. Markowitz (1952) further argued that a rational investor acting under uncertainty should act according to probability beliefs and where no objective probabilities are known, expected probabilities should be anticipated or forecasted. Therefore, Markowitz (1952) derived the formula for computing variance of a portfolio as a measure of risk.

The theory further assumed that rational investors should consider expected return desirable and variance of return undesirable. At a given level of return, investors will try to minimise risk and given risk they will try to maximise return. Thus, given a choice between two investments with equal rates of return, one will select the asset with the lowest level of risk. The expected return for an individual asset can, therefore, be generalised to:

$$E(R) = \sum_{i=1}^n P_i R_i \quad (5)$$

Where $E(R)$ represents the expected return, P_i is the probability of attaining the return, and R_i represents the investment return.

The variance for calculating risk was presented as

$$\delta^2 = \sum_{i=1}^n P_i [R_i - E(R)]^2 \quad (6)$$

Where δ^2 is the variance of an individual asset, R_i represents anticipated return and P_i is the probability of getting that return.

Markowitz (1952) further postulates that “the return on the portfolio as a whole is a weighted sum of random variables where the investor can choose the weights.” Thus, for a two-asset portfolio, the formula can be generalised to;

$$E(R_p) = w_1 E(R_1) + w_2 E(R_2) \quad (7)$$

Where $E(R_p)$ is the expected return of a portfolio, w_1 represents percentage of total portfolio value invested in asset 1, w_2 represent represents percentage of total portfolio value invested in asset 2, $E(R_1)$ is the expected return of asset 1 and $E(R_2)$ is the expected return of asset 2.

Portfolio theory is concerned with determining optimal combinations of securities/assets that investor should purchase in order to minimise risk given return and maximise return given risk.

The general formulae for the standard deviation of a portfolio of two risk assets can be generalised to:

$$\delta\rho = \sqrt{w_1^2\delta_1^2 + w_2^2\delta_2^2 + 2w_1w_2cov_{1,2}} \tag{8}$$

Where w_1 is the proportion of the portfolio invested in Asset 1, and w_2 is the proportion of the portfolio invested in Asset 2. δ_1 represents standard deviation for asset1, δ_2 represents standard deviation of asset 2 and $cov_{1,2}$ is the covariance. Covariance measures the extent to which two investments returns move together over time. A positive covariance means that the rates of return on asset tend to move together, negative covariance means that the two assets return tend to move in opposite directions and a covariance of zero means there is no linear relationship between the two investments/assets.

This theory suggests that rational investors should diversify their portfolio with assets whose returns are negatively correlated, as shown in figure 9 below. The fundamental concept of portfolio management emphasised by this study was considered in measuring financial knowledge. Agribusiness entrepreneurs were expected to have a basic knowledge on risk and return relationship and the effect of diversification on risk. Markowitz (1952) assumed that there is a diversified portfolio which provides both maximum expected return and minimum variance, and it is this portfolio that the investor should invest in. Figure 9 shows the Time patterns of returns for two assets with perfect negative correlation.

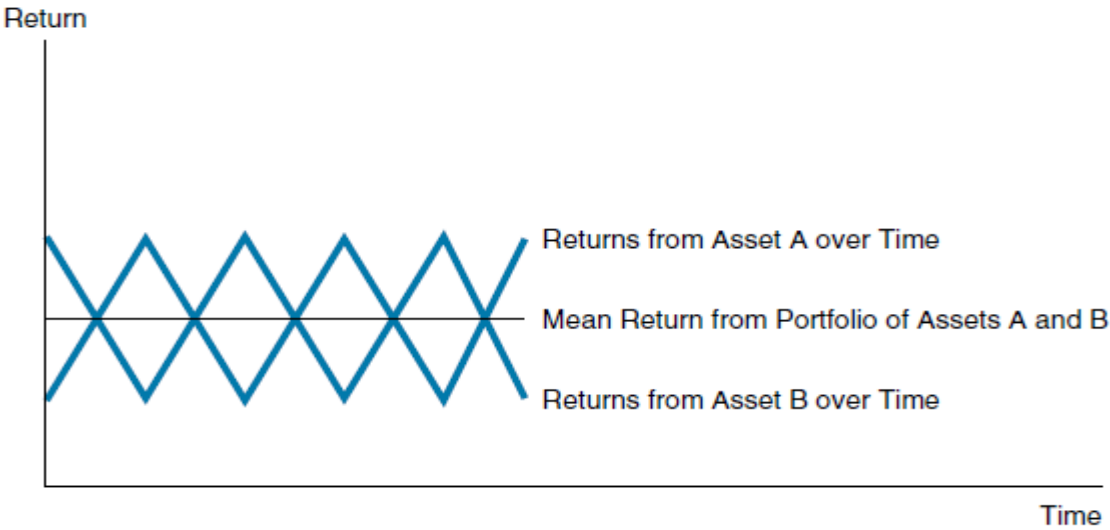


Figure 9 Time patterns of returns for two assets with perfect negative correlation

Source Reilly and Brown (2011)

Taking into consideration investor utilities given risk and return, the optimal portfolio that a rational investor should invest into is the portfolio on the efficient frontier with the highest utility for a given investor. This lies at the point of tangency between the efficient frontier and the curve with the highest possible investor utility as described in the figure below.

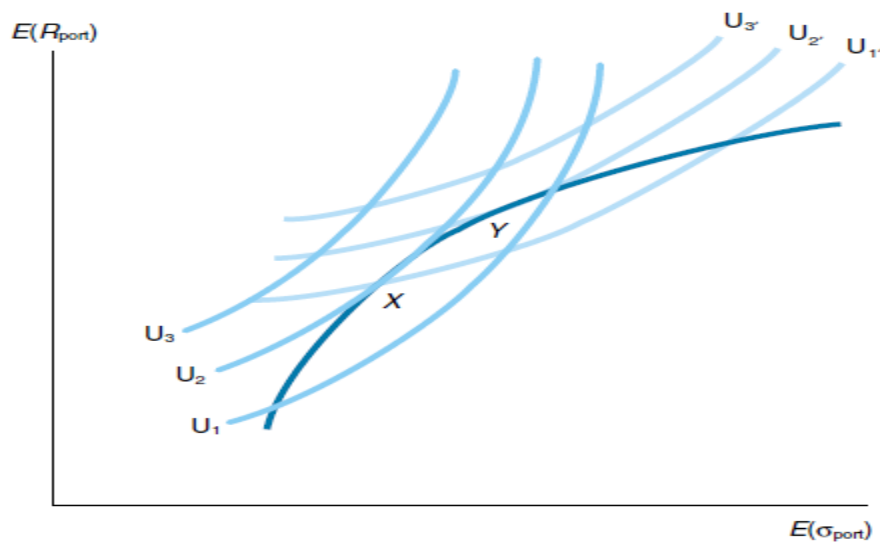


Figure 10 Optimal risky portfolio on the efficient frontier

Source: Reilly and Brown (2011)

The efficient frontier epitomizes the set of portfolios with the maximum rate of return given risk, or the minimum risk for every level of return. Considering investor utility, a risk averse investor utility or optimal portfolio should be at point X where the indifference curve U_2 touches the efficient frontier whilst a more risk tolerant investor highest utility is at point Y which presents a portfolio with a higher expected return and higher risk than portfolio X (Reilly and Brown 2011).

According to this theory, a financially literate investor should choose a portfolio that lies on the efficient frontier that has either a higher rate of return for equal risk or lower risk for an equal rate of return than some portfolio beneath the frontier. Financially literate individuals in the financial front should be able to understand the portfolio theory when investing in stocks and bonds. However, due to the complexity of the theory to the general populace, participation in the stock exchange and bonds is low. An understanding of diversification can, however, suffice

to agribusiness entrepreneurs and use of financial advisors. Other investment theories like the capital asset pricing model were developments from Markowitz (1952) portfolio theory.

Figge, Thorpe and Manzhynski (2021) applied the portfolio theory to ordinary use of resources in the economy. The authors argued that portfolio theory concepts of risk and return generates crucial insights into the governance and efficient use of natural resources. Taking into consideration the propositions of the portfolio theory, the authors confirmed that grouping assets or investments into portfolios enables risk averse investors to potentially maximize their returns for a given level of risk. Ma *et al.* (2022) applied the portfolio theory in real stock market trading and found the theory effective in developing trading strategies for risk averse investors. However, Ma *et al.* (2022) noted that the theory was mainly effective for risk averse investors and inappropriate for risk lovers who are willing to accept a very high level of risk in order to earn high level of return. In the modern world not all markets are efficient as explained by the theory and tax and transaction cost exist in the real world. Nevertheless, the theory remains an important tool for portfolio selection up to date (Ma *et al.* 2022).

4.3.6 The trans-theoretical model of behaviour change

Prochaska developed the trans-theoretical model of change from a comparative analysis of leading theories of psychotherapy and behaviour change (Prochaska *et al.* 1994). The authors used studies from behavioural change investigations of smokers, alcohol and substance abuse individuals, people with eating disorders and obesity, AIDS prevention, and mammography screening. Prochaska *et al.* (1994) established six stages of change, namely, pre-contemplation stage, contemplation stage, preparation stage, action stage, maintenance stage, and termination stage. The theory argues that humans pass through these phases before they change behaviour ultimately (Kawamura *et al.* 2021).

In the pre-contemplation stage, an individual is not intending to act for behavioural change in the foreseeable future usually measured as the next 6 months and is uninformed about consequences of behavioural change. In the stage that follows the contemplation stage, the theory suggested that an individual intend to change behaviour but might not be aware of the advantages of changing that behaviour. In the third stage the preparation stage, a person intends to act in the immediate future and already have a plan of action. In the fourth stage, the action stage, an individual has made specific modifications in their lifestyle for the past 6 months and

in the maintenance stage a person will be working on maintaining the behaviour and to prevent relapse to previous behaviour and finally in the termination stage, individuals have zero temptation to return to previous behaviour. Lyons and Schneider (2005) implemented this theory in his study of financial literacy and argued that individuals pass through these same stages as they try to implement financial literacy information and behaviour.

Individuals who attempt to change bad borrowing behaviour, excessive spending habits and adoption of new financial technology usually pass through the stages posited by Prochaska *et al.* (1994) therefore, this research will implement this theory in measuring financial behaviour of individuals. Various authors argue that financial literacy program has no effect to behavioural change, which might be reflected from their empirical results (Kawamura *et al.* 2021). However, in actual fact, individuals will be in different states of applying the gained knowledge (Martinez 2016). Mutengezanwa (2018) applied this theory of trans-theoretical model of behavioural change as major theory that explains financial behaviour. The author noted that behavioural interventions explained by the theory like education could be used to advise and make people better investors (Mutengezanwa 2018).

4.3.7 Prospect theory

The prospect theory is the cornerstone of behavioural finance. The theory was founded by Daniel Kahneman and Amos Tversky in 1979. Kahneman and Tversky (1979) argued that utility theories on their own were not adequate descriptive models for human decision-making, especially under risk. The two authors identified various market anomalies and irrational financial behaviour in financial markets which violated the generic propositions of utility theories, modern portfolio theory and capital asset pricing model. Through various experiments, investigations and game choice preferences, they concluded that individuals' underweight outcomes that are uncertain in comparison with outcomes that are obtained with certainty. This axiom which they called the certainty effect translated to individuals being risk averse in choices involving sure gains and being risk seekers in choices involving sure losses.

Specifically, the authors argued that investors are concave and risk averse in gains and convex and risk seeking in losses as shown by the figure below. Kahneman and Tversky (1979) theorised that when a share starts to rise in value investors' fear of the unfavourable price changes, tempt them to sell gaining shares too early and therefore lose substantial future growth

opportunities. However, when a share price starts to fall, investors find it difficult to accept the loss therefore they continue holding the share even if the situation show that the price of the share will continue to fall. Subsequently if that share price rise again, investors quickly sell even without a profit or analysing future gains. Knowledge of such behaviour biases is crucial as it assists investors to limit their losses and become more capable of managing their finances and investments.

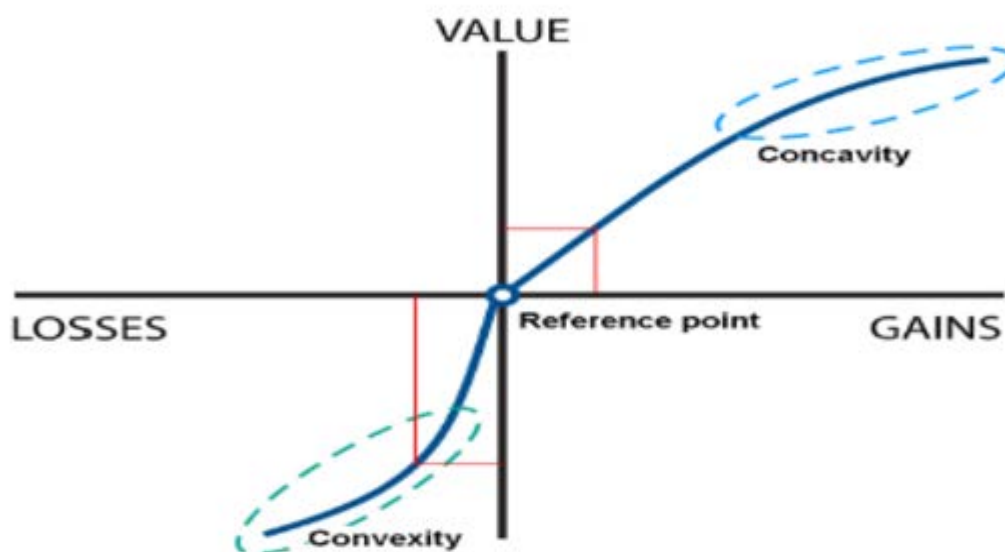


Figure 11: Prospect theory gains and loss biases

Source: (Stupavský 2018)

Kahneman and Tversky (1979) further established that individuals choose inconsistent preferences when the same choice is presented in different forms, which they called the Isolation effect/framing effect. Various authors concur with the isolation effect, nevertheless such decision inconsistencies might be due to lack of financial literacy and making financial choices through guessing.

Stupavský (2018) also applied the prospect theory in his study and further posited that the prospect theory outlined important human psychological biases caused by emotions, greed, optimism, fear or pessimism. These biases lead to irrational decision making which had the potential to make financial markets inefficient. Stupavský (2018) further explained that behavioural biases can be categorised into three major categories: cognitive errors, emotional biases and biases pertaining to information processing. Key behavioural biases, thus, involve

overoptimism, overconfidence, confirmation, loss aversion, framing, self-attribution and anchoring and adjustment bias (Stupavský 2018)

Kahneman and Tversky (1979) also concluded that investor's perception of probability is biased, especially when compared to expected utility theory propositions. The authors identified overweighting of low (and high) probabilities and underweighting of medium probabilities. In the face of uncertainty, new and rare circumstances, investors tend to overweight the returns or losses associated with the event and this causes panics and unexplained shocks in financial markets. Figure 12 below shows the prospect theory weighting function.

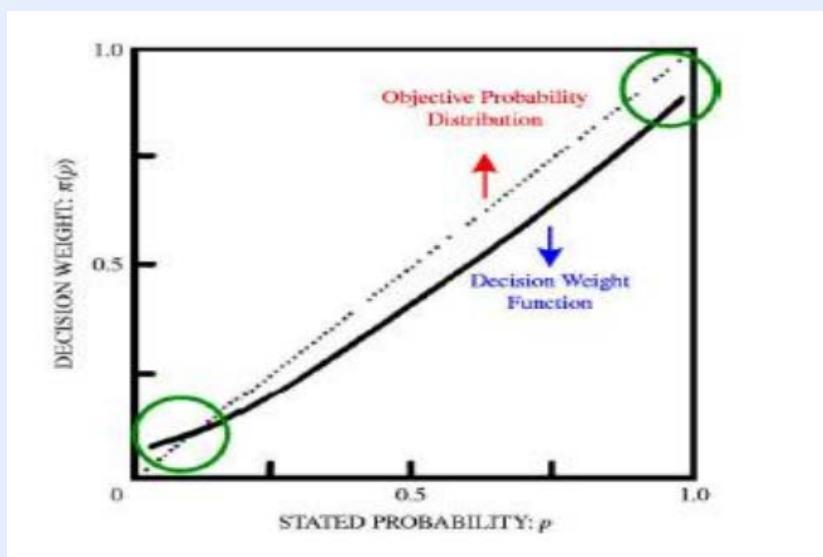


Figure 12: Weighting function

Source: Stupavský (2018)

The prospect theory weighting function explains people's behaviour when faced with rare and new circumstances. People usually panic during the onset of a rare occasion. There was great volatility in the financial markets during the onset of the COVID-19 pandemic as people panicked about the effect of the pandemic to financial assets (Chhatwani and Mishra 2021b).

4.3.8 Financial socialisation theory

Financial socialisation is the process of acquiring and developing values, attitudes, standards, norms, knowledge, and behaviours that contribute to financial literacy and individual wellbeing (LeBaron and Kelley 2021). Literature documents the importance of financial socialisation in building financial capabilities. Bandura social learning theory argues that people learn new skills by observing and imitating others in the social environment. The consumer financial socialisation theory states that through socialisation individuals learn financial concepts, skills and attitudes that can influence their behaviour (Chambers, Asarta and Farley-Ripple 2019). Such socialisations affect individual's affective, cognitive, and behavioural attitudes (Kumar *et al.* 2023).

LeBaron and Kelley (2021) posits that one crucial way of financial socialisation is through a family set up, where children learn (and do not learn) about money from their parents. Gudmunson and Danes (2011) developed a theory of family financial socialisation which posits that family purposive financial socialisation and family interactional relationships are shaped by family demographics, which affects children's financial attitudes, knowledge and capabilities and ultimately results in financial behaviour and financial wellbeing. Hence financial attitudes, knowledge capabilities and financial behaviour are results of the financial socialisation processes taking place in families.

A wide range of literature have repeatedly confirmed parents as the primary source of children's financial learning (Johan, Rowlingson and Appleyard 2021). Binoy and Subhashree (2019) argue that parents can teach their children good financial habits through giving them pocket money and through financial discussions with children on money matters. Thus, through discussing financial issues with children, parents develop financial capabilities of students (Chambers, Asarta and Farley-Ripple 2019). Khawar and Sarwar (2021) established that financial socialisation have a huge positive relationship with financial behaviour and financial education, reflecting the importance of both formal and informal of financial concepts. The theories of family financial socialisation reflects all the main components of financial literacy namely financial attitude, financial knowledge and financial behaviour (LeBaron and Kelley 2021).

4.4 Theory underpinning this study.

The theory underpinning this study is the theory of planned behaviour proposed by Ajzen (1985, 1988, 2012 and 2020). The theory is an extension of the theory of reasoned action, with a measure of perceived behavioural control added to predict behaviours that were not under complete volitional control (Mutengezanwa 2018). This theory of planned behaviour had been widely accepted for its success in explaining and predicting intentional behaviour in a multitude of behavioural domains which include health, technology acceptance and multiple social contexts (Lim and Weissmann 2023). The theory has also received considerable support in a number of empirical investigations, Hasbullah, Mahajar and Salleh (2014); Lim and Weissmann (2023) and is accompanied by well-established methodological tools that can be used to obtain reliable and valid measures in its theoretical constructs Hagger (2019).

The theory was selected for this study due to its (1) clear explanation of the link between human attitudes and behaviours (2) practical explanation of how different social references/backgrounds can exert influence or social pressure to perform a behaviour, (3) provision of a conceptual framework for determining human behaviour, (4) clear explanation for predicting change of behaviour, and (5) explanation on people's perceptions of their ability to perform a given behaviour (Lim and Weissmann 2023). The theory also considers the effect of personal and environmental barriers on human behaviour, which explains the major determinates of financial literacy in this study (Hagger 2019).

Behavioural attitude the first construct of the theory of planned behaviour is a crucial mediating factor to behaviour which was applied in this study to explain how financial attitude ultimately affects financial behaviour and financial literacy. Although behaviour was explained as stemming from attitude it was well explained that behaviour was not attitude. This study measures financial behaviour and financial attitude as separate constructs of financial literacy. The inclusion of perceived behavioural control provides information about the potential constraints on action as perceived by an individual and is held to explain why intentions do not always predict behaviour.

4.5 The level of financial literacy conceptual framework

Considering the theories discussed above concerning financial literacy and the identified operational dimensions of financial literacy, the assessment of the level of financial literacy is conceptualised in Figure 13. Financial literacy is operationalised as a combination of three dimensions that are affected by the intermediating effect of socio-economic. demographic factors as shown in Figure 13.

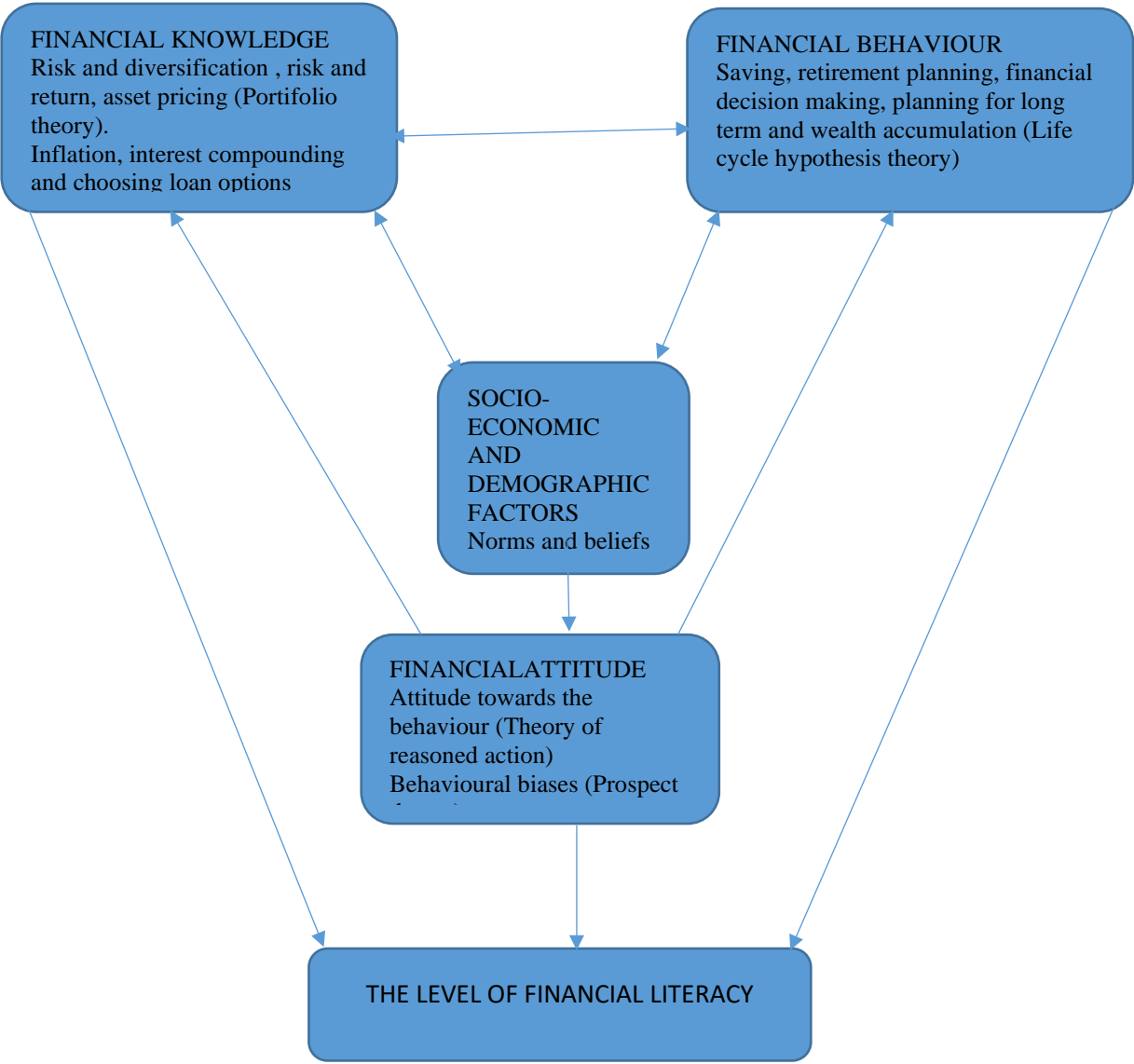


Figure 13: The level of financial literacy conceptual framework

Source: Authors' compilation (2022)

Financial knowledge relates to the theoretical understanding of financial concepts (Thomas and Subhashree 2020). Having knowledge is the basis of having good financial attitude and of practising good financial behaviours (Fessler, Jelovsek and Silgoner 2020). Hence, financial knowledge has a direct influence of financial literacy (Kadoya and Khan 2020). Elements for measuring financial knowledge were guided by portfolio theory risk and diversification knowledge and the need for investing in an optimum portfolio to earn higher return. Other elements like inflation and interest compounding were guided by empirical literature.

Financial attitude is defined as the mental or psychological judgment of an individual in financial matters or an individual personal inclination to financial matters (Thomas and Subhashree 2020). Positive financial attitude relates to attitude towards acquiring money to achieve planned financial goals compared to preference towards use of money only for the gratification of immediate needs. Positive financial attitudes towards long term financial planning have a positive influence on financial literacy. According to the theory of reasoned action, attitude intentions influence behaviour whilst positive financial attitudes facilitate the need to acquire financial knowledge.

Financial behaviour of an individual behaviour is strongly influenced by intentions as propounded by Ajzen's theory of reasoned action and intentions are influenced by person's attitude (Ajzen and Kruglanski 2019). Financial behaviour is generally defined as the application of financial knowledge in decision making (Lusardi 2019; Klapper and Lusardi 2020). Hence the direct influence of financial knowledge to financial behaviour.

The level of financial literacy in this study relates to a numerical score derived from financial knowledge, financial behaviour, and the intermediating effect of financial attitudes (OECD 2020). The theory of life cycle hypothesis clearly stipulated financial behaviours that individuals should undertake throughout their life cycle, whilst the portfolio theory emphasised the importance of financial knowledge in making investment decisions. Financial attitude towards various financial behaviours were explained by the theory of reasoned action and the prospect theory.

4.6 Chapter summary

The chapter provides the theoretical framework of financial literacy and its components. The reviewed theories show that although classical and traditional investment theories are crucial in explaining financial literacy, human psychology should be considered as individual investor emotions and attitude are crucial predictors of financial behaviour. Specifically, this research was guided by the theory of lifecycle hypothesis, theory of planned behaviour, theory of reasoned action and other theories explained in this chapter.

CHAPTER FIVE

EMPIRICAL LITERATURE REVIEW ON FINANCIAL LITERACY

5.1 Introduction

The previous chapter explained the theoretical framework relating to financial literacy and its components. This chapter compares, contrasts and critiques previous academic empirical studies conducted in various countries and finally connect the literature to the objectives of this research. The study objectives were to determine the level of financial literacy of agribusiness entrepreneurs, to determine factors that affect their financial literacy levels and to determine the financial services they require for their business operations. The chapter provides literature on the various factors that affect financial literacy and provides a framework of how financial literacy should be measured.

5.2 Strategies of measuring financial literacy

This study sought to determine the level of financial literacy of agribusiness entrepreneurs. The conceptual definition of financial literacy for this study defines financial literacy as an evolving concept which should be linked to individuals' daily lives and associated financial services. This definition recognises the need to tailor financial literacy measuring instruments to specific groups and specific financial economies. Financial literacy was then operationalised into three dimensions namely financial attitude, financial behaviour, and financial knowledge.

There is no consensus in reviewed literature concerning the definition of financial literacy. In many cases the term is defined depending on individuals' circumstances, background, and past experiences. Basic financial literacy can be simple to measure, however the level beyond basic financial literacy is determined by every persons individual living circumstances (Louw 2009). Thus, the need to tailor made financial education programs to the specific needs of individuals/sectors. This chapter operationalises financial literacy by identifying the various elements that should be measured to determine the level of financial literacy of an agribusiness entrepreneur. Various empirical literature was reviewed to guide the questions and elements to be considered in this research.

Santini *et al.* (2019) conducted a meta-analysis of how financial literacy has been measured in the past. The study analysed the components, determinants, moderators, and consequences of financial literacy. Forty-four studies were used to generate 690 observations that were used in meta-analysis. The study established that financial literacy is formed by a group of financial behaviours, financial knowledge, financial attitudes and socio-economic characteristics. The authors developed the framework indicated by Figure 14 below

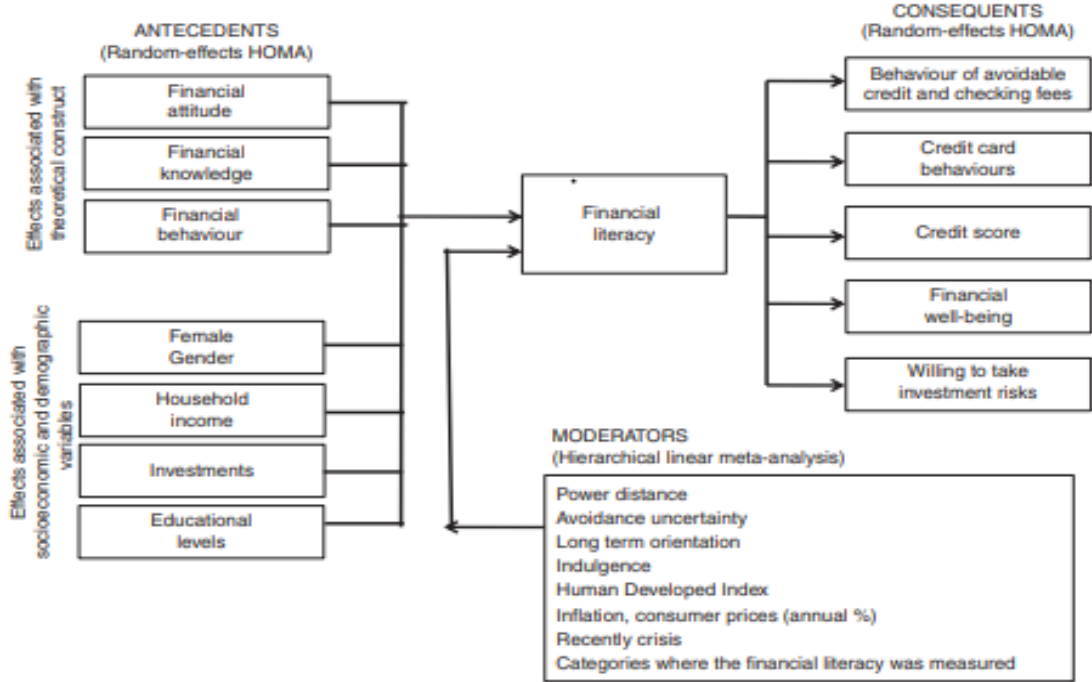


Figure 14: Financial literacy framework

Source: Santini, Ladeira, Matte and Ponchio (2019)

Santini *et al.* (2019) argue that financial literacy is a construct of financial behaviour, financial knowledge, educational level, financial attitude, gender, household income and investments. The authors considered five possible consequences of financial literacy namely financial well-being, credit card borrowing and checking fees, credit card behaviours, credit score, and the disposition to take investment risks. Adding the credit score as a consequence of financial literacy was a great contribution as the score could be a true reflection of an individual’s level of indebtedness and borrowing behaviours. However, financial data on credit scores is usually confidential and difficult to source. Financial well-being was defined as life’s financial satisfaction.

Various authors concur that financial literacy is a combination of different components. (OECD 2020) recognises financial attitudes, financial behaviours and financial knowledge as the three main components of financial literacy and consider financial wellbeing and financial resilience as the main consequences of financial literacy. However, Lusardi and Mitchell (2011); Lusardi, Mitchell and Curto (2014); Mitchell and Lusardi (2015); Lusardi, Michaud and Mitchell (2017); Lusardi (2019) mainly consider financial knowledge as the main component of financial literacy and relates to financial behaviour and financial wellbeing. as the major consequences of financial literacy.

Santini *et al.* (2019) also established cultural and economic factors that moderate the relationship between financial literacy and its components. The moderators included power distance (degree of inequality between individuals), tolerance of uncertainties, long-term perspective/resistance to change, inflation and human development index (measured by wealthy, literacy, life expectancy, and birth rate in the country). However, the moderators depended on the conditions in which the research was conducted and could be difficult to apply in studies conducted in one country.

Literature documents that socio-economic and demographic factors like gender, level of education, income, marital status, culture, and family background affect financial literacy and not components of financial literacy. Socio-economic and demographic factors are usually considered determinants or moderators of financial literacy.

Santini *et al.* (2019) conceptual model can be compared to Hung, Parker and Yoong (2009), conceptual model of financial literacy. Hung, Parker and Yoong (2009) established that there are interdependences of the three main concepts considered for measuring financial literacy: financial knowledge, financial skill and financial behaviours. Although financial literacy could be distinguished into three components, it is difficult to separate the influences of one component from other components. Financial knowledge influences financial skills, whilst financial behaviour depend on financial knowledge, perceived knowledge and financial skills. That is an individual with high financial knowledge will also possess good financial attitudes and behaviours whilst an individual with low financial literacy will also exhibit poor financial attitudes and behaviours. Hung, Parker and Yoong (2009) conceptual model is illustrated in the Figure 15 below.

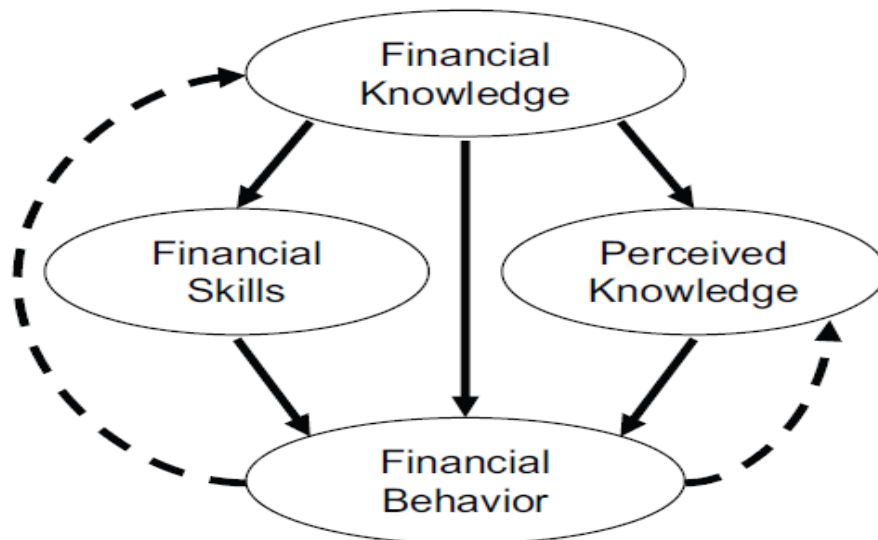


Figure 15: Logical relationships among financial literacy components

Source: Hung, Parker and Yoong (2009)

Considering the propositions of Santini *et al.* (2019) and Hung, Parker and Yoong (2009), and Kadoya and Khan (2017), there is concurrence that financial literacy is multidimensional and should be measured by measured by summing up average scores of financial knowledge, financial attitude and financial behaviour. Behavioural finance propositions that individuals can exhibit irrational behaviours due to some psychological influences support Kadoya and Khan (2017) propositions on measuring financial literacy. Although financial knowledge and financial behaviours are linked, there are two different concepts that should be measured differently because knowledge does not guarantee good behaviours. Sivaramakrishnan *et al.* (2016) established that financial knowledge only develop intentions and the application of these intentions are the ones which influences a certain behaviour as postulated by the theory of planned behaviour. Ajzens theory also propounded that intentions are influenced by person's attitude, subjective norms and perceived control (Ajzen and Kruglanski 2019). Therefore, the need to measure these concepts separately.

Fairfax (2018) concurs that financial literacy is multidimensional which included both the cognitive ability to understand financial concepts and ability to apply the knowledge in financial decision making. However, Fairfax (2018) argues that though there is an inextricable link between financial knowledge and financial behaviour, the author noted that the proxies usually used to measure financial behaviour like overdrawing a credit card and paying debts on time

are problematic and not good measures for sound decision making. He argued that characterising financial decisions as appropriate or inappropriate depends on individual value judgement that may be difficult to measure as one may overdraw personal account to pay a child's college fees. Some financial behaviours may be due to lack of access to products that are deemed more financially appropriate. Due to the above-sited reasons, Fairfax (2018) concluded that the appropriate measure of financial literacy should be a cognitive test, which mainly involves the extent to which an individual understands rudimentary financial and economic concepts. This research disagrees with Fairfax (2018) propositions that measurement of behaviour is difficult to measure as financially literate individuals are expected to save and plan for expected and unexpected future events. Therefore, borrowing and consistent use of the credit cards is a good proxy for financial illiteracy behaviours.

Kadoya and Khan (2017) measured financial literacy by summing up average scores of financial knowledge, financial attitude and financial behaviour. First the authors calculated financial knowledge from individual ability to understand financial calculations related to interest rates, inflation, and risk and return of financial securities. The authors adopted and adapted Lusardi and Mitchell (2014) financial literacy questions to measure financial knowledge. Secondly, the authors measured financial behaviour from questions which investigated individuals' ability to save for emergencies, saving for retirement and making a considered financial service purchase. Financial behaviour was defined as how people utilise financial knowledge and act in financial transactions. Thirdly the authors used questions that measured awareness to financial security as financial attitude proxies. Financial attitude was defined as people's approach to financial issues. The authors postulated a positive relationship between financial knowledge, financial behaviour and financial attitude. Unlike other studies which relates financial literacy to financial knowledge without considering attitudes and the ability to apply the knowledge, Kadoya and Khan (2017). The study considered various forms of financial literacy. OECD (2016, 2018; 2020) also argue that financial literacy is a threefold variable which includes financial attitude, financial knowledge, and financial behaviour.

Lastly, two regression models, the ordinary least squares regression model and the generalized structural equation model in logit (GSEM in logit), were used to explain how demographic, socio-economic factors and knowledge of financial security relate to financial literacy. Four models were used in the regression analysis where (1) the overall financial literacy score was used as the dependent variable, (2) financial knowledge scores, (3) financial attitude scores, and

(4) financial behaviour scores. Independent variables in all the models included employment status, gender, income, age, education, financial information financial assets and financial trouble.

Generalized structural equation model in logit (GSEM in logit) was adopted as a measure to check the robustness of results, the model controlled the possible endogeneity bias in the coefficients. The study considered a score of 0.5 or more as higher financial literacy whilst a score below 0.5 indicated lower financial literacy whilst the dependant variable for the logit regression took the value of 1 for financially literate respondents and 0 for financially illiterate.

Lusardi and Mitchell (2008, 2011; 2014) developed a scale that measured financial literacy. The scale evaluated basic financial literacy and advanced financial literacy. Basic financial literacy questions measured concepts related to; (1) numeracy in making interest compounding and understanding of the concept; (2) knowledge of inflation, and (3) knowledge of stock risk diversification. Advanced financial literacy questions covered understanding of functions of the stock markets, relationship between bond prices and interest rates, knowledge of mutual funds and relationship between risk and return of financial assets.

The construction of the scale was guided by four factors namely simplicity, relevance, brevity, and capacity. Thus the questions were presented in a simple and understandable manner, related to concepts relevant to peoples' general daily financial decisions, were few in number to allow large scale surveys and the questions had capacity to differentiate between those who have an understanding and those who lacked understanding (Lusardi 2019).

Lusardi and Mitchell's (2008, 2011 and 2014) basic financial literacy questions were widely accepted as financial literacy measured and were widely used in international and empirical surveys. The questions were later recognised as the big three financial literacy questions due to widespread application (Lusardi 2019). The questions are presented below.

Question 1

“Suppose you had \$100 in a savings account and the interest rate was 2 percent per year. After 5 years, how much do you think you would have in the account if you left the money to grow: **[more than \$102; exactly \$102; less than \$102; do not know; refuse to answer.]**”

Question 2

“Imagine that the interest rate on your savings account was 1 percent per year and inflation was 2 percent per year. After 1 year, would you be able to buy: [more than, exactly the same as, or **less than today** with the money in this account; do not know; refuse to answer.]”

Question 3

“Do you think that the following statement is true or false? “Buying a single company stock usually provides a safer return than a stock mutual fund.” [true; **false**; do not know; refuse to answer.]” (Lusardi and Mitchell 2008; 2011; 2014; 2019).

This research adopted Lusardi and Mitchell (2008; 2011; 2014) big three questions presented below as measures of basic financial knowledge. The questions were adopted due to (1) simplicity in presentation without use of confusing technical jargon, (2) relevancy to the day-to-day financial literacy decisions and (3) ability to differentiate between those who understand from those who do not understand (4) measurement of numeracy which is a crucial proxy of cognitive abilities. However, other measures will be based on OECD (2016; 2018; 2020) financial literacy questions. Although the questions are measured as financial literacy scale questions, they only measure one component of financial literacy, financial knowledge. The questions were also adopted because knowledge about inflation and its impact on the value of money is crucial for agribusiness entrepreneurs due to inflationary pressures in the country. Knowledge of interest rates was crucial as agribusiness entrepreneurs’ source/borrow finance from various institutions to finance their farming business from time to time. Therefore, financial literacy is crucial for choosing low-cost loans. Lusardi (2020) argues that financially literate individuals borrow at relatively lower cost than the illiterate.

Behrman *et al.* (2012) investigated the relationship between financial literacy and wealth accumulation using basic financial literacy and advanced financial literacy scores related to Lusardi and Mitchell (2014) questions. However, a norm referenced grading system where responses were weighted according to the number of respondents that answered the questions correctly was used. Accordingly greater weight was awarded to answering a question correctly than other respondents answered incorrectly. This, however, does not measure the level of individual financial literacy but how financially literate an individual is in relation to the average population. Ordinary least squares were then used to establish the relationship between financial literacy and wealth accumulation. The study established that there is a positive significant association between financial literacy and wealth accumulation. This concurs with

Lusardi and Mitchell (2014) who established that financial literacy has a positive impact on stock market participation and general wealthy accumulation.

Schmeiser and Seligman (2013) recognised that there are inconsistencies in how respondents answer the same financial literacy questions when asked more than one or when presented differently. Whilst Lusardi and Mitchell (2014) noted guessing of correct answers where options were provided, Lusardi and Mitchell (2014) included the option “I don’t know” and “refuse to say” to allow individuals to select for those options instead of guessing. This research implements Lusardi and Mitchell (2014) strategy of avoiding guessing but will also add a follow up open ended question on concepts where respondents are prone to guess answers.

Feng, Koh, Mitchell and Rohweder (2021) measured the financial literacy and financial decision making of 6573 individuals aged 50+ in Singapore. Financial literacy was measured Lusardi and Mitchell (2014) big three questions which measure interest rate compounding, risk diversification and inflation whilst financial decision making was measured using credit card repayment behaviour, propensity to hold stock and ability to follow expected age investment glide path. Measuring financial literacy using Lusardi and Mitchell (2014) big three questions is inadequate as financial literacy has various forms apart from financial knowledge. Fang *et al.* analysed data using multivariate regressions and descriptive statistics and established that a 92 % of the old population repaid their credit cards in a timely manner, 42% of the older population with net worth above 1000 held shares and followed an age-appropriate investment glide path.

In Zimbabwe, financial behaviours cannot be measured effectively using credit cards as postulated by Feng *et al.* (2021) since people have limited access to credit cards. Credit cards are only available to individuals who earn a steady salary. Agribusiness entrepreneurs earn an income from their business however they do not have a salary and do not have a payslip that is required to borrow or apply for a credit card. Also, measuring financial behaviour by greater propensity to hold a stock is not effective in Zimbabwe due to poor access to the market and the high poverty level in the country. The concepts can only be measured as a financial knowledge concept.

5.3 Global measurement of financial literacy

Low financial literacy is a global challenge (Lusardi 2019). Therefore, apart from micro studies conducted by individual researchers; nations and international organisations also study and measure financial literacy. This section reviews how financial literacy has been measured by international and national organisations.

5.3.1 The Organisation for Economic Co-operation and Development/International Network on Financial Education (INFE) financial literacy survey

OECD (2016) conducted an international survey which measured financial literacy competences of adults between the age of 18-79. Thirty countries were drawn from Africa, Asia, Europe, Australasia, North America and South America, in an international survey of adult financial literacy competencies using the globally recognised OECD/INFE toolkit (Albania, Austria, Belarus, British Virgin Islands, Czech Republic, Estonia, Finland, France Georgia, Hong Kong, China, Hungary, Jordan, Korea, Latvia, Lithuania, Malaysia, the Netherlands, Norway, Poland, the Russian Federation, Thailand, Turkey, South Africa, The United Kingdom and other counties). The OECD/INFE toolkit used to measure financial literacy was initially tested in 2005 and has gone under continuous development and testing and is now an internationally recognised financial literacy survey toolkit (OECD 2016, 2018, 2020). Financial literacy is measured as a combination of three components: financial knowledge, financial behaviour and financial attitude. The table below shows the key competencies measured by the toolkit.

Table 3: Financial literacy key competencies

Key competence	Questions
Financial knowledge	Time value of money
	Interest paid on loan
	Calculation of interest plus principal
	Compounding over 5 years
	Combined simple interest plus compounding
	Risk and return
	Definition of inflation
	Diversification
Financial behaviour	Budgeting: responsible for making day-to-day decisions
	Budgeting: Existence of a budget
	Budgeting: responsible for financial decisions and in a household with a budget
	Active saving
	Making a considered purchase and paying bills on time
	Keeping watch of financial affairs
	Striving to achieve long term goals
	Avoiding borrowing to make ends meet
Financial attitude	Preference to live for today and let tomorrow take care for its self
	Preference to spend money than to save it for long term
	Attitude on spending money

Source: OECD (2016, 2018, 2020)

A financial literacy self-assessment question was also added where individuals were asked to rate their overall knowledge about financial matters with possible responses; very high, quite high, about average, quite low, very high. The study established that there was positive correlation between self-assessed knowledge and the score gained from financial questions scores. The countries which scored high financial literacy scores from financial literacy questions also rated themselves higher than those with low financial literacy. Gustavo *et al.* (2016) argue that a clear distinction should be established between the perception of financial literacy and actual levels of financial literacy, since most people report higher levels of financial literacy due to overconfidence of their level of financial literacy vis a vis their actual knowledge.

The toolkit measured financial knowledge through seven questions which measured concepts related to; time value of money, interest paid on loan, calculation of interest plus principal, compounding over 5 years, combined simple interest plus compounding, risk and return,

definition of inflation and diversification (OECD 2016, 2018, 2020). One point was allocated for each correct answer and zero otherwise.

Behavioural literacy was measured by financial savvy behaviours which were grouped into budgeting, active saving, considered purchase, timely bill payment, keeping watch of financial affairs and long-term goal setting. Specifically, the questions awarded points for responsibility for making day-to-day decisions, existence of a budget, responsibility for financial decisions and in a household with a budget, active saving, making a considered purchase and paying bills on time, keeping watch of financial affairs, striving to achieve long term goals, avoiding borrowing to make ends meet and planning for long term goals. Nine points were allocated for this section (OECD 2016, 2018, 2020).

OECD (2016, 2018, 2020) also measured financial attitude. They argued that even if a person possesses sufficient knowledge and ability to act in a particular way, their attitude will influence their decision of whether to act. Therefore, they measured financial literacy as a combination of awareness, skill, attitude, and behaviour needed to make sound financial decisions and improve financial wellbeing. Financial attitude was measured by three likert scale statements which measure whether an individual strongly agree, agree, neither agree or disagree, disagree, or strongly disagree. The questions measured statements which measured individual preference for living today by spending money to longer term financial planning. (OECD 2016) established that women have positive financial attitudes than man across all participating countries.

The overall score for financial literacy was 21, which is seven for financial knowledge, nine for financial behaviour and five for financial attitude. The minimum score for financial knowledge was 5/7, for financial behaviour was 6/9 and for financial attitude the minimum score was a choice of 4/5 on the five-point scale of the attitude statement. The average scores for financial knowledge, financial behaviour and financial attitudes were averaged for each country and compared.

Results from the 51,650 adults interviewed in 2016 established that the majority of adults were financially literate about the impact of inflation on purchasing power, concept of interest rates and the basic relationship between risk and return. However, across all participating countries calculation of simple interest, compounding and diversification were a challenge (OECD 2016).

These results showed the importance of measuring both basic financial literacy and advanced financial literacy questions since individuals apply a wide range of concepts in decision making.

The toolkit also measured financial utilisation of respondents, to determine the level of financial inclusion. The findings from 125 787 adults interviewed in 2020 survey established that product awareness has improved and was relatively high across all countries however, use of the products was relatively low. Specifically, less than half of the respondents bought a financial product or service. Payment products like the payment card and mobile payment service are the most widely used, while insurance products the least (OECD 2020). Financial literacy was relatively low across all 26 sampled countries. That is, only 53% attained the minimum target financial knowledge score across all individuals, only 49% attained the minimum behavioural score and only 43% attained the minimum attitude score (OECD 2020).

OECD (2020) added the concept of financial resilience in their financial literacy toolkit, they argued that financial resilience is a crucial consequence/output of financial literacy especially considering financial shocks brought by the COVID-19 pandemic. Limited financial resilience was noted, with only one third of surveyed adults having a financial cushion of one week if they lose their main income. Financial stress was common among sampled adults, with the majority worrying about meeting their everyday living expenses (OECD 2020). This could have been exacerbated by the COVI-19 pandemic, which has brought about mandatory business shutdowns and financial loss.

5.4 Strategies for determining financial inclusion level

OECD/INFE (2016, 2018;2020) argued that researchers and policyholders must have information about financial inclusion alongside the measure for financial literacy, as this provides insight on financial consumers' participation and awareness of financial products. To measure the extent of financial inclusion, product holding, product awareness and influences of product choice were measured. Product holding categorised products into holding saving or retirement product; payment product, insurance product and credit product or mortgage. Product awareness was considered the first step of increasing inclusion; however, individuals may be aware of a product without a clear understanding of its purpose (OECD 2016).

Demand side constraints of financial inclusion involve, financial illiteracy, high transaction cost, lack of confidence, low levels of education and low income levels whilst supply side constraints includes, lack of widely accessible branches, information asymmetry, irrelevant financial products and high risk levels (FinScope 2011).

5.5 Components/dimensions of financial literacy

Literature concur that there are three major components of financial literacy, namely; financial knowledge, financial attitude and financial behaviour (OECD 2020, Kadoya and Khan 2020, (Potrich, Vieira and Mendes-Da-Silva 2016). This section explains the three operational dimensions of financial literacy.

5.5.1 Financial behaviour

Financial behaviour commonly refers to actions related to money management. The study of financial behaviour relates to a composite of an individual's actions that determine one's ability to withstand financial shocks and positively influence their current and future financial well-being (Meneau and Moorthy 2021). OECD (2020) prioritises financial savvy behaviours like saving, long term planning, making considered purchase, keeping track of cashflows as crucial components when measuring financial literacy.

Previous studies measured financial literacy through questions that measured numeracy and financial knowledge, however the results were not consistent with financial behaviours as individuals with higher financial literacy/financial knowledge scores exhibited financially illiteracy behaviour, hence, the need for the introduction of financial behaviour as a vital component of financial literacy. A financially literate individual should have the ability to apply individual financial knowledge in financial decision making and also actively participate in financial behaviour savvy activities like saving, budgeting, retirement planning, making a considerate purchase, planning for the future and making ends meets without borrowing (OECD 2020).

According to the lifecycle hypothesis theory, as individual's age, their financial behaviours optimise consumption for both current and future needs. Thereby the middle-aged save and accumulate wealth for future use. Individuals are expected to budget, save for emergencies and

for retirement during their working period. However not all human behaviours are rational and sound (Kahneman and Tversky 1979).

5.5.2 Financial knowledge

Various authors concur that financial knowledge is a crucial component of financial literacy (Bucher-Koenen *et al.* 2016; Lusardi 2019; OECD 2020). Financial knowledge relates to knowledge of basic financial concepts and the ability to apply the knowledge in financial decision making. Financial knowledge also refers to numeracy skills that are usually required in debt and money management. Therefore, measures of financial knowledge involve financial calculations (Lusardi 2019).

Knowledge initiates the other two forms of financial literacy, good financial behaviour, and attitudes, as a result financial knowledge is usually referred as the foundation or cornerstone of financial literacy. Various authors argue that measuring of financial attitudes is subjective whilst that of behaviours use proxies that are not effective, so they measure financial literacy using financial knowledge questions only (Hung, Parker and Yoong 2009; Fairfax 2018).

Financial knowledge helps individuals to compare financial services, navigate financial issues with confidence and make well-informed financial decisions (OECD 2020). Financially knowledgeable individuals can react to financial news and trends happening in financial markets thereby having greater chances of taking advantage of arbitrage opportunities in financial markets.

5.5.3 Financial attitude

Literature has documented that even if an individual has financial knowledge and the ability to apply the knowledge, their attitudes will influence their financial decision (Bhushan and Medury 2014; Kadoya and Khan 2017; Ameliawati and Setiyani 2018). The observation relates to behavioural finance theory which stipulated that financial participants are individuals with emotions, feelings, and attitudes, thereby the need to understand psychological factors.

OECD/INFE Toolkit measure financial attitude by three attitude statements that gauge respondents' attitudes towards long term financial planning and management of finances.

Individuals who show an attitude toward long term use of money are awarded more marks compared to those who prefer to use money for current expenditures (OECD 2020). A Likert scale was used for allocation of marks.

5.6 Determinants of financial literacy

Firli (2017) investigated the factors that influenced financial literacy through a grounded theory qualitative study, where gathered data from selected journal articles were analysed and compared to come up with a comprehensive framework. The study established that there are four major factors that affect financial literacy which are: personal Socio-demographic characteristics, financial knowledge, financial behaviour and lastly financial attitude and financial training as indicated in Figure 16 below.

Firli (2017) grounded theory established that financial literacy differs with age since various studies in developed countries reported low financial literacy among young people as compared to older people. This concurs with Lusardi (2019) who postulated that financial literacy follows an inverted U shaped pattern with the young generation having low financial literacy than the middle aged, however the author further established that the older retired generation also have low financial literacy. Firli (2017) further argued that marital status and income also influence the financial literacy since married people has more motivation to try to accumulate wealth and also individuals with higher incomes are likely to invest in financial products such as pension, insurance and capital market products.

Personal Socio Demographic Characteristics	Financial Knowledge	Financial Behaviour
<ul style="list-style-type: none"> • Age • Gender • Education • Marital Status • Nationality • Income • Personal Level (motivation, online tools, attitude and Volition) • Occupation • Wealth • Qualification • Hopelessness • Religiosity • Parent's education • Parent's occupation • Family member opinion • Workplace activity 	<ul style="list-style-type: none"> • Knowledge about current product and Services • Educational of financial • Basic Knowledge • Money Management • Savings & Investment • Risk Management • Perception & Opinion 	<ul style="list-style-type: none"> • Basic Money Management • Savings behaviour • Investment behaviour • Portfolio and diversification behaviour • Financial participation (bonds, bills, repo, stocks, hedge funds, gold, foreign currency, term deposit and none).
<p style="text-align: center;">Financial Attitude</p> <ul style="list-style-type: none"> • Attitude towards money • Financial responsibility 		<p style="text-align: center;">Financial Training</p> <ul style="list-style-type: none"> • Received training in finance

Figure 16: Financial literacy framework

Source: Firli (2017)

5.6.1 Age

Lusardi, Mitchell and Curto (2014) argue that financial knowledge increases very slowly with age however financial mistakes are most prevalent among the young and the elderly. Lusardi, Mitchell and Curto (2014) further established that older population aged above 50 are not financially sophisticated and fail to comprehend essential aspects of risk diversification, investment fees, asset valuation and portfolio choice. Considering the transformation of retirement policies from employer backed benefit policies to individual contribution policies older population are at higher risk.

Financial literacy follows a humped or inverted U-shaped pattern with lower financial literacy for the young and the older age groups but is at the peak in the middle of a person's life cycle (OECD 2016). Li *et al.* (2015), however, established that cognitive ageing- does not lead to poor financial decision making if the decision maker has developed financial expertise. That is the older generation low financial literacy, lack of financial knowledge which emanated even at their younger age.

Contrasting literature on the effect of age on financial literacy, Ye, Zou, Post, Mo and Young (2022) argue that it is not the chronological age or number of years that affect old people level of financial literacy but the psychological perceived age on individual associates with. Ye *et al.* (2022) study examined how individual age identity measured as the difference between individual perceived age and actual chronological age. The study established that individuals who feel younger were more probable to make financial plans like saving, investing, buying commercial insurance. The psychological feeling also had an impact individual's willingness to pay for elder care insurance.

5.6.2 Gender

Bhushan (2014) explored the determinants of financial literacy of salaried individuals of Himachal Pradesh in India. A total of 516 respondents were selected using multistage and convenience sampling. To measure financial literacy, thirteen questions that measured financial numeracy, borrowings, savings and investments, insurance, risk and return were asked. The study showed that financial literacy of females is lower than that of males. The level of financial literacy was positively related to education and the level of income. That is, financial literacy increases with an increase in education and income level. The study also established a number of salient issues like employees working in urban areas were more financially literate than those working in rural areas and also employees working in non-governmental jobs were more financially literate as compared to those in government jobs.

Bucher-Koenen *et al.* (2017) established that there exists a gender gap in financial literacy across countries. Financial literacy was detected to be severe and widespread among women as women failed to answer most financial knowledge questions than man, and they awarded themselves lower scores on financial literacy self-assessments than men. This gender gap persisted even after considering education, marital status, income and socio-economic characteristics. They further established that women are less likely to seek financial advice to compensate for their lack of financial knowledge. However, women tend to live longer than their male counterparts therefore they need to save, accumulate wealth, and prepare more for retirement (Alessie *et al.* 2021).

In most cases, women are less financially literate than their male counterparts (Lusardi, 2008). Chen and Volpe (2002) argue that compared to men, women have a burden of raising families and are less willing to learn personal financial management concepts. The author established that women were less knowledgeable about personal finance compared to men.

Gustavo *et al.* (2016) survey administered questionnaires on a sample of 377 undergraduate and graduate students at Mid-Atlantic state university in the US. Lusardi big three related were used to measure actual financial literacy. Both actual and perceived financial literacy was measured. The research established that females has generally low financial literacy than males.

Lusardi (2014) also established that woman display low financial literacy than male counterparts. This is evidenced by the difficulty faced by woman in making financial decisions after the death of the husband. OECD (2016) also established that women had low financial knowledge than man, 61% of man achieved the minimum target score compared to 51% of women across a cross-sectional survey of 30 countries drawn from Asia, Africa, Europe, Australasia, North America, and South America. Lusardi (2018) argued that there are large gender differences in financial knowledge with women most likely to say I do not know to questionnaire questions.

Chambers *et al.* (2019) analysed the effect of gender and parental characteristics on financial knowledge of high school students by using OECD's Programme for International Student Assessment (PISA) secondary data. Multi-level modelling of data from 18 OECD member countries and non-OECD countries were polled together. The study established a significant difference between males and females' financial literacy average scores, indicating the presence of a gender gap favouring males. At the county level, Italy, the United States, New Zealand, Latvia, and Colombia displayed gender gaps favouring male students whilst only Slovak Republic exhibited a gender gap where female students performed better than male students. The study also established that parents have a positive influence on their children education. The study further examined gender gap in financial knowledge within the context of parental characteristics using variables such as mother's level of education, father's level of education and having a mother live in the student's household. Parent's level of education was positively correlated with student's financial knowledge, whilst having a mother live in the students home exhibited the strongest association with students' financial knowledge.

Gender is commonly understood as the manner in which men and woman are biologically and socially constructed from birth and throughout their lives by the family institution and the society in order to adopt female and male identities. Various authors argue that the differences in societal and family roles of men and women could be the major cause of gender differences in financial literacy.

Horna, Kiss and Lenard (2021) argue that gender differences in financial literacy can be a result of differences in preferences and personality traits of women and males. In an experimental study of 1088 high school students in Hungary Horna *et al.* (2021) investigated the existence of gender gaps in personality traits like risk attitudes, trustworthiness, time preference, altruism, competitiveness, trust and cooperation. The study concluded that there exists a gender gap in social preferences like trust, trustworthiness and altruism, where females were found more self-sacrificing/ selfless, but less risk tolerant, less present biased, less trusting, less trustworthy, and generally less competitive than males. These results were consistent even after controlling for individuals age, school grades, cognitive skills and family background. It is uncontested that there exist underlying factors which causes gender differences in literature Due to low financial literacy documented among women, women were the most vulnerable to socio-economic challenges during the COVID-19 pandemic (Sampson *et al.* 2021).

Tinghög *et al.* (2021) further investigated the existence of inbuilt prejudices of gender on finance. The authors established that financial anxiety of women undermine their performance in tasks involving finance. Financial literacy gender gap has the potential to reduce women's participation in economic activities, financial control within the household, Diffusion of financial knowledge to the next generation and can worsen prevailing social inequalities OECD (2013).

Hung, Yoong and Brown (2012) established that the major causes of gender differences among OECD member countries were related to socioeconomic conditions, women's disadvantaged status in the labour market, traditional gender roles in household decision making, lower access and attainment in education and key differences in the way that men and women process information. The authors established that girls normally have less access to education than boys and if they get a chance to learn they are discriminated to take courses that assist in marriage and not in the labour market. Gender differences were also explained by differences in

opportunities for exposure to financial products especially where man hold exclusive responsibility in financial matters.

5.6.3 Education

Ansong and Gyensare (2012) explored the determinants of university working student's financial literacy at University of Cape coast Ghana. Two hundred and fifty students were randomly selected from both undergraduate and postgraduate students. A correlational research design methodology was adopted to determine the cause-and-effect relationship between various demographic factors and financial literacy. The study established that there is considerable evidence that people who studied economics/ business courses are more likely to be financially knowledgeable.

Lusardi (2014) propounded that individuals with less than high school education had low financial literacy as they faced challenges in computing simple interest and compounding questions whilst majority of those with degrees could answer simple financial literacy questions and risk diversification questions. Contrarily, Norman Norman (2010), in his study to find out the level of financial literacy among accountants revealed that most accountants are not financially literate. He established that of the 67% of the participants in an Australian survey who claimed to understand the concept of compounding only 28% could find the correct answer. Various authors established that education and level of income are the major factors that affect level of financial literacy; however, Norman established that educated consumers with high income can just be ignorant as less educated lower income earners.

Wegner (2019) used the 2015 National financial capability study data set to analyse the relationship between financial education and financial literacy through an ordered probit model and descriptive statistics. The study established that financial education is positively related to financial literacy scores that is individuals who received financial education at school or at workplaces had statistically higher financial literacy scores compared to individuals who did not receive any form of financial education. This is consistent with previous research (Ansong and Gyensare 2012; Lusardi, Michaud and Mitchell 2017).

OECD (2016) cross-sectional survey of 30 countries among adult entrepreneurs revealed that financial literacy levels were lower in all countries; there were low levels of financial knowledge and numeracy even in developed countries. In a survey of third year University students from Northwest University Louw (2009) established that students lacked financial knowledge in financial planning, banking, taxation, inflation, and interest rates. Final year students who were about to graduate lacked basic financial capability skills except for students from the faculty of economic and management sciences and those who had done a short course in financial literacy. OECD suggested that financial literacy education should be introduced in Universities and School curriculum to build positive financial habits from a young age.

Individuals with less than high school education had low financial literacy as they faced challenges in computing basic financial questions whilst those with degrees could answer simple financial literacy but faced challenges in computing advance financial literacy (Lusardi and Mitchell 2014). Martinez (2016) argues that exposure to a wide variety of business modules does not translate to higher financial literacy, therefore the need to improve financial literacy among college students even for business students.

In the same vein, Oppong-Boakye and Kansanba (2013) surveyed the level of financial literacy of undergraduate business students of Kwame Nkrumah University of Science and Technology Ghana, with a sample of 203 students selected using stratified random sampling. The study concluded that the level of education is crucial in determining the level of financial literacy as accounting, banking and finance students had higher levels of financial literacy compared to students from other courses.

Sreelakshmi (2017) established that financial literacy programs on farmers in Pillu village in Thailand, had a positive influence on awareness and use of financial services like use of savings accounts. However, since services like the automated teller machines were not available in the village and most farmers did not possess smart phones, usage of mobile banking and automated teller machines were not fully explored. The study interviewed 60 farmers who were selected randomly from the Pullu village in Thailand. These results, however, contradict Cole, Sampson and Zia (2009), who established that financial literacy programs had no direct effect on the likelihood of opening a bank savings account in India and Indonesia, but small subsidy payments. However, Cole *et al.* (2009) concurred with the notion that financial literacy is a major predictor of financial services demand. The difference in research results might have

emanated from the nature and content of financial literacy program offered. Sreelakshmi (2017) mainly concentrated on farmers whilst Cole *et al.* (2009) had people from various sectors of the economy. Various authors concur that financial literacy programs have to be specific to a particular target group to be effective.

Jain *et al.* (2022a) employed quantile regression estimates on data collected from 150 employees of the University of Rajasthan, India to investigate the impact of education on financial literacy. The study documented a positive and significant effect of education on financial literacy as employees with post-graduate qualifications were more financially literate compared to the ones with education up to higher secondary. However, the financially literate group mainly exhibited knowledge of basic financial literacy concepts.

5.6.4 Socio-cultural factors

Jorgensen and Savla (2010) investigated the importance of parental socialisation on their children's financial literacy. A sample of 1046 college students was selected from different states in the United States of America and only 420 complete responses were considered for analysis. The study established that perceived financial influence of parents had a direct significant influence on financial attitude and financial behaviour, but it has no effect on financial knowledge.

There is a strong link between financial literacy and socio-economic status, with students from higher socio-economic statuses performing better in financial literacy (Lusardi 2015). Socio economic background was measured by PISA index of social, cultural, and economic status index which is based on parents' education and occupation, the number and type of home possessions and educational resources at home (Lusardi 2015). Ansong and Gyensare (2012) further established that mother's education; age and work experience is positively correlated to sibling's financial literacy competences. Level of study, work location, fathers' education, access to media and source of education were not correlated to financial literacy.

The literature above emphasised the role of parents in improving financial literacy of siblings. Policy makers can consider parental involvement in their financial education programs and also

in improving financial capabilities of women who have a direct impact on children's capabilities (Ansong and Gyensare 2012).

5.6.5 Race

In America certain racial groups like African Americans and Hispanics display low financial literacy than whites Lusardi (2014). In the same vein (Amoah 2016) conducted a cross sectional study focused on African Americans level of financial literacy and established that African Americans display low levels of financial literacy. Thus, there are certain ethnic groups of individuals that are vulnerable to financial inequalities due to financial illiteracy. Research studies based on the transformative research philosophies can assist in investigate financial literacy incompetence's for these group and proposed well informed financial education programs.

5.6.6 Income

Bhushan (2014) conducted a survey among salaried individuals of Himachal Pradesh in India. A sample of 515 respondents were chosen using multistage sampling. A questionnaire that tested for financial numeracy, savings, investments, borrowings, insurance, risk, and return was used. The results showed that there is a significant difference between male financial literacy and female financial literacy, with males scoring better than females. The more the income earned the more was the financial literacy and non-governmental employees have higher financial literacy than government employees. However, there was no significant relationship between age, financial literacy, geographical region, and financial literacy. Financial literacy was generally low among all respondents.

5.6.7 Geographical location

Ramos-Hernández et al (2020) conducted a comparative descriptive analysis of the level of financial literacy between college students in Mexico and Columbia. Variables for measuring financial literacy included knowledge on; retirement planning, inflation, numeracy, insurance credit, saving, investment and risk diversification. 224 college students from Mexico and Columbia were selected. Students from both countries exhibited low levels of financial literacy

(81%). However, concerning risk diversification, credit and numeracy, Columbian students scored higher than Mexican students. Country of origin or geographical location had an impact on the level of financial literacy of individuals.

Firli (2017) further argued that individuals in developed countries are more financially literate than people in undeveloped countries as they still need to develop the country physical infrastructure, financial markets, educational system and therefore less exposure and lower financial literacy.

5.6.8 Cognitive ability

Cognitive abilities can explain differences in the level of financial literacy of individuals. Tang (2021) argues that an individual cognitive ability influences information processing, memory function, problem solving ability and mathematical skills. These skills are vital skills when dealing with financial matters. Tang (2021) further argues that cognitive abilities have an impact on individual's self-efficacy, which affects individual belief/ confidence to control and influence financial matters. Through an investigation of the effect of cognitive abilities on financial behaviour among older adults in United States of America, Tang (2021) established that individuals with higher cognition scores achieved better financial outcomes whilst lower cognitive abilities decreased individual's sense of self-efficacy, which, resultantly decreased financial management efficiency. This argument explains the financial literacy gap among the young and the older population, as generally cognitive abilities develop in childhood and decrease in old age.

Agarwal *et al.* (2009), argued that there exist inconclusive effects of cognitive ability on financial literacy in literature. Agarwal Agarwal *et al.* (2009) documented an inverted u-shaped relationship between age and cognitive ability where middle-aged individuals borrowed at lower interest rates and paid fewer fees compared to younger and older adults. The authors argued that experience in financial decision-making rises with age, therefore the young are less experienced in making financial decisions whilst analytical abilities decline with age therefore older population makes a lot of financial mistakes.

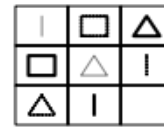
Memory

Study the following words and then write as many as you can remember

Goat
Door
Fish
Desk
Rope
Lake
Boot
Frog
Soup
Mule

Reasoning

Select the best completion of the missing cell in the matrix



Spatial Visualization

Select the object on the right that corresponds to the pattern on the left



Perceptual Speed

Classify the pairs as same (S) or different (D) as quickly as possible

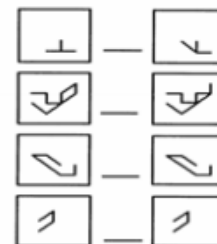


Figure 17: Four tasks used to measure cognitive function

Source: Agarwal et al. (2009)

5.6.9 Family financial socialisation

Zhao and Zhang (2021) established that family financial socialisation by parents to children and other members of the family has a positive impact of financial literacy. Individuals who confirmed that their parents taught them about financial matters, saving and advantages for maintaining a good credit score when they were growing up were more financially literate than their counterparts. The concept of family socialisation relates to social learning and the social financial socialisation theory which states that individuals learn and gain financial knowledge through socialising with family, peers and friends.

5.7 Chapter summary

The chapter reviewed literature on how financial literacy has been operationalised and measured into various elements. There is no consensus on how financial literacy should be measured. The analysis of empirical literature showed a gap in how financial literacy should be

operationalised as different authors tend to use different elements in measuring financial literacy. There is no consensus on the actual elements and questions that should be used to measure financial literacy. However, key components of financial literacy have been identified.

Hence, this study will close that gap by operationalising the measurement and definition of the concept. The study operationalised financial literacy into three dimensions, namely, financial knowledge, financial behaviour, and financial attitude. Elements for measuring financial literacy were identified from empirical international studies.

The chapter also detailed the various factors that caused differences in financial literacy among individuals. Determinants of financial literacy ranges from age, gender, income, level of education among other factors. This study also sought to identify the major determinants of financial literacy among agribusiness entrepreneurs. The next chapter provides the methodology of the research. The methodology explains how this study was conducted.

CHAPTER SIX

RESEARCH METHODOLOGY

6.1 Introduction

A critique, comparison and review of the literature was conducted in the previous chapter. This chapter demonstrates the systematic way the research problem of this study was solved and explains the logic behind the methods and techniques used. Specifically, the chapter provides a detailed account of the research philosophy, research design used to address research questions, sampling methods used to select research participants, data collection instruments used to collect primary data and ethical considerations considered in data collection. Methods used to ensure the validity and reliability of research instruments and data analysis procedures were also described in this chapter.

6.2 Research philosophy

A research philosophy contains important assumptions about the way in which the researcher views the world. Such assumptions determine the research strategy and research methods that can be adopted (Saunders, Lewis and Thornhill 2012). Affecting such philosophical lens of a researcher is usually the epistemology, ontology, and axiology. Therefore, a research philosophy depends on what constitutes acceptable knowledge in the field (epistemology), nature of reality (ontology), and the researcher's value judgments (axiology). Creswell and Creswell (2017) emphasised that research methodologies should be guided by a philosophical lens of the general beliefs that should guide research actions. Philosophy provides a foundation and analytical positions of inquiry that seek to inform research actions.

Creswell and Creswell (2017) argue that a researcher can use four major philosophical world views: positivism, constructivism/interpretivism, transformative and pragmatism. The positivism research philosophy involves adopting a natural scientist approach which involves working with an observable social reality that can be measured using standardised procedures to come up with standardised scientific generalisations. The positivist approach is highly structured and standardised and cannot be used to fully understand human factors like feelings, emotions, and behaviour under the study of financial literacy (Creswell and Clark 2017). The positivist philosophy facilitates replication of procedures and comparability; however, it

imposed structural laws and theories that do not fit all research problems and environments (Creswell and Clark 2017).

In contrast to positivism, the interpretivist/constructivist approach argues that individuals develop subjective meanings of their experiences, these views are considered varied and multiple, therefore, the need for the researcher to look for the complexity of views rather than narrowing meanings into a few categories or ideas. Rather than starting with a theory, inquirers generate or inductively develop a theory from personal, cultural, and historical experiences (Saunders, Lewis and Thornhill 2012).

Amid the positivist and the interpretivist approaches lies the pragmatism approach. Pragmatism posits that the most important determinant of the philosophical lens for research should be the research question under study. One approach could be better compared to the other for answering different questions therefore the need to use various approaches in the study. Pragmatism mirrors the use of mixed methods, where both qualitative and quantitative research methods can be used. Saunders, Lewis and Thornhill (2012) further argue that a researcher should choose a study of his/her interest and value and use different methods which the researcher deems appropriate and use results in ways that can bring about positive consequences within his/ her value system.

This study adopted the pragmatic research philosophy or worldview because pragmatism focuses more on the research problem and the use of all approaches available to understand the problem. There is an external world independent of our minds, hence absolute scientific positivism methods where grounded meaning and truth can be determined were not effective. The study adopted this philosophy as it encourages the application of multiple collection approaches, considering the weaknesses of using one method. In this worldview, researchers draw liberally from both quantitative and qualitative assumptions when they engage in research (Creswell and Creswell 2017). The study adopted the philosophy of effectively triangulating qualitative and quantitative research approaches in addressing research questions.

6.3 Research approach

Creswell and Creswell (2017) propound that there are three broad research approaches, namely, quantitative research, qualitative research, and mixed methods. Saunders, Lewis and Thornhill (2012) similarly categorised research approaches into quantitative research, qualitative research, and multi-methods, where multi-methods involve mixed method research, multi-method quantitative and multi-method qualitative.

Quantitative research approach relates to the use of data collection techniques or data analysis procedures that generate or use numerical data while qualitative research approaches involve data collection techniques or procedures that generate or use non-numerical data (Saunders, Lewis and Thornhill 2012). Researchers can, therefore, choose to use a mono method by applying one data collection procedure and techniques or use more than one data collection procedures or techniques or approach.

Mixed methods refer to the collection of both quantitative and qualitative data collection methods and analysis procedures in a research design. The approach can be categorised into sequential research designs, where qualitative and quantitative data techniques are collected one after another or in parallel at the same time (Saunders, Lewis and Thornhill 2012).

The researcher employed mixed methods research design as it provided more opportunities for answering the research questions and increased the validity of the data. The mixed methods paradigm has its roots in the pragmatic worldview where there is concern with application, what works and solutions to problems. Financial literacy of an individual is based on knowledge, behaviour and personal attitude. To assess these concepts, both subjective personal and quantitative financial capabilities should be studied. Previous quantitative financial literacy studies in literature experienced biases in terms of guessing of answers given answer options; thereby producing noisy false analysis on the level of financial literacy (Norman 2010; Lusardi, Michaud and Mitchell 2017). Therefore, quantitative methods where options are provided were supplemented with open ended unstructured questions.

Consequently, to avoid guessing of answers where options are provided, the researcher added a follow-up open-ended question, where research respondents were expected to explain their financial knowledge or financial behaviours. For example, where a responded was asked if s/he

has been saving for the past two years, instead of providing a yes or no option only, a follow up question to explain where the money has been saved was added. This study employed both open-ended and closed-ended questions to avoid guessing and awarding of scores ineffectively. Follow up interviews were also conducted among Agricultural Technical and Extension Services (AGRITEX) officers. Table 4 below provides justification for using mixed methods approach.

Table 4: Justification for using mixed methods.

Avoid guessing of answers from closed ended question choices	Lusardi (2015)
Triangulation for greater validity	Creswell and Creswell (2017)
Complexity of the research problem (measuring financial literacy is complex and therefore require clear assurance that the responded answered the question honestly)	Bryman (2006)
Quantitative methods not adequate in explaining human behaviour	Saunders, Lewis and Thornhill (2012)
Need for more detailed explanation and illustration of examined concepts.	Creswell and Clark (2017)
Complementarity of methods	Creswell and Clark (2017)
Completeness of collected information by providing a more comprehensive analysis	Creswell and Clark (2017)
More opportunities for answering the research questions	Saunders, Lewis and Thornhill (2012)
Explore/ extract new information (financial needs of agribusiness entrepreneurs)	Creswell and Clark (2017)
Enhancing credibility and integrity of research findings	Creswell and Clark (2017)

Source: Authors compilation (2022)

6.4 Research design

Research designs are procedures for gathering, analysing, interpreting and reporting data in research (Creswell and Clark 2017), it refers to the general plan of how the research questions are answered (Saunders, Lewis and Thornhill 2012). There are five major types of mixed methods research designs: the convergent parallel design, the explanatory sequential research design, the embedded design, the exploratory sequential design and transformative research design (Creswell and Clark 2017). The mixed methods research approach looks at many approaches for collecting data thereby giving the researcher freedom of choice rather than subscribing to only one way of data collection (Creswell and Clark 2017).

The convergent parallel design relates to a concurrent collection of quantitative and qualitative data during the same phase of the research process. Data is analysed independently and then mixed during the overall interpretation of results. There is an equal weighting of qualitative and quantitative methods. Whilst the explanatory sequential research design is a two-phase research design where the researcher collects and analyses quantitative data first, followed by subsequent collection and analysis of qualitative data. The follow up qualitative phase is implemented to explain the results of the first phase in more depth or to provide additional explanation to quantitative research findings. Figure 18 shows the phases of an explanatory sequential research design (Creswell and Clark 2017).

Unlike explanatory sequential design, exploratory sequential design occurs where qualitative data is collected and analysed first to explore a phenomenon then building of the qualitative exploratory results, the researcher conducts a follow up quantitative phase to generalise initial findings. Qualitative data is weighted more in this method (Creswell and Clark 2017)

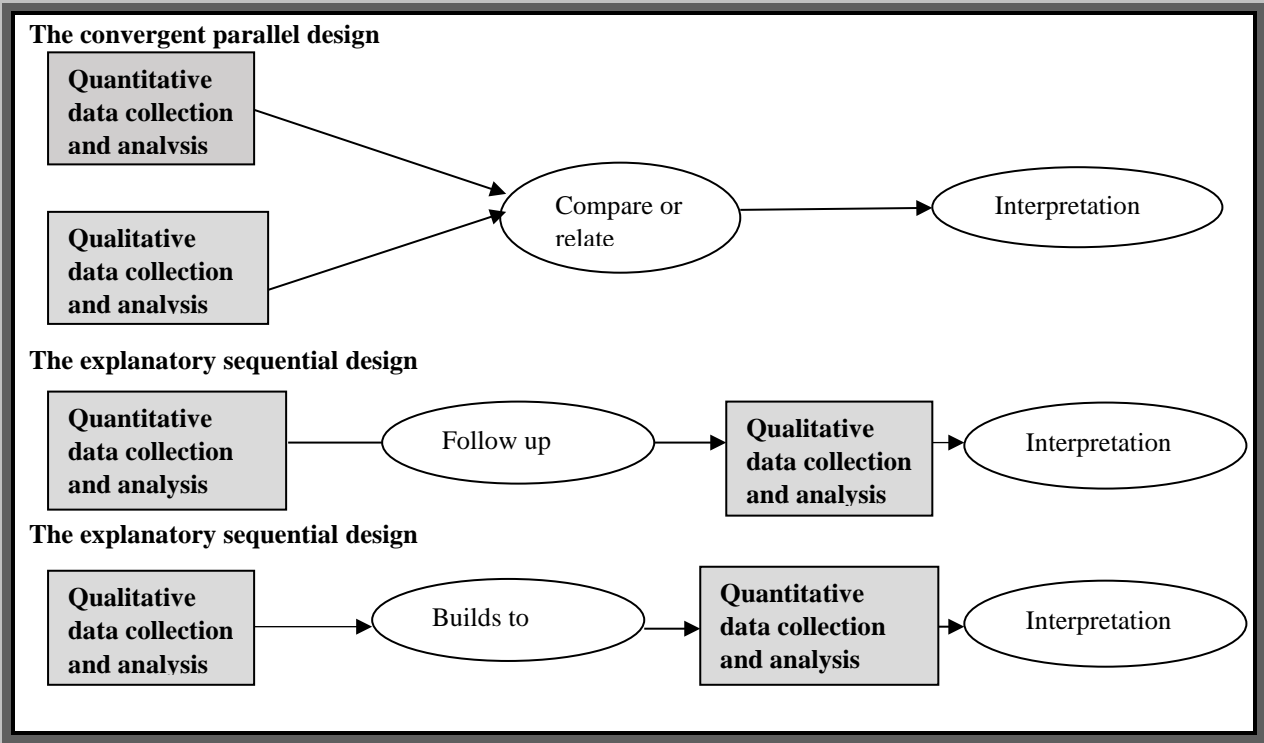


Figure 18: Convergent parallel, explanatory, and exploratory sequential designs

Source: Creswell and Clark (2017)

Transformative mixed methods design occurs when a researcher employs the transformative theoretical framework to collect both qualitative and quantitative data in different phases. The

transformative theoretical framework asserts that the needs of the marginalised populations are usually under presented and undermined, therefore, the need for a sensitive/ unique approach to special population. The research is 4conducted with the aim of improving social justice of the special population (Creswell and Clark 2017).

Finally, the embedded design is employed when the researcher embedded a qualitative strand within a traditional quantitative study or adds a quantitative strand within a traditionally qualitative study. The methodology is applicable where the research questions require different types of data and where the researcher has identified emergent issues in the primary strand which need to be clarified using a different methodology. The timing of adding the strand could be before, during or after the primary strand depending on the reason for adding the supplementary data. Figure 19 presents the embedded and the transformative research designs (Creswell and Clark 2017)

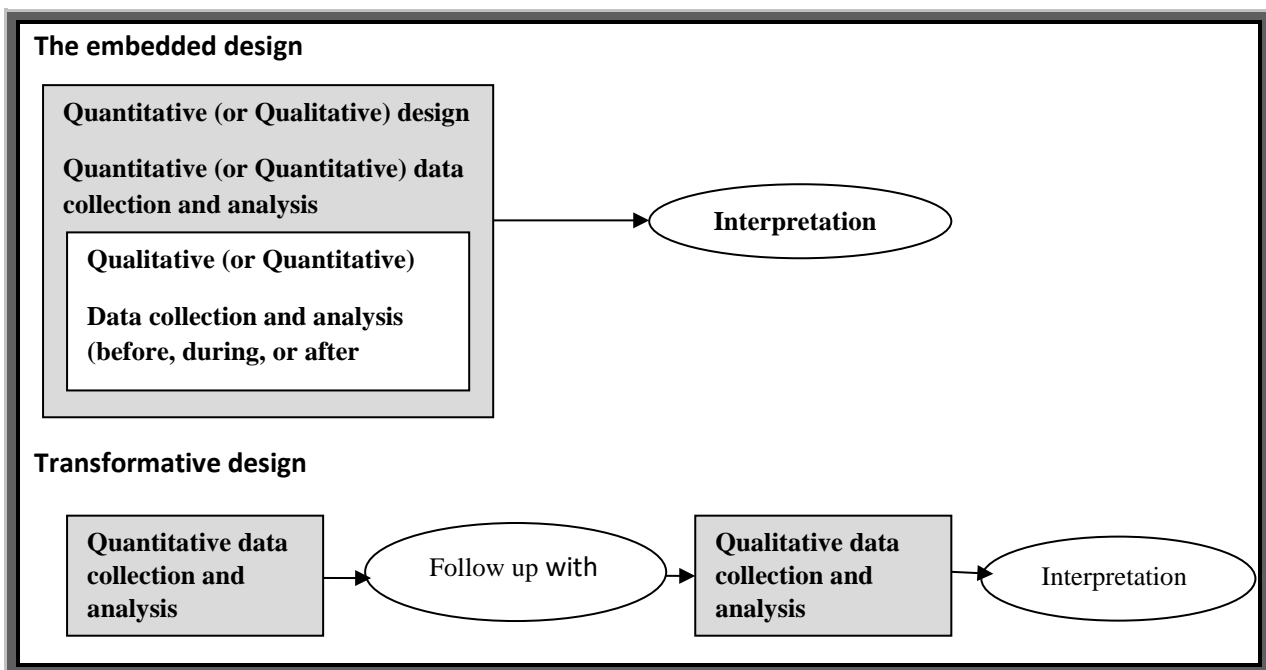


Figure 19: Embedded and transformative research designs

Source: Creswell and Clark (2017)

The researcher employed the explanatory sequential research design. First quantitative data was collected using a structured questionnaire among agribusiness entrepreneurs. The questionnaire collected data relating to all the research questions under study and this data from the questionnaire had more weighting in the study. The level of financial knowledge, financial

attitude, financial behaviours, financial literacy, and the factors affecting the level of financial literacy of agribusiness entrepreneurs was determined from closed-ended questions in a questionnaire however, a few open-ended questions were added to ensure the validity of selected options to avoid guessing of answers. Second, the researcher conducted follow-up semi-structured face to face interviews with 6 AGRITEX officers. Interviews were conducted to confirm and explain quantitative research finding results. Triangulating data sources resulted in merging database to reinforce each other. The researcher gave more weighting to quantitative data in terms of weighting and mixing. Data was collected and analysed independently and mixed in the interpretation of results.

6.5 Research questions

This section explains how the research questions were addressed through qualitative and quantitative methods. Literature documented low levels of financial literacy worldwide (Lusardi and Mitchell 2014, OECD 2016). Considering the higher loan default rates observed in the Zimbabwean agribusiness sector, this study sought to investigate on the following research questions.

1. What is the level of financial knowledge of agribusiness entrepreneurs?
2. How are the agribusiness entrepreneurs financially behaving?
3. Which factors influence the financial literacy of entrepreneurs in agribusiness?
4. What are the financial service preferences of agribusiness entrepreneurs?

First, the researcher measured financial knowledge, financial attitudes and financial behaviours of agribusiness entrepreneurs through a semi-structured questionnaire with both open and closed-ended questions. The level of financial literacy was determined by adding financial knowledge scores, financial attitude scores and financial behaviour scores. A financially literate person was considered as an individual who scores 70% of the questions correctly (OECD 2020). Open-ended questions were mainly used to reinforce quantitative choice made by the respondents to avoid guessing of answers.

The questionnaire also gathered data on socio-demographic factors of respondents and investigated the influence of these factors on the level of financial literacy of respondents.

Ordinary least squares regression analysis was conducted to investigate the influence of different socio demographic factors on financial literacy.

Considering that agribusiness entrepreneurs are highly excluded and there have been a disassociation between the financial services provided by financial institutions and the services needed by agribusiness entrepreneurs (Masiyandima *et al.* 2011), this research, therefore, sought to explore on the financial services actually demanded by agribusiness entrepreneurs. Information on financial needs was investigated through an open-ended question in the questionnaire.

Finally, the researcher conducted interviews with AGRITEX officers to validate and to provide their view on the examined concepts. AGRITEX officers are involved in the daily farming activities and training of agribusiness farmers therefore their contribution was crucial for this research.

6.6 Population and sample size

Research population refers to the complete set of cases from which a sample is selected (Saunders *et al.* 2012). Consequently, a sampling frame is the complete list of all the cases in population from which a sample is selected. In Zimbabwe most of the population (70%) survives on agriculture related activities and the Zimbabwean government is working on commercialising all farming activities through AGRITEX. However, the population of all agribusiness entrepreneurs was unknown, and thus the need for this research to consider registered farmers who own farms as the population of this study.

There was no comprehensive database for farmers at the Ministry of Lands, and the approximate population of farmers was obtained from Ministry of Lands, Agriculture, Fisheries and Rural Settlement policy document and the survey of (Scoones *et al.* 2011). According to Scoones *et al.* (2011) and Ministry of Lands, Agriculture, Fisheries and Rural Settlement (2018) there are 1 304 500 large- and small-scale registered farmers in Zimbabwe. The Ministry of Lands, Agriculture, Fisheries and Rural Settlement is currently conducting a land audit of land ownership and distribution in the country to determine an accurate and recent statistics about farmers in Zimbabwe. However, by the time this research was being conducted, the audit was still in progress, and the data was not yet available.

Agribusiness entrepreneurs are dispersed across sixty-two agricultural districts, hence the need for selecting a sample. The research targeted agribusiness farmers from five districts selected through multistage random sampling namely Mutare, Mt Darwin, Mutoko, Gweru and Masvingo. The available updated sampling frame from AGRITEX had 28707 farmers in Mutare, 25704 farmers in Mt Darwin, 39310 farmers in Mutoko, 29600 farmers in Gweru and 48900 farmers in Masvingo. AGRITEX is a government organisation which offers agricultural training and extension services to farmers throughout the country and their data base for farmer was reliable and up to date since they work with farmers daily.

To determine the sample size various sample determination formulas and statistical concepts were considered. First, the Cochran (1977) formulas were considered, however, the formulas are more suitable where (1) the population size is unknown and the population proportion is known and (2) where the population proportion and population mean are unknown (Chaokromthong and Sintao 2021). The population of the five selected districts was based on current data from AGRITEX. Krejcie and Morgan (1970) sample determination formulas and Yamane and Taro sample sizes were also considered for their effectiveness with large and finite populations, however, their sample sizes are generally restricted to sample sizes below 400 (Chaokromthong and Sintao 2021). Literature documents that sample size formulae should be dependent on the sampling method, approved standard deviation, distribution of population and the desired standard error. Although the population size of the five selected districts was known little to nothing was known about the population distribution. The Slovin formulae, which relate Yamane's (1967) sample size formulae, work effectively where little is known about the distribution and behaviour of a population. Hence this study adopted the Slovin (1960) sampling formulae because the population size was known but little was known about the distribution and behaviour of the population under consideration. The formulae have a tolerant margin of error and works effectively with a survey research approach and multivariate research with multiple regressions (Chaokromthong and Sintao 2021).

The total population from the five selected districts was 172221 ($28707+25704+39310+29600+48900$) and the sample size was calculated using the Slovin (1960) sample size formulae. The formula relates to other methods used in empirical literature, for example, the Bukhari's (1979) sample size formulae, Fowler (2009) and Yamane's (1967) sample size formulae.

Slovin (1960) formula states that $n = N/(1 + N (e^2))$

Where: n is the sample size,

N is the population of the study and

e is the margin of error to be decided by the researcher.

Considering a margin of error of 4% (Bukhari 1979) the sample size of this study was calculated as

$$\begin{aligned}n &= 172226 / (1 + 172226 * 0.04^2) \\ &= 622.74 \\ &= 623\end{aligned}$$

6.7 Sampling technique

Sampling techniques are commonly categorised into probability or non-probability sampling categories. In probability sampling, every individual in the population has an equal chance or probability of being selected as sample subjects (Sekaran and Bougie 2019). Whilst in non-probability sampling there is no predetermined chance of being selected as subjects. Probability methods ensures that the sample chosen will have the same composition and characteristics as the universe (Kothari 2004) and allow wider generalisability of research findings. Examples of probability sampling techniques includes simple random sampling, stratified random sampling and cluster sampling (multi-stage sampling) whilst non-probability sampling includes quota sampling, purposive sampling, self-selection sampling and convenience sampling techniques (Saunders, Lewis and Thornhill 2012).

The choice of sampling techniques generally depends on research questions/objectives, available sampling frame, size of sample needed, population spread, need for face-to-face contact with respondents and likelihood of sample being representative of the total population among other reasons (Saunders, Lewis and Thornhill 2012). This research used the multistage cluster sampling technique since the population of agribusiness farmers was very large and diverse. Multistage cluster sampling involves taking a series of randomly selected cluster samples from geographically demarcated groupings. Selecting clusters randomly from geographical demarcations makes multistage cluster sampling a probability sampling. The sampling frame of this method usually involves a complete list of clusters rather than a complete list of individual cases within the population (Saunders, Lewis and Thornhill 2012).

First, in stage 1, cluster area sampling was used to subdivide the population into clusters, according to Zimbabwe agricultural regions. There are five agricultural regions in Zimbabwe, therefore, the research population was subdivided into five clusters namely Region I, Region II, Region III, Region IV and Region V. Districts that fall in the five respective regions were identified for consideration. A total of sixty 62 districts were identified, however, districts in Harare and Bulawayo Metropolitan Provinces were regarded as urban cities, therefore there were excluded from agriculture provinces sampling frame provided by AGRITEX. Demarcating the research population using these regions was crucial as agricultural activities in the country varies with the weather conditions of the area. Region I and II receives relatively high amounts of rainfall compared to other regions in the country. Figure 20 below shows the different agricultural regions and their characteristics.

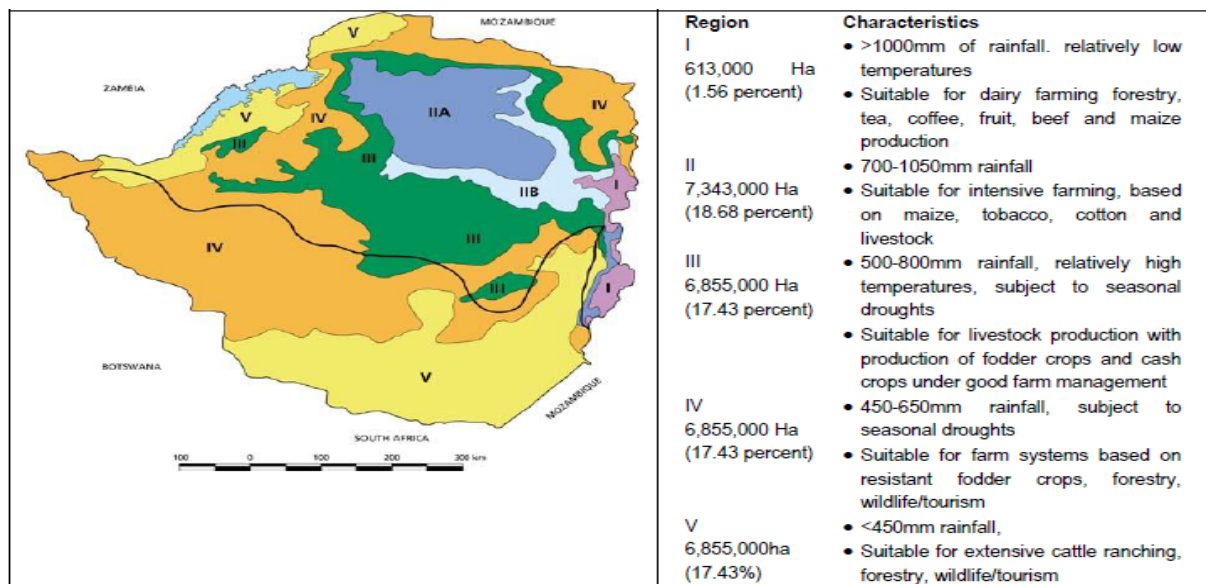


Figure 20: Description of the Natural regions of Zimbabwe

Source: ZEPARU (2018)

In stage 2, five districts in each agricultural region were identified and grouped. One district/stratum was then randomly selected from the five clusters using simple random sampling. Simple random sampling was used due to the availability of a list of all the agricultural districts in Zimbabwe. Mutare District with 28 707 farmers was selected for region 1 strata, Mt-Darwin District was selected for region 11 strata, Mutoko District with 25 704 farmers was selected for Region III strata, Gweru District with 29600 farmers was selected for Region IV strata whilst Masvingo District with 48 900 farmers was selected for Region V strata.

To allocate the sample size from each stratum the method of proportional allocation was used where the size of the sample from different stratus will be proportional to the size of the strata (Kumar 2018). The procedure for calculating the number of elements to be selected for each stratum.

$$\text{Number of elements per stratum} = \frac{\text{elements in each stratum}}{\text{Total population size}} * \text{sample size}$$

$$\text{Stratum I (Mutare)} = (28\,707/172\,221)*623= 104$$

$$\text{Stratum II (Mt-Darwin)} = (25\,704/172\,221)* 623= 93$$

$$\text{Stratum III (Mutoko)} = (39\,310/172\,221)* 623= 142$$

$$\text{Stratum IV (Gweru)} = (29\,600/172\,221)* 623= 107$$

$$\text{Stratum V (Masvingo)} = (48\,900/172\,221)* 623= 177$$

Table 5: Sampling procedure

Region	Districts in the region	Selected district	Selected strata population	Number of questionnaires distributed
Region 1	Buhera, Chipinge, Chimanimani, Makoni, Mutare, Mutasa, Nyanga	Mutare	28 707	104
Region 11	Bindura, Centenary, Guruve, Mazoe, Mbire, Mt Darwin, Rushinga, Shamva	Mt-Darwin	25 704	93
Region III	Chikumba, Whedza, Mudzi, Mutoko, Goromonzi, Marondera, Murehwa, Seke, Uzumbamarambapfungwe, Chegutu, Kadoma, Makonde, Sanyati, Hurungwe, Kariba, Mhondoro ngezi, Zvimba	Mutoko	39 310	142
Region IV	Gokwe North, Gokwe south, Kwekwe, Gweru, Shurugwi, Zvishavane, Mberengwa, Mvuma	Gweru	29 600	107
Region V	Bikita, Chivi, Masvingo, Zaka, Chiredzi, Gutu, Mwenezi, Binga, Bubi, Hwange, Ngai, Umguza, Lupani, Tsholocho Beitbridge, Gwanda, Mangwe, Umzingwane, Ulilima, Insiza, Matopo	Masvingo	48 900	177
Total	62 districts		Total population 172221	622 questionnaires

Source: Authors compilation (2022)

In stage 3; Quota sampling was then used in the selection of the actual research population considering a fair representation of every district. Notices of the dates when the research was to be conducted was put in various AGRITEX District offices. AGRITEX is an arm of the government that provides extension services to farmers across the country. The organisation's agricultural specialist officers distributed across the country have direct daily interaction with farmers in their districts, and their farmer's databases were well updated. Questionnaires were administered physically across the selected districts.

The researcher also sampled AGRITEX officers to be considered for interviews. The target population for the interviews were field officers involved in the daily operations of farmers. There were 69 AGRITEX field officers in Gweru district during the time of the study. Purposive and convenience sampling were used to select 6 field officers for interviews. The respondents were selected using purposive and convenience sampling.

6.8 Measuring instruments

The core objective of this research was to measure financial literacy. Financial literacy, in this study, is defined as a combination of financial knowledge, attitude and behaviour necessary to make sound financial decisions (OECD 2016, 2018, 2020). To achieve this objective, the researcher assessed the financial knowledge, financial behaviour and financial attitudes of agribusiness entrepreneurs using a research questionnaire. The researcher also sought to determine the financial services preferences of agribusiness entrepreneurs and to determine factors affecting agribusiness entrepreneurs' level of financial literacy.

6.8.1 Research questionnaire

First, a research questionnaire was developed. There was a wide range of questions that could be used to assess financial literacy. However, the researcher mainly considered Lusardi's internationally recognised Big three questions of measuring basic financial literacy and the globally recognised financial literacy toolkit developed by the International Network on Financial Education (OECD 2016, 2018, 2020). These instruments are widely acceptable, and their methodologies could be replicated easily. The questions have been adopted by Kadoya and Khan (2017), Feng, Koh, Mitchell and Rohweder (2021), Mutengezanwa (2018) and

Potrich, Vieira and Mendes-Da-Silva (2016). OECD financial literacy toolkit has also been used to measure financial literacy among more than 23 countries in Europe, Asia and Africa for the past seven years. Research questions have been tested and developed repeatedly with international experts in the field.

A questionnaire usually consists of several questions printed or typed in a definite order on a form or set of forms (Kothari 2004). A self-administered questionnaire was developed as the main research instrument, and respondents were expected to complete the form on their own. Although self-administered questionnaires were used as the main data collection instrument to cater for the visually impaired, the old and those with challenges in writing, interview administered questionnaires were also administered using (OECD 2016, 2018, 2020) guideline.

Self-administered questionnaires were employed based on the large size of the respondents, the complexity of the questions, financial implications, easy of automating data, time available and the COVID-19 health guidelines. The sample size of 622 respondents was quite large and the population was dispersed across the five agricultural regions. Therefore, use of questionnaires required less time and research workers during data collection.

6.8.2 Interview guide

A semi structured interview guide was developed according to the objective of the study. The purpose of the interview was to validate quantitative data research findings. The researcher had a list of themes, namely, level of financial literacy; financial behaviours, level of financial knowledge, financial attitudes and financial services/products required.

Semi structures interviews can be used in both explanatory and exploratory studies whilst structured interviews are mainly applicable to explanatory studies and in-depth unstructured interviews are mainly appropriate for exploratory studies (Saunders, Lewis and Thornhill 2012). Semi-structured interview was used to collect explanatory data, that explained the level of financial literacy and financial behaviour of agribusiness entrepreneurs and why they had that level of financial literacy. The length of time required for semi structured interviews was limited, and the interviews were easy to conduct and complete.

6.8.3 The structure of the questionnaire

Both open-ended and closed-ended questions were used to collect a wide range of quantitative and qualitative data and to avoid guessing of answers previously noted by previous authors (Lusardi 2015). The questionnaire was structured following the Durban University of Technology questionnaire structure where a letter of information and consent form are required to accompany research instruments. The questionnaire had five sections, namely, general demographic section, financial knowledge section, financial behaviour section, financial attitude section and the choice of financial products section.

6.8.3.1 General demographic questions

The research investigated socio-demographic characteristics of respondents ranging from gender, age, marital status, level of education, income, children, and adults who live in the household, employees employed by the business, nature of the agribusiness involved in and farm size. Literature indicates that these variables are predictors of financial literacy (Kimiyaqahlam, Safari and Mansori 2019; Lusardi 2019; OECD 2020) therefore, correlation and regression analysis was conducted to further investigate the relationship of these factors with financial literacy.

6.8.3.2 Financial knowledge

Various authors concur that the foundation of financial literacy is acquiring financial knowledge and the ability to apply the knowledge in making well informed financial decisions (Potrich, Vieira and Mendes-Da-Silva 2016). Users of financial services should be able to calculate loans on interest since from time to time, individuals borrow from banks, have knowledge on the effect of inflation on the value of money (Lusardi and Mitchell 2014) and understand risk diversification and various risk and return associated with various financial assets like shares (Lusardi 2019). The study adopted and adapted OECD/INFE Toolkit, which measures financial knowledge based on the time value of money, understanding of interest compounding, simple interest calculation, understanding correctly both simple and compound interest, understanding the definition of inflation and understanding risk diversification. The study also adopted Lusardi internationally recognised big three questions of measuring financial literacy. These questions measure; interest compounding, inflation, and stock

risk/diversification. The questions have been adopted in the United States survey of consumer finances and are widely used in financial literacy surveys (Kadoya and Khan 2017; Mutengezanwa 2018).

The financial knowledge score was created by allocating one score for each question answered correctly and zero for a wrong answer, with the maximum score possible being 10. The questions test the concepts shown by Table 6 below.

Table 6: Financial knowledge questions

	Concept	Author of question
1	Interest compounding	Lusardi (2019)
2	Inflation	Lusardi (2019)
3	Stock risk/diversification	Lusardi (2019)
4	Farming risk diversification	Contribution of the study
5	Risk and return	Lusardi (2019)
6	Asset pricing	Lusardi (2019)
7	Interest on loan	Lusardi (2019)
8	Tax collection	Contribution of the study
9	Hyperinflation	Contribution of the study
10	Time value of money	Contribution of the study

Source: author's compilation (2022)

Measuring of financial literacy should relate to day-to-day financial decisions of individuals (OECD 2018). Therefore, the researcher also adapted some questions to the context of farmers and the Zimbabwean environment. Although knowledge of inflation is vital for entrepreneurs living in Zimbabwe, the knowledge of hyperinflation is of paramount importance as from time-to-time prices of commodities need to be adjusted according to the rate of inflation, usually derived from the parallel rate.

6.8.3.3 Financial behaviour

Financial habits, for example, saving, making considered purchase, paying bills on time, keeping watch of personal financial affairs, avoiding unnecessary borrowing are considered behaviours that individuals need to repeat to be resilient to financial shocks. The study measured financial behaviour by using a variety of questions about prudent financial behaviours as shown in Table 7 below.

Table 7: Financial behaviour questions

	Concept measured	Author
1	Taking an individual control of financial decision making.	OECD/INFE (2018, 2020)
2	Budgeting and keeping track of cash flows	OECD/INFE (2018)
3	Active saving	OECD/INFE (2018, 2020)
4	Paying debts on time	OECD/INFE (2018, 2020)
5	Avoiding borrowing to make ends meet	OECD/INFE (2018, 2020)
6	Planning for long term goals	OECD/INFE (2018, 2020)
7	Retirement planning	OECD/INFE (2018, 2020). Retirement is usually associated with formal employment; therefore, the question was adjusted to suite agribusiness farmers work
8	Financial resilience	OECD/INFE (2018, 2020). Question adjusted to suite agribusiness farmers' nature of work.

Source: Authors' compilation (2022)

6.8.3.4 Financial attitude

Financial attitude questions were adopted from OECD (2016, 2018, 2020) and measured attitudes toward long term planning and saving of money against spending for the short term. These concepts are explained in the next chapter. Table 8 shows financial attitude questions.

Table 8: Financial attitude questions

Ques tion	Text	Responses	Notes
AT1	I find it more satisfying to spend money than to save it for the long term	5 point scale 1= Strongly agree	These questions were originally included in OECD (2018) financial literacy scale and indicate whether the respondent focuses exclusively on the short term (agrees) or has a preference for longer-term security (disagrees)
AT3	Money is there to be spent	5=Strongly disagree.	
AT4	I tend to live for today and let tomorrow take care of itself		
AT7	Government loans should not be paid back, because it is the responsibility of the government to support agribusiness.	5 point scale 1= Strongly agree 5= Strongly disagree.	
AT8	I divert a portion of business loans for personal use		These questions were added by the researcher based on observed financial illiteracy attitudes of agribusiness entrepreneurs in Zimbabwe. The questions measures willingness to repay government loans and proper use of agribusiness loans.

Source: Authors compilation (2022)

6.8.3.5 Choice of financial products and financial service preferences

Choice of financial products and financial service preferences section focus on the nature of financial products currently held by agribusiness entrepreneurs and the factors that affected the choice of the services. Financial products were categorised into payments products, savings products, insurance products, investment and retirement products (OECD 2020) as shown by table 9.

Table 9: Financial products

Financial product category	Types of financial product	
Payment products	Current account, mobile money (Ecocash, onemoney/textacash)	These are financial products used mainly to receive payments and make a purchase
Savings product	Savings account	Savings account specifically meant to deposit money saved for future purposes
Investment and retirement product	Company shares, financial bonds, pension funds	Included investment if financial and retirement products
Credit products	An unsecured bank loan, a secured bank loan and a microfinance loan.	Included any formal bank loan or microfinance loan
Insurance products	Insurance	Included any form of insurance product, health, funeral, personal liability or home insurance)

Source: Authors compilation (2022)

The questions in table 9 explore the nature of financial products demanded by these agribusiness entrepreneurs for their daily business needs by asking the respondents to explain the nature of financial services/products they require/recommend. An open-ended question was used since the information was being explored for the first time. Reviewed literature documented higher levels of financial exclusion among agribusiness entrepreneurs (Masiyandima, Chigumira and Bara 2011) and the rural population (FinScope 2011), there could be a mismatch between the financial products offered by banks and the financial services required for the sector due to its seasonal nature.

The questions also explored the financial experiences of agribusiness entrepreneurs in relation to financial fraud, financial service problems or refusal to open an account. Literature documents that users of financial services should be able to use financial services without losing money to scams and bogus investments avenues and should know their rights as users of financial services (OECD 2020). The following set of questions adopted and adapted from (OECD 2018) were used;

Table 10: Financial experiences

	Yes	No	Prefer not to say
Have you accepted advice to invest in a financial product that you later found to be a scam, such as a <pyramid> scheme?			
Have you accidentally provided financial information in response to an email or phone call that you later found out was not genuine?			
Have you discovered that someone has used your <card> details to pay for goods without your authorisation?			
Have you queried a transaction listed on your bank or credit card statement that you did not recognise?			
Have you made a formal complaint about the service you have received from a bank or other financial institution?			
Have you tried to open a bank account and been refused for any reason?			
Have you been refused a claim on an insurance product that you expected to cover you?			
Have you complained to a remittance provider about high charges when sending or receiving money?			
Have you lost money as a result of hackers or phishing scams?			

Source: OECD (2018, 2020)

Financial literacy self-assessment was also investigated in this last section, where respondents were asked to rate their level of financial literacy. Lusardi and Mitchell (2014) documents a relationship between measured financial literacy and self-assessed financial literacy. Individuals with low financial literacy usually rate themselves low when asked to rate themselves (Lusardi and Mitchell 2014; Lusardi, Michaud and Mitchell 2017; OECD 2020).

6.9 Financial literacy score

The research sought to measure the level of financial literacy of agribusiness entrepreneurs in Zimbabwe. Financial literacy is defined as a combination of awareness, knowledge, skill, attitude, and behaviour necessary to make sound financial decisions and ultimately achieve financial wellbeing. The financial literacy score was derived from questions that measured three key financial literacy concepts discussed in the sections above, namely, (1) Financial knowledge, (2) Financial behaviour and (3) Financial attitude. The financial literacy score was computed as the sum of all scores divided by the total score and weighted as a percentage as

shown in the equation below. Ten (10) scores were assigned to ten (10) questions that tested financial knowledge, eight (8) scores were awarded to financial behaviour eight questions and five (5) scores were awarded to questions that test financial attitude. However, 2 financial attitude questions were removed from the financial attitude construct due to low factor loading. The scores were calculated using the methodology explained OECD (2016, 2018, 2020) and Lusardi and Mitchell (2014).

The table below shows how the financial literacy scores were awarded. Descriptive statistics such as mean, mode and standard deviation of weighted scores were computed for analysis.

Financial knowledge score in this study takes a arrange of 0 to 10,

Financial behaviour (takes a range of 0 to 8)

Financial attitude (takes a range of 0 to 5)

Total score (takes range of 0 to 23)

$$FLS = \frac{\text{Financial knowledge score} + \text{Financial behaviour score} + \text{Financial attitude score}}{\text{Total scores}} * 100$$

Table 11: Financial literacy score

Concept measured		Value towards score
Financial knowledge		
FK1	Interest compounding	1 point for respondents who choose the correct answer, 0 in all other cases
FK2	Inflation	1 point for respondents who choose the correct answer, 0 in all other cases
FK3	Stock risk/diversification	1 point for respondents who choose the correct answer, 0 in all other cases
FK4	Farming risk diversification	1 point for respondents who choose the correct answer, 0 in all other cases
FK5	Risk and return	1 point for respondents who choose the correct answer, 0 in all other cases
FK6	Asset pricing	1 point for respondents who choose the correct answer, 0 in all other cases
FK7	Interest on loan	1 point for respondents who choose the correct answer, 0 in all other cases
FK8	Tax collection	1 point for respondents who choose the correct answer, 0 in all other cases
FK9	Hyperinflation	1 point for correct explanation of concept, 0 in all other cases
FK10	Time value of money	1 point for correct explanation of concept, 0 in all other cases

Financial behaviour		
FB1	Taking an individual control of financial decision making.	1 point for respondents who choose either 1,2 or 3, 0 in other cases
FB2	Budgeting and keeping track of cash flows	1 point for respondents who choose answer 1, 0 in all other cases
FB3	Active saving	1 point for respondents who choose answer 1, and provide adequate explanation in the follow up question, 0 in all other cases
FB4	Paying debts on time	1 point for respondents who choose answer 2, and those with a clear plan for paying outstanding debts, 0 in all other cases
FB5	Avoiding borrowing to make ends meet	1 point for respondents who choose answer 1, 0 in all other cases
FB6	Planning for long term goals	1 point for respondents who choose answer 1 and provide clear explanation of their plans to meet set financial goals, 0 in all other cases
FB7	Retirement planning	1 point for respondents who are actively saving for retirement or with retirement schemes
FB8	Financial resilience	1 point for respondents who could survive for more than 6 months/two seasons without borrowing and money, 0 in all other cases
AT1	I find it more satisfying to spend money than to save it for the long term	1 point for option 4 and 5, 0 in all other cases
AT2	Reverse statement	Not for analysis
AT3	Money is there to be spent	1 point for option 4 and 5, 0 in all other cases
AT4	I tend to live for today and let tomorrow take care of itself	1 point for option 4 and 5, 0 in all other cases
AT5	Reverse statement	Not for analysis
AT6	Reverse statement	Not for analysis
AT7	Government loans should not be paid back, because it is the responsibility of the government to support agribusiness.	1 point for option 4 and 5, 0 in all other cases
AT8	I divert a portion of business loans for personal use	1 point for option 4 and 5, 0 in all other cases

Source: Authors compilation (2022)

6.10 Reliability

Reliability relates to the accuracy and consistency of research instruments across different researchers and projects (Creswell and Creswell 2017). To ensure that the research produces similar scores across various conditions and situations, including different evaluators and testing environments, a pilot study was conducted, research procedure was noted for replication and a Cronbach alpha for the construct was calculated.

6.10.1 Pilot study

To ensure reliability the researcher collected data more than twice through a pilot study under the same or similar conditions to the actual study. Repeated measurements of pilot study participants secured the same and consistent results. Where a slight alteration of a research question resulted in a drastic change of answers the research instrument was simplified and retested. The pilot study was conducted among 50 agribusiness entrepreneurs in Gweru, selected using purposive and convenience sampling. A pilot study of 30 respondents is generally considered viable (Saunders, Lewis and Thornhill 2012). During the pilot study, the researcher noted the processes that should be followed in the distribution and collection of questionnaires. The noted procedures were followed in an identical manner for the results to be compared and to ensure conformability.

Reliability measures the consistency of a scale measurement in producing similar results regardless of change in conditions or situations. Various issues were raised during the pilot study and corrected, for example, the initial questionnaire mentioned about salaries, retirement from work and stocks as adopted from (Lusardi 2019). These issues were adapted to fit agribusiness entrepreneurs' nature of work. Agribusiness entrepreneurs earn income from their farming activities, they believe that there is no retirement in the farming business and in Zimbabwe stocks are commonly named shares.

6.10.2 Expert analysis and Cronbach alpha

The reliability of the financial attitude scale was measured with the Cronbach alpha. The Cronbach alpha for the financial literacy scale with 5 items (FATT1, FATT2, FATT3, FATT4 and FATT5) was 0.572, which was lower than the recommended 0.7 (Pallant, 2014). Though

analysis of the component’s correlations and factor analysis, components with low factor loadings were dropped from the analysis. The scale retained only 3 items in the financial attitude scale with a Cronbach alpha of 0.703 as shown in the Table 12 below. A Cronbach alpha of 0.7 and above is generally acceptable (Pallant, 2014). Table 12 below show the Cronbach alpha value of the scale construct financial attitude. The results indicated that the construct was a reliable measure of financial attitude.

Table 12: Cronbach Alpha

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.693	.703	3

Source: SPSS analysis of primary data (2022)

The financial attitude scale was adopted from OECD (2016, 2018, 2020), the scale mainly measured attitude toward long term financial planning compared to living for today and spending money. The researcher added two more questions which measure the existence of financial illiteracy attitudes that have been observed and posited by various authors in Zimbabwe. It is alleged that agribusiness entrepreneurs misuse agribusiness loans availed through government schemes by diverting the money to personal use and intentionally fail to pay the loans. It is also alleged that even though some are capable of paying loans some agribusiness entrepreneurs are not willing to pay back the loans especially when they know they were funded by the government. This research sought to analyse the existence of this attitude among agribusiness entrepreneurs for the first time.

6.11 Validity

Validity is the degree to which an instrument measures what it is intended to measure (Kothari 2004). To ensure construct validity the researcher determined the extent to which independent variables measured the same thing by conducting a multi-collinearity test. Two variables with high correlation coefficient were removed from the model. Factor analysis was also conducted to check if the statements in the construct of financial attitudes were measuring relatively the same variable.

6.11.1 Content and criterion-related validity

To ensure content validity the researcher used a panel of research specialists to judge how well the measuring instrument meet standards. The researcher triangulated different data sources by examining evidence from both quantitative and qualitative data. Statistical quantitative data scores from the questionnaire were reinforced by confirmatory qualitative data from interviews. Peer debriefing and the use of an external auditor to review the entire research project were also conducted to provide an objective assessment of the project throughout the research.

To ensure criterion-related validity, the researcher used rich and thick descriptions to explain the research procedures and findings such that the research criterion was stable and reproducible. A large sample was recruited to account for any dropouts in the research process. The researcher also spent a prolonged time in the field to establish an in-depth understanding of the phenomenon. Factor analysis scores were also compared with scores from the OECD (2018) research.

6.11.2 Construct validity

Construct validity testifies how well the results obtained from the use of the measure fit the theories around which the test is designed. The study used statistical factor analysis to test the validity of one financial attitude construct in the study. Factor analysis measure the intercorrelations of a set of variables in a construct. Five items of the financial attitude scale were subjected to principal components analysis (PCA) using IBM SPSS version 27 to check if all five items were measuring the concept of financial attitude. Prior to conducting PCA, the suitability of the data for factor analysis was assessed using the Kaiser-Meyer-Olkin and Bartlett's Test of Sphericity and the correlation matrix. The inspection of the correlation matrix revealed the presence of many coefficients of 0.3 and above whilst the Kaiser-Meyer-Olkin value was 0.69, exceeding the recommended value of 0.6 (Kaiser 1970, 1974). The Bartlett's Test of Sphericity (Tobias and Carlson 1969) reached statistical significance of less than 0.05. Table 13 show the KMO and Bartlett test of sphericity which test if factor analysis is suitable for analysis. The test is an important diagnostic test before conducting factor analysis. The test was

statistically significant at $p < .05$ and the Kaiser-Meyer-Olkin value was above 0.6 (Pallant 2012). Thus, the researcher proceeded to conduct factor analysis.

Table 13: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.691
Bartlett's Test of Sphericity	Approx. Chi-Square	286.545
	Df	10
	Sig.	0.0001

Source: SPSS analysis of primary data (2022)

Principal components analysis summaries data by grouping variables with common variance and test whether the proposed measured items load well in their respective construct. Principal component analysis revealed the presence of two components with eigenvalues exceeding 1, explaining 40.610% and 22.378% of the variance respectively as shown in the table below. According to Kaiser-Guttman rule-of-thumb, Eigenvalues greater than one (1) has the potential to form a unique factor. Table 14 below show the results of the principal component analysis.

Table 14: Total variance explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings	
	Total	% of Variance	Cumulative %	Total	% of Variance
1	2.031	40.610	40.610	2.031	40.610
2	1.119	22.378	62.988	1.119	22.378
3	.753	15.063	78.051		
4	.583	11.665	89.716		
5	.514	10.284	100.000		

Source: SPSS analysis of primary data (2022)

Table 14 shows that component one and two have the greatest significant in measuring the financial attitude. The study, thus, adopted the first two items with eagles' values above one in the construct of financial attitude. However, an inspection of the scree plot revealed that there was no clear break after the second component as shown in Figure 21 below.

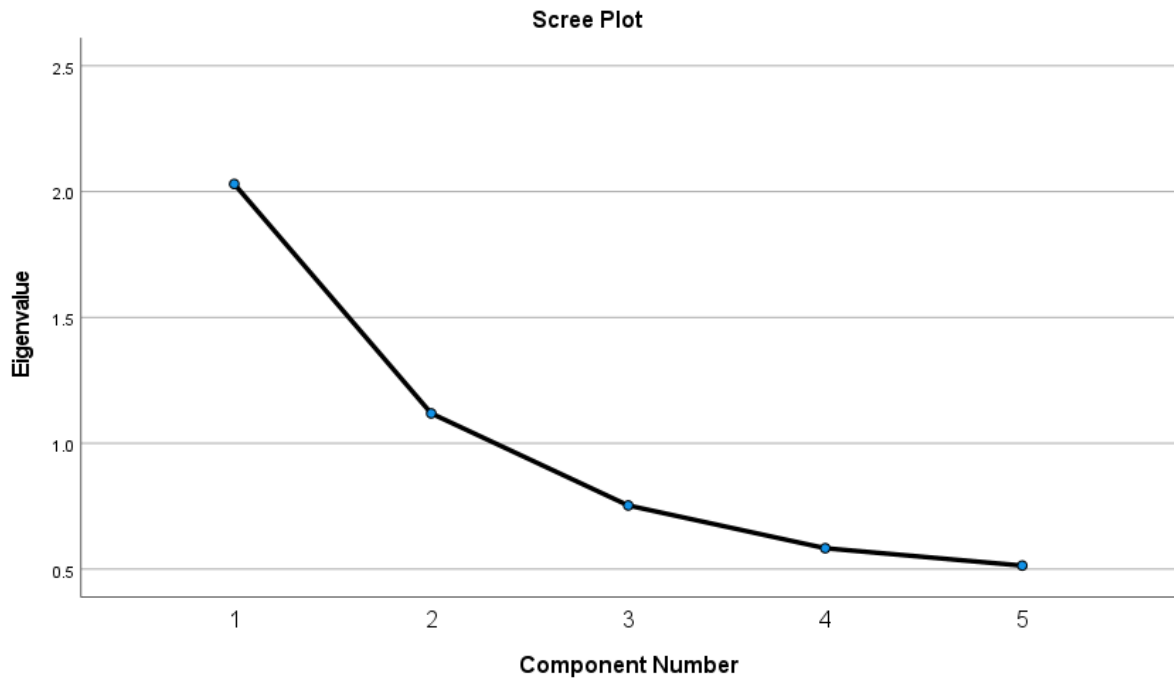


Figure 21: Scree Plot

Source: SPSS analysis of primary data (2022)

Thus, using the Cattell (1988) scree test shown in Figure 21 above, the study will retain the first three components with eigenvalues greater than 1 and the third component with an eigenvalue of 0.753 components for further investigation as there is no clear elbow on the scree plot after component 2. Table 20 below shows the scree plot for the financial attitude construct. The three-component solution explained a total of 78.051% of the variance, with component 1 contributing 40.610%, component 2 contributing 22.378% and component 3 contributing 15.063. Table 15 shows the pattern matrix.

Table 15: Pattern Matrix

Pattern Matrix ^a			Structure Matrix		
	1	2	Component		
				1	2
Financial attitude 1	.807		Financial attitude 1	.796	
Financial attitude 2	.777		Financial attitude 3	.772	
Financial attitude 3	.755		Financial attitude 2	.769	
Financial attitude 5		.881	Financial attitude 5		.855
Financial attitude 4	.347	.592	Financial attitude 4	.420	.634

Source: SPSS analysis of primary data (2022)

The oblimin rotation was also performed to add in the interpretation of the loadings. The rotated solution revealed the presence of simple structure (Pallant 2020), with both components showing several strong loadings and all variables loading substantially on only one component. Which implied that all statements in the constructs we connected and measuring the same concept of financial attitude. The selection of the three components is consistent with previous research by OECD (2016, 2018, 2020) scale, where three components of financial literacy were selected. The three selected item components with high factor loadings are the ones adopted from OECD (2018) financial literacy scale.

The table below shows the original factor loadings from OECD (2018) study. Repeated factor analysis of the extracted three factors showed a good positive correlation among the factors as shown by Table 16 below.

Table 16: Scale components correlation matrix

Correlation Matrix			
	Financial attitude 1	Financial attitude 2	Financial attitude 3
Financial attitude 1	1.000	.438	.470
Financial attitude 2	.438	1.000	.416
Financial attitude 3	.470	.416	1.000

Source: SPSS analysis of primary data (2022)

Although the components were correlated, their correlation factors were below the acceptable range of below 8, reflecting that no one statement in the construct could represent the other.

The principal component analysis results concur with the original OECD (2016) financial attitude component analysis which revealed that the questions shown below are adequate for an international financial attitude scale. Thus, the statements used in measuring financial attitude in this study were also used in an international survey and analysed by experts in the field of finance. Thus, improving the validity and reliability of the construct.

The original OECD (2016) principal component analysis of the financial attitude score scale has factor loadings above 0.6, indicating that they can be used to measure a specific scale. All the three statement (1) I tend to live for today and let tomorrow take care of itself, (2) I find it more satisfying to spend money than to save it for the long term, and (3) Money is there to be spent had significant factor loadings at 0.76, 0.812 and 0.673 respectively. The Kaiser-Meyer-

Olkin (KMO) Measure of sampling Adequacy was 0.612 and Bartlett's Test of Sphericity Significant 0.001 (OECD 2016).

6.11.3 Qualitative data validity and reliability

Lincoln and Guba (1985) differentiate how validity and reliability in qualitative research should be measured from quantitative techniques explained above. The authors argue that reliability and validity in qualitative studies should be represented by ensuring credibility, transferability, dependability and confirmability. Credibility relates to ensuring that qualitative research results are reliable or believable from the research participants whilst transferability refers to the degree to which the results of qualitative research can be generalised or transferred to other contexts or settings (Kumar 2018). Credibility of interview results was ensured by taking the findings of the research back to a few research participants who confirmed that the results were congruent and a true representation of their contributions. Transferability was ensured by extensively and thoroughly describing the research process and methods in order to allow other researchers to follow and replicate.

Dependability relates to whether one could obtain the same results after observing the same thing twice. The researcher to ensure dependability checked for inter-coder agreement by checking if two or more independent coders agreed on codes of same passages text from qualitative information. The researcher also ensured confirmability by standardising the conditions at which the measurement of the research took place and by following research procedures.

6.12 Ethical considerations

The researchers' ethical considerations were guided by the Durban University of Technology (DUT) ethical procedure guideline. Letters of information, consent forms, COVID-19 related procedures, authority from relevant ministries and departments and confidentiality issues were considered in this research.

To ensure voluntary participation, the researcher certified that respondents were made adequately aware of the type of information wanted from them, why the information was

sought, how the respondents were expected to participate in the study and how the research will directly/ indirectly affect them. DUT informed consent form was issued for signing by research participants and at any time the respondents could withdraw from participating in the research. The researcher did not provide any incentive to respondents during the data collection process.

The researcher ensured that the actual names of respondents and information provided by them were protected, by replacing actual names with pseudonyms for individuals and places to protect actual identities (Lincoln and Guba 1985) . Names used in this research for interviewees are pseudonyms. Before conducting the research, the research sought authority from the relevant ministry and authorities in the various districts where data was collected. Due to the link of the research to the achievement of Zimbabwean National Development Goals, relevant authorities awarded the researcher permission to conduct the study.

The researcher added information explaining how the respondents and the researcher were supposed to interact in accordance with COVID-19 health guidelines. Hand-shaking was prohibited during the research process and all participants were mandated to sanitise and wear their masks. Although other businesses operations were restricted during the pandemic, the agricultural sector was regarded as an essential service, therefore, the researcher was able to collect data even during the pandemic (following suggested health guidelines). The researcher was vaccinated before conducting data collection.

6.13 Determinants of financial literacy model specifications

To establish the determinants of financial literacy, the standard multiple regression model (SMR) was used. SMR model dependent variable was represented by financial literate percentage scores whilst independent variables involve age, gender, income, level of income, level of education, farm size, years in business, financial products held and financial services choice.

6.13.1 Model specifications

Regression analysis is concerned with how the average value of the dependent variable varies with the given values of explanatory variables (Gujarathi 2022). It is usually concerned with predicting or estimating the mean value of the dependent variable based on explanatory variables. The linear regression model describes how the dependent variable is related to the explanatory variable(s) and the error term. Where the model has one explanatory variable, simple linear regression is conducted and where there are more than one explanatory variables, a multi-regression model is conducted.

Multiple regression facilitates the predictive power of a set of variables on the dependent variable. The model does not establish a cause-and-effect relationship, but just that there is a relationship and predicts the strength of the relationship between the dependant and explanatory variables. The dependent variable for a linear regression model should be a continuous variable, whilst the independent variables can take any form (Katchova 2013). Linear regression was employed due to its flexibility in accepting continuous, ordinal, and categorical variables as explanatory variables. The dependent variable, financial literacy, was a continuous ratio score.

There are three major types of multiple regression models, namely, the standard or simultaneous multiple regression model (SMR), hierarchical or sequential model (HMR) and the stepwise multiple regression model (Pallant 2020). In the SMR, method all explanatory variables are entered for analysis simultaneously as one block and evaluated according to their predictive power. In the HMR, explanatory variables are entered in the equation in the order specified by the researcher (Pallant 2020). Researchers are usually guided by literature. Prediction is assessed after controlling for other variables. The stepwise model allows the analysis software to select the variables it will enter and the order for entering them into the equation. The ordering is usually based on statistical criterion (Pallant 2020).

The multiple linear regression model is the simplest and widely applied model; however, its weaknesses lie in the wide range of assumptions which might not be fulfilled in other conditions, therefore. The SMR was used to determine factors that affect financial literacy. The use of SMR was selected guided the need to give all factors an equal chance of analysis as one block and based on the satisfying of its 10 assumptions. The following are the assumptions of the MLR model.

- The regression model should be linear in its parameters
- Regressor values should be fixed and non-stochastic
- Zero mean values for random disturbance terms ε
- Homoscedasticity of disturbance error terms
- No autocorrelation between the disturbance error terms
- Zero covariance between the regressors and the random disturbance terms
- Number of observations should be greater than the number of explanatory variables
- Variability in explanatory variables
- The regression model should be correctly specified
- Absence of perfect multi-collinearity between explanatory variables.

The determinants of financial literacy were estimated using the model in equation 9. The purpose of the regression model was to determine the various factors that affect the level of financial literacy of agribusiness entrepreneurs. The form of the regression model employed in this study was adopted from Barbić, Palić and Bahovec (2016) and Kadoya and Khan (2017).

The standard multiple regression model (simultaneous) is as follows:

$$Y = \beta_0 + \beta_1 x_1 + \dots + \beta_i x_i + \varepsilon \quad (9)$$

Where Y is the dependent variable

β_0 - is a constant term.

$\beta_1 \dots + \beta_i$ - represents beta coefficients to be estimated.

$x_1 \dots x_i$ - represents independent variables.

ε - represents the error term factors.

Following equation (9) the model takes the following form:

$$\text{Financial Literacy} = \beta_0 + \beta_1 \text{gender} + \beta_2 \text{age} + \beta_3 \text{marital status} + \beta_4 \text{education} + \beta_5 \text{income} + \beta_6 \text{period in business} + \beta_7 \text{children below 18} + \beta_8 \text{farm size} + \beta_9 \text{financial utilisation} + \beta_{10} \text{financial information} + \varepsilon \quad (10)$$

6.13.2 Explanation of explanatory variables

Literature established that various socio-demographic factors like age (Ye *et al.* 2022) gender (Bucher-Koenen *et al.* 2016; Bucher-Koenen *et al.* 2017; Klapper and Lusardi 2020; Bottazzi 2021), income (Feng *et al.* 2020), level of education (Lusardi, Mitchell and Curto 2014), marital status (Lusardi 2019), financial utilisation (OECD 2020) and financial information (OECD 2020) strongly affect the level of financial literacy of individuals. These variables represented the explanatory variables in the multiple regression model. The variables included sociodemographic factors, family characteristics (Section one of the questionnaire), financial utilisation and financial information as shown in equation (10) above.

Literature generally concurs with the notion that gender affects the level of financial literacy. Various authors documents that men generally have higher levels of financial literacy than women (Potrich, Vieira and Kirch 2018; Tinghög *et al.* 2021). Henceforth this study considered gender as a determinant of financial literacy. Gender was represented by 0 for males and 1 for females and the variable was expected to have a positive relationship with financial literacy as men are considered more financially literate than females (Bucher-Koenen *et al.* 2016; Bucher-Koenen *et al.* 2017; Klapper and Lusardi 2020; Bottazzi 2021). However, there exists reports from developed countries where equal employment and educational opportunities which reports absence of the much-popularised research gap. Grohmann, Hubler, Kouwenberg, and Menkhoff (2021) study of middle-class women, who earned at least a minimum wage in Bangkok Thailand, established that women showed the same high level of financial literacy as men, in terms of financial knowledge and financial behaviour. The authors argued that the countries' gender equality principles in school enrolment, involvement of women in financial matters and high employment ratios of women explain the missing financial literacy gender gap (Grohmann *et al.*, 2021). Therefore this study sought to investigate the effect of gender on financial literacy among agribusiness entrepreneurs in the Zimbabwean socio economic environment.

Financial literacy is usually lower among the old and higher among the middle-aged (Lusardi and Mitchell 2014; van der Westhuizen 2016; Mutengezanwa 2018). This research population was comprised of the middle-aged and the old population according to ownership of land in the country and negative relationship was expected between financial literacy and age. Costaneda (2020) established that high financial literacy scores were associated with working middle aged individuals aged between 30 years to 60 years. The reason behind this being that the working

middleclass are more exposed to the financial markets, have the capacity to continuously upgrade and learn new financial concepts and have more financial decisions to make. Financial literacy is an evolving concept which requires continuous learning to adapt to new service innovations.

Almost all researchers identify the level of education as a major determinant of financial literacy. Castaneda Castañeda, Ormazábal and Cisternas (2022) study results established a positive significant relationship between education and financial literacy. Individuals with college or University education scored high financial literacy scores than individuals with basic education. Baihaqi *et al.* (2022) also confirmed this relationship among coffee farmers in Indonesia. Farmers with higher educational levels scored high financial literacy scores.

The level of education in this study was expected to have a positive relationship with financial literacy as various authors established that individuals with higher education perform better in financial literacy surveys than those with low levels of education (Martinez 2016; Kadoya and Khan 2017; Lusardi 2019; Baihaqi *et al.* 2022). Education is the basis for gaining financial knowledge, financial attitudes and financial (Johan, Rowlingson and Appleyard 2021).

It can be argued that the single and the widowed have lower financial literacy than the married (Lusardi 2019), the reason behind the notion being that the widowed and single generally have lower incomes to explore financial markets than the married. In line with this notion Garg and Singh (2018) concluded a significant relationship between marital status and financial literacy with the married having better financial attitudes and financial literacy than the single. Marital status was expected to have a negative relationship with financial literacy as the widowed and the single usually scores lower than the married in financial literacy surveys (Lusardi 2019). Mutengezanwa (2018) established that the single and the divorced Small to medium entrepreneurs in Zimbabwe had low financial literacy compared to the married.

Income acts as a barrier of entry to participation in the financial markets in developing countries, as the poor find it costly to access financial services (FinScope 2011). A survey of financial inclusion status in Zimbabwe by FinScope (2011) established that the rural poor could not effort bank charges and the fees required by banks to open bank accounts. Travelling cost to banks usually located in towns and growth points also imposed a cost to the rural population.

Most agribusiness farmers reside in farms located in rural areas hence the availability of income to access financial services is vital for gaining financial experience.

Literature documents a positive relationship between financial literacy and income. The life cycle hypothesis theorises that individuals gain more income during their middle ages yet this is the age with the highest financial literacy levels. Kadoya and Khan (2017) argued that individuals with higher incomes participate and learn more about financial investments and concepts than those who earn low income. Income is the grease and oil of financial literacy. Hence this research expected a positive impact between income and financial literacy.

OECD (2016) and Atkinson and Messy (2011) introduced number of dependants in a family as a major determinant of financial literacy. The number of dependents in a family usually deteriorates the amount of disposable income for a family (OECD 2020). Consequently, those families with fewer dependants are left with more disposable income after household expenses and are expected to be more financially literate. This research expected a negative relationship between number of children below 18 years and the level of financial literacy of the family head. Bustin and Matteau (2007) advocated for mandatory pension schemes for farmers since old farmers due for retirement remain with dependants to take care of. In Ethiopia it was noted that farmers who had access to loans mainly used it for buying food, clothes, household expenditures and children's education compared agribusiness activities Bustin and Matteau (2007).

The variable financial utilisation was considered a determinant of financial literacy based on its contribution to financial experience (OECD 2020). Literature concurs that financially excluded individuals generally have lower financial literacy than the financially included (Priyadarshini *et al.* 2017; Morgan and Long 2020). Generally, the financially knowledgeable demand financial services than the less knowledgeable. Hence financial literacy is usually associated with demand for more financial products (OECD 2020). This research expected a positive relationship between financial literacy and financial utilisation. The theory of financial socialisation also asserts that individuals learn more about financial concepts through socialising with peers, friends, and family. Investing in different financial products increases experience and interaction of an individual with other investors (LeBaron and Kelley 2021).

It can be argued that individuals who consult a wide range of sources of information or financial advice, generally gain more financial knowledge than individuals who depends on their financial experiences only (OECD 2020). Priyadarshini *et al.* (2017) argued that rural farmers with access to media like newspapers and television were more financially literate that farmers without access to media. This research expected individual who consulted formal and various sources of financial advice more financially literate. The table below shows the expected relationship of different explanatory variables.

Table 17: Explanatory variables

Variable/description	Expected relationship based on literature review	Relationship signal expectation	Codification
Gender	Women have generally low financial literacy than man (Bucher-koenen <i>et al.</i> 2016)	Positive	0- female 1 Male
Age	Age is usually lower among the young and the old (Lusardi and Mitchell 2014). The population of this research mainly included the middle aged and the old.	Negative	Continuous variable
Marital status	The single and the widowed generally have lower financial literacy than the married (Mutengezanwa 2018)	Negative	1- married 2- single 3- Divorced 4- Widowed 5-Other
Level of education (Relating to formal education obtained through schools, colleges and Universities).	Literature concurs that higher levels of schooling or education leads to higher levels of financial literacy	Positive	1-Did not go to school 2-Did not finish primary 3-Primary level 4- 'O' level 5- 'A' level 6- Certificate 7- Diploma 8- Bachelor's degree 9- Masters 10- Doctorate
Income (Refers to income earned from agribusiness.	Individuals who earn low incomes tend to have lower financial literacy Santini and Ladeira (2019). Income acts	Positive	1- less than \$500 2- \$ 501-1500 3- \$1501-2500 4- \$2501-3500

Denominated in United states dollars)	as an entry barrier to opening a bank account and economic participation to the poor (Finscope, 2014).		5-\$3501-4500 6- \$4501-5500 7-\$5501-6500 8- \$6501-7500 9-\$7501-8500 10. Above \$8500
Number of children under the age of 18	Family composition especially the number of depended living in a family affects disposable income and thereby financial literacy	Negative	Continuous variable
Size of the farm	Large scale commercial farmers tent to be more knowledgeable about financial management than small scale farmers	Positive	1- Homestead land 2- Small scale farms 3- Medium scale farms 4- Large scale farms
Financial utilisation	Financial literacy is related to use of more financial services and risk tolerance to invest in stock markets (OECD 2020).	Positive	1- Holds no financial product 2- Holds one financial product 3- Holds more than one financial product
Financial information	Financially literate individuals consult many sources of information before using a service.	Positive	1- Used personal experience 2- Used informal sources of information 3-Used formal sources of information 4- Used various sources of information

Source: Authors compilation (2022)

6.13.3 Pre-estimation diagnostic test

Diagnostic tests to test for model fit, multi-collinearity, normality, linearity, homoscedasticity, and independence of residuals were conducted according to the assumptions of ordinary least squares regression. A multiple regression model where ten independent variables representing

various demographic factors was estimated. The researcher conducted the F-test, multi-collinearity test, auto correlation tests, normality tests and heteroscedasticity test.

6.13.3.1 F-Test on Multiple Regression

A test of overall model significance should be conducted when using standard regression model (SRM). The researcher tested if the multiple regression model was significant using the F-Test. The F- Test is used to test if the beta coefficients of the regression model are not equal to zero. Thus, the null hypothesis of the test is $H_0: \beta_1 = \beta_2 = \dots = \beta_i = 0$ and the alternate hypothesis $H_1: \beta_1 \neq 0$ or $\beta_2 \neq 0 \dots \beta_i \neq 0$ for some i where $i = 1, 2 \dots i$. (Katchova 2013).

6.13.3.2 Multi-collinearity test

The Pearson product-moment correlation (r) and the variance inflation factors (VIF) were used to test for multi-collinearity and autocorrelation among independent variables. Correlation generally relates to the strength and direction of the relationship between continuous and dichotomous variables (Pallant 2020). Multi-collinearity exist where variables have high correlation coefficients of ($r=0.9$ and above) (Pallant 2020). The Pearson product-moment correlation provides a numerical direction of the linear relationship between two variables.

6.13.3.3 Normality

The model detects that the dependent variable should be assumed to be normally distributed (the error terms will also be normally distributed). Normality of data was checked by visual graphs and statistical calculations as postulated by Pallant (2020) and Bridgmon and Martin (2012). The researcher used the scatterplot to check how close the variables were close to the mean. The scatterplot provides information of data normality, linearity, and homoscedasticity. In terms of normality, residuals were expected to be accumulated in the centre of the plot against the values of the predicted score. There scatterplot reflects a concentration of residuals in the middle, and an even dispersion from the centre in smaller numbers as suggested by Pallant (2020) and Bridgmon and Martin (2012).

6.13.3.4 Autocorrelation tests

Autocorrelation generally refers to correlation between members of series of observations ordered in time. Gujarathi (2022) posited that autocorrelation was more associated with time series data compared to cross sectional data. Hence the cross-sectional data in this data involving the regression of agribusiness entrepreneur demographic factors on financial literacy was not expected to be affected by auto correlation since data was collected across various agribusiness entrepreneurs from various families and districts. Autocorrelation is generally low in cross sectional studies (Gujarathi 2022).

To test for autocorrelation, the researcher used the Durbin - Watson test. The Durbin - Watson test is a ratio of the sum of squared differences in successive residuals to the RSS (Gujarathi 2022). The ratio test if there is no correlation between model successive error terms. That is for any two observations in the model, the residual term should be uncorrelated. Violation of this assumption results in an autocorrelation problem. To test for the absence of positive autocorrelation, the Durbin-Watson d statistical significance points of d_L and d_U at 0.05 significance level were used. The rejection criterion of the Durbin- Watson test is shown in Figure 22 below.

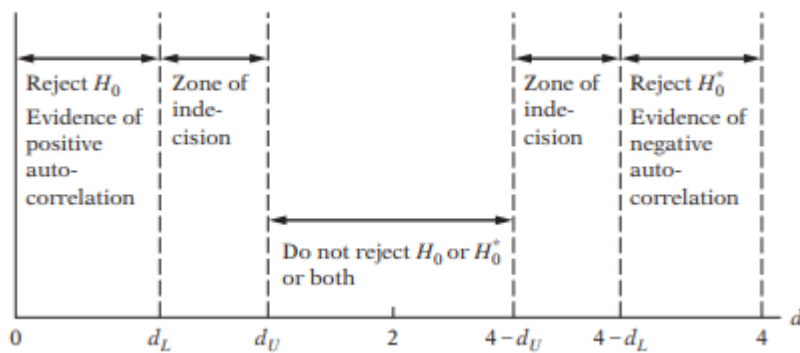


Figure 22: Durbin-Watson rejection/acceptance criterion

Source: Gujarathi (2022)

6.13.3.5 Homoscedasticity

Homoskedasticity detects that variability in scores for explanatory variables should be similar at all values of the dependant variable. Pallant (2020) asserted that the scatterplot should show a fairly distribution. Equal variance assumption was confirmed by residuals which were distributed evenly in the scatterplot. The Breusch-Pagan-Godfrey (BPG) test was also used to

check homoscedasticity. The BPG test assumes that all error variances are equal to zero. First the researcher conducted regression analysis and requested unstandardised residual variables of the model. The regression added residuals in the data file. A new variable was created for residual error terms. Secondly the researcher conducted a second regression with the unstandardized regression residuals new variable as the dependant variable against the explanatory variable used in the first regression. If the residuals have an equal variance the p-value represented in the regression ANOVA table should be above 0.05 showing absence of a linear relationship between the explanatory variables and the dependant variable. The p-value was above 0.05 reflecting an equal variance of residual error terms.

6.14 Delimitations/scope

The scope of this study relates to geographical area, time covered, and the subject matter covered by this research. The research population mainly focuses on agribusiness farmers since majority of micro agribusiness entrepreneurs are informal traders their population could not be statistically estimated. Entrepreneurs in other crucial sectors of the economy were also excluded from this research. Research respondents were randomly selected from five agricultural districts demarcated according to region. Out of the 62 agricultural districts in Zimbabwe only 5 were considered for this research. A cross sectional research methodology was conducted however the concept investigated consisted of both long term and short-term financial behaviours like retirement planning and saving. The research was more interested in events post the fast-track land reform program (2000-2022).

The current research mainly focused on the level of financial literacy of agribusiness entrepreneurs and its components. Research instruments of the study were adopted and adapted from Lusardi and Mitchell (2014) and OECD (2016, 2018, 2020) financial literacy toolkit. The research also sought to explore on the financial services required by agribusiness entrepreneurs, there is no research to the knowledge of the researcher that investigated financial need of agribusiness entrepreneurs in Zimbabwe.

6.15 Chapter summary

The study sought to determine the level of financial literacy of agribusiness entrepreneurs in Zimbabwe and to examine the nature of financial services demanded by these entrepreneurs. This chapter explained the research methodology of the research. Specifically, the chapter explained the research philosophy, approach, and design. Sampling and data collections procedures were explained whilst model variables and specifications were discussed. The chapter explained how the research questions were addressed and justified why a mixed method approach was implemented. The chapter also documented how validity and reliability of the research was ensured. Ethical issues that were considered before conducting this study were also alluded in the chapter. Vital diagnostic test that was conducted before conducting regression analysis and the model assumptions were explained. The next chapter presents and discusses research findings.

CHAPTER SEVEN

RESULTS AND FINDINGS OF THE LEVEL OF FINANCIAL LITERACY

7.1 Introduction

This chapter provides a detailed analysis of the level of financial literacy of agribusiness entrepreneurs in Zimbabwe. Specifically, the chapter measures the level of financial literacy of agribusiness entrepreneurs. Financial literacy was operationalized by three components namely financial knowledge, financial behaviour and financial attitude using the OECD (2020) and Lusardi (2019) methodology. Measurement of financial literacy provides the basis for the development of the financial literacy operationalization model.

In addressing the research objectives, a semi-structured questionnaire which collected quantitative data was distributed among five selected districts in Zimbabwe, namely, Gweru, Masvingo, Mutare, Mt-Darwin and Mutoko. This data was recorded and analyzed quantitatively using IBM SPSS 27. Secondly, follow-up interviews to validate the research findings from the questionnaire were conducted among 6 AGRITEX officers and data was analyzed through content and thematic analysis.

7.2 Response rate

The sampling frame consisted of 172221 large, medium and small-scale farmers in Zimbabwe and the sample size of the study was 623 agribusiness farmers. Out of the 623 questionnaires distributed, 440 questionnaires were completed and returned, and only 433 were viable for use, giving a response rate of 70%. A response rate of 60% and above is usually considered adequate for surveys (Baruch, 1999).

Questionnaires were self-administered to respondents across five districts, namely: Gweru, Masvingo, Mt-Darwin, Mutoko and Mutare. Table 18 below indicates the response rate of this study. The response rate is categorised according to the various districts where data was collected.

Table 18: Response rate

Distributed questionnaires	Sample size	Fully completed questionnaires	Response rate (%)
Mutare	104	78	75
Mt-Darwin	93	60	64.51
Mutoko	142	95	66.9
Gweru	107	88	80.24
Masvingo	177	112	63.27
Total	623	433	70

Source: Primary data (2022)

7.3 Socio-demographic characteristics of respondents

Table 19 shows socio demographic characteristics of the respondents of this study. Data was analysed using IBM SPSS version 27. Data was analysed through frequencies, inferential statistics, regression analysis and correlations. Factor analysis and reliability tests were conducted before analysing data to check for construct validity and reliability of research instruments. Table 19 indicates the gender, age, income, level of income and family composition of the surveyed population. The results were crucial for regression analysis and answering of research objectives.

Table 19: Socio-demographics characteristics

Variable	Classification	Frequency	Percentage
Gender	Male	217	50.1%
	Female	216	49.9%
	Total	433	100%
Age	25-34	38	8.8%
	35-44	74	17.1%
	45-59	171	39.5%
	60 and above	150	34.6%
	Total	433	100%
Marital status	Married	301	69.5%
	Single	13	3.0%
	Divorced	40	9.2%
	Widowed	77	17.8%
	Other	2	0.5%
	Total	433	100%
Level of education	Did not go to school	8	1.8%
	Did not finish primary level	25	5.8%
	Primary level	74	17.1%
	'O' level	118	27.3%
	'A' level	15	3.5%
	Certificate	37	8.5%
	Diploma	81	18.7%
	Bachelor's degree	61	14.1%
	Master's degree	13	3.0%
	Doctoral degree	1	0.2%
	Total	433	100%
Monthly Income (monthly income was denominated in united states dollars)	Less than \$500	162	37.4%
	\$501-1500	74	17.1%
	\$1501-2500	33	7.6%
	\$2501-3500	14	3.2%
	\$3501-4500	10	2.3%
	\$4501-5500	23	5.3%
	\$5500-6500	13	3.0%
	\$6500-7500	16	3.7%
	\$7501-8500	33	7.6%
	Above \$8500	55	12.7%
	Total	433	100%
	Number of employees at the beginning of the business	No employees	272
1-5		156	36.0%
6-30		5	1.2%
Total		433	100%

Current employees	No employees	162	37.4%
	1-5	191	44.1%
	6-30	79	18.2%
	31-75	1	0.2%
	Total	433	100%
Nature of business	A combination of various farming activities		45.7%
	Cereals	198	18.5%
	Animal husbandry	80	12.0%
	Poultry	52	6.9%
	Tobacco/ Cotton	30	9.5%
	Horticulture and vegetables	41	6.7%
	Aquaculture	29	0.7%
	Total	3	100%
Farm size	Small scale farm	433	61.4%
	Medium scale farm	102	23.6%
	Large scale farm	65	15.0%
	Total	433	100%

Source: SPSS analysis of primary data (2022)

Gender composition of respondents was balanced, as the sample comprised 50.1% males. Various authors argued that gender has a great influence on the level of financial literacy as males are regarded as more financially literate than females (Potrich, Vieira and Mendes-Da-Silva 2016; Bucher-Koenen *et al.* 2017; Klapper and Lusardi 2020). This research sought to further investigate the presence of this gender gap in order to recommend strategies that can be implemented to work towards the empowerment of the vulnerable group. Bucher-Koenen *et al.* (2016) argue that the widening financial literacy gender gap between men and women was a major cause of wealth accumulation differences between men and women. However, the differences in societal and family roles of men and women could be the major cause of gender differences in financial literacy (Chen and Volpe 2002). Therefore, to ensure effective analysis, gender balance was of great importance.

The majority of the surveyed population were married (69.5%), followed by the widowed (17.5%) and the divorced (9.2%). Two individuals mentioned that they separated from their partners. Bucher-koenen *et al.* (2016) documented that single woman, like widows, exhibited low financial literacy of basic concepts relevant to their day-to-day financial decisions. In the same vein Firli (2017) further argued that married people have more motivation to try to accumulate wealth and thus were more financially literate than the single. Single women and

widows were expected to be more financially literate since they manage their finances on their own without partners. This research contributes to the literature by further investigating if the marital status influences financial literacy. Financial literacy can increase the financial resilience of individuals against financial shocks/ emergencies and help individuals make informed financial decisions about saving, borrowing, retirement planning, financial planning, budgeting, managing debt and making a considered purchase (Klapper and Lusardi, 2020). Differences in financial literacy between the married and the single or between females and males has a direct impact on the finances of households and individuals (Kadoya and Khan 2017). Thus, policy makers should, therefore, understand factors that affect financial literacy to assist all vulnerable populations.

Only 36% of the surveyed population had professional education, a certificate, a bachelor's degree, a master's degree, and a Doctorate degree. Most of the population only attained Ordinary Level and primary level. Literature documents a positive relationship between education and financial literacy. Lusardi (2014) argued that individuals with less than high school education had low financial literacy compared to those with degrees. Individuals with basic and professional education in Zimbabwe can read and write in English as it is the language of instruction in most subjects. The language of instruction on the questionnaire was English. However, the researcher or research assistant translated and assisted the few respondents who could not write and read.

Majority (37.4%), of the small-scale farmers earn an income of less than 500 USD per month or 6000 USD per annum followed by (17.1%) who earn 501-1500 per month. However, majority of surveyed large-scale farmers earn more than 8500 USD per month. Income is generally considered a major determinant of financial literacy. The poor usually fail to participate in some financial markets due to a lack of appropriate registration funds (Chiromo 2019). To facilitate financial inclusion, policymakers should consider lowering the cost of entry in various financial markets like stock markets, retail banking, and money markets (Bongomin *et al.* 2017a; Morgan and Long 2020).

Most of the surveyed population did not have employees when they started their business and currently have 1-5 employees at their farms. Only large-scale farmers, with large hectare of land indicated that they have 6-30 employees working at their farms. Farmers indicated that agricultural work is seasonal, and most employees are contract workers who are only called for

daily or weekly work (Ugwu 2019). Labour is a crucial factor of production in business and thus the number of employees employed by small scale farmers indicates the level of their operations and farm productivity This provides evidence that most small-scale farms are being underutilised (Zimbabwe Democratic Institute 2019). This has a negative implication on the country's overall food security if harvested produce falls below national food requirement (Ministry of Lands Agriculture Fisheries Water and Rural Resettlement 2018).

The majority (45.7%) of agribusiness entrepreneurs were involved in a combination of various farming activities at their farms to match the demands of agricultural seasons. Financial knowledge question on diversifications also showed that farmers were aware of the dangers of concentrating on one financial activity at their farms. Most farmers were involved in both livestock production and crop farming. About 61.7% of the surveyed agribusiness entrepreneurs were small-scale farmers, followed by 23.6% medium scale farmers and 15% large-scale farmers. The population was a true reflection of the structure of agribusiness entrepreneurs in Zimbabwe where the majority (60%) are small scale farmers (Chiromo 2019). Agribusiness farmers who conducted farming activities at their homesteads were not included in the study.

Table 20 presents descriptive statistics of continuous demographic variables, namely actual age, children below 18, children above 18 and years in business.

Table 20: Descriptive statistics

	Minimum	Maximum	Mean	Std. Deviation
Actual age	30	82	52.61	11.150
Children below 18	0	8	2.13	1.396
Children above 18	0	10	2.42	1.146
Years in Business	2	34	12.85	5.843

Source: SPSS analysis of primary data (2022)

Agribusiness farmer's households are comprised of at least two (2) minors less than eighteen (18) years and two (2) children who are above eighteen (18) years. The number of dependents in the family increases the expenditures in the household and thereby reduces the income available for saving and other farming businesses (OECD, 2016). The research, therefore, sought to determine the average number of dependants living in a household and the effect it has on the level of financial literacy of agribusiness entrepreneurs living in the household.

The number of years of experience of agribusiness entrepreneurs varies from 2 to 34, with most farmers having 21 years of farming experience (from year 2000 when they gained the land

through fast-track land reform program). Respondents had an average of 13 years of experience in agribusiness. Thus, agribusiness farmers had vast experience in farming, but their income and business operations are not growing. Considering the increasing expenditure by government to the sector annually (Ministry of Finance, 2021), there is an urgent need to examine all the contributing factors towards low productivity. Mutengezanwa (2018), further establishes a disassociation between business experience and financial knowledge, where entrepreneurs with more than 10 years of experience scored lower levels of financial literacy compared to those with less than five years. This implies that more experienced entrepreneurs are usually reluctant to improve their financial skill (Ameliawati and Setiyani 2018).

The mean age for agribusiness farmers was 53 years, reflecting that most landowners in Zimbabwe are old and aged. Considering the sentiments of some agribusiness farmers that they will not retire from the farming business; the sector will soon be dominated by the old population. Most agribusiness entrepreneurs are approaching retirement age of 65 or have already past the age. Furthermore, due to the hyperinflationary environment in the country, people buy farming land for retirement purposes, and this explains why most landowners are aged. These results imply that government should develop training programmes suitable for the middle to old population. To ensure productivity in the sector government should consider making it a mandate for medium to large scale farmers to hire technical staff such as accountants or farm managers.

7.4 Measuring financial literacy

The study sought to measure the level of financial literacy of agribusiness entrepreneurs in Zimbabwe. Financial literacy is defined as a set of skills and knowledge that allow an individual to make informed and effective financial decisions (Kadoya and Khan 2020). This study measures financial literacy as a combination of financial knowledge, financial behavior, and financial attitude necessary to make sound financial decisions and, ultimately achieve individual or household financial well-being (OECD, 2020). After taking into effect reliability and factor analysis, the financial literacy for this study consists of the summation of three elements indicated in the table below. Table 21 shows the operationalization of financial literacy.

Table 21: Operationalization of the level of financial literacy

Dimension of financial literacy	Number of elements	Range of scores
Financial knowledge score	10	0- 10
Financial behavior score	8	0- 8
Financial attitude score	3	0- 3
Total Financial literacy score	21	1- 21

Source: Authors compilation (2022)

The level of financial literacy for this study was operationalized through three major dimensions and twenty-one elements. One score was awarded for having the required financial competence and zero otherwise (Lusardi and Mitchell 2014). The minimum financial literacy score for this study is seventy percent (70%) since all the measured elements were fundamental to daily financial decision-making (OECD 2016; 2018; 2020).

7.4.1 Measuring financial Knowledge

This section measures the level of financial knowledge of agribusiness entrepreneurs focusing on 10 questions designed to measure various aspects of financial knowledge that are widely considered to be useful to individuals when making financial decisions in their daily lives. Lusardi (2019), Bottazzi (2021), and Norman (2010) concur that the knowledge of inflation, interest rate, risk and investment is crucial for every individual who uses financial services. In Zimbabwe, the knowledge of inflation and the time value of money is crucial for every individual due to the hyperinflationary economic environment. Therefore, this study added two open-ended questions relating to hyperinflation and time value of money. The knowledge of tax collection was also considered crucial for agribusiness farmers in Zimbabwe since payment of tax is mandatory for all business transactions. Table 22 shows financial knowledge number of correct and incorrect responses.

Table 22: Financial knowledge number of correct and incorrect responses weighted data

Score of responses	0	1
Interest compounding	23.60%	76.40%
Inflation	30.70%	69.30%
Stock risk	82.90%	17.10%
Farming risk	9.00%	91.00%
Risk & return	32.10%	67.90%
Asset pricing	91.90%	8.10%
Loan interest	26.30%	73.70%
Tax collection	51.30%	48.70%

Hyper inflation	57.00%	43.00%
Time value of money	55.70%	44.30%

Source: SPSS analysis of primary data (2022)

7.4.1.1 Interest compounding

The interest-compounding question is one of Lusardi's big three financial literacy questions, which has been widely adopted in international surveys (Lusardi 2015; Lusardi, Michaud and Mitchell 2017; Lusardi 2019). The question measures the basic numeracy of calculating interest and the knowledge that money deposited in a bank will earn interest if the money is left to grow. Most agribusiness entrepreneurs (76.4%) answered the question correctly and were aware that money deposited in a bank, if left to grow it will earn an interest, and the depositor will receive more. Agribusiness entrepreneurs have the basic knowledge of the effect of interest on savings deposited in a bank, however this does not reflect that they are financially knowledgeable since interest compounding is only one element of financial knowledge. Financial education programs targeted to agribusiness entrepreneurs should concentrate on other components of financial knowledge. These results are consistent with Mutengezanwa (2018), who conducted a financial literacy survey of Small to Medium Enterprises in the Harare metropolitan province. Mutengezanwa (2018) established that 74.5% of the respondents managed to calculate compound interest rates correctly.

The Zimbabwean agribusiness sector is aware of the benefits of saving and the interest that can be received from savings. However, they are reluctant to deposit their money in financial institutions. This could be due to inflationary pressures currently in the economy and lack of confidence from previous hyperinflationary environment (Zimbabwe Ministry of Finance and Economic Development 2020). Zimbabwe experienced hyperinflationary environment of 2007-2009, which increased to 89.7 % sextillion and 79.9% billion months on month in 2008 and during that period depositors lost confidence in the financial sector (Zimbabwe Ministry of Finance and Economic Development 2009).

The results of this study are also in line with Jain *et al.* (2022a) (2022) also established those Indian postgraduate students had a general understanding of compound interest and simple interest. However, Banks in India were no-longer offering simple interest for ordinary deposits. Similarly, Zimbabwe financial institutions also offer very low deposit interest rates which cannot lure investment.

7.4.1.2 Understanding of Inflation

Table 22 shows that most agribusiness entrepreneurs (69.3%) had knowledge of the effect of inflation on savings, specifically when the interest offered by banks is lower than the rate of inflation. Inflation affects the purchasing power of money, and various authors concur that knowledge of inflation in an economy is fundamental. The surveyed agribusiness entrepreneurs had personal experiences with the effect of hyperinflation on their money, especially when commodities prices and agricultural input prices continuously rise. In 2009, the Reserve Bank of Zimbabwe closed all Zimbabwean dollar accounts and introduced the multicurrency regime due to hyperinflation. As a result, the public lost their money without compensation. The results were consistent with Mutengezanwa (2018), who established the majority of SMEs in Zimbabwe understand the concept of inflation. Further research on knowledge of inflation should look at practical application of the knowledge.

Basic understanding of inflation is vital for making financial decisions; however, it represents one element of financial knowledge and does not imply financial knowledge. Agribusiness entrepreneurs will need to develop financial behaviours that cushion them from the depreciating Zimbabwean dollar. Sekita, Kakkar and Ogaki (2022) established that risk literacy, deposits literacy and debt literacy have significant impacts on wealth accumulation in Japan, whereas inflation literacy and insurance literacy do not. Hence knowledge of inflation alone does not result in wealth accumulation.

7.4.1.3 Understanding of risk and diversification

Portfolio risk management and diversification is quite a complicated phenomenon which requires financial expertise, however, a basic and simple question about investing in a single company shares or in a mutual fund was posed to measure respondents understanding of financial investments risk and diversification. Table 22 shows that most of the surveyed population (82.9%) answered the question incorrectly and had no idea about investing in company shares. Investing in shares is quite low in Zimbabwe and most of the population are not fully aware of the investment avenue. However, in measuring financial literacy it is crucial to measure concepts that relate to daily financial experiences of individuals, therefore, the concept of risk and diversification was explored in two questions. This study added one more question which measure farm risk and diversification. Agribusiness investments are mainly

related to farming activities, therefore, a question which relates more to these activities was more appropriate in measuring risk diversification.

Policy makers need to facilitate mobile financial innovations that facilitate trading of shares. Lusardi and Mitchell (2014) argue that stock market participation is a vital avenue for wealth accumulation, however very few individuals participate on the stock exchange. Baker, Kapoor and Khare (2021) argue that individuals were generally risk averse and have a home bias to investment thus limiting their investment in domestic shares. Investment in shares allow investors to diversify their portfolios by investing in shares of companies from various countries, however, due to home bias and lack of portfolio diversification knowledge individuals only consider shares from their home country (Baker, Kapoor and Khare, 2021).

7.4.1.4 Farming risk and diversification.

Table 22 shows that most agribusiness farmers (91%) could easily understand the diversification concept when related to farming activities. Although the entrepreneurs were not aware of company shares and share mutual funds, they understand that it is risky to concentrate on returns of one crop than of several crops and it is the knowledge of diversification that is crucial when investing in financial markets. Agribusiness farmers in Zimbabwe conduct various farming activities on their farms and do not depend on one agricultural activity. This implies that agribusiness entrepreneurs already have knowledge of business risk and the need for diversification but lack financial knowledge related to financial assets. Training programs should relate financial concepts to daily farming concepts to enhance agribusiness financial competences.

Agribusiness entrepreneurs have a range of agricultural activities on their farms related to livestock, horticulture, cereals, and poultry. Diversification will promote financial resiliency among these agribusiness entrepreneurs. However, to hyperinflation, exchange rate fluctuations and loss of depositor confidence in Zimbabwe, the local financial markets lack the adequate market depth and breadth to allow proper diversification of financial assets.

7.4.1.5 Risk and return.

Risk is defined as the level of uncertainty related to investment returns. Investment return is usually related to the risk associated with the investment, therefore, generally, investments which provide higher return are likely riskier than investments with low risk (Reilly and Brown 2011). An understanding of return alone is not adequate without relating to associated risk. There is a fair understanding of the risk and return concepts as 67.9% of the surveyed population answered the question correctly. Hence the implication that agribusiness entrepreneurs understand that they should not invest in high-risk endeavours which are associated with high risk.

Basic knowledge about risk and return ensures that agribusiness entrepreneurs navigate financial matters related to investments with greater confidence and can react to news and events that may have consequences for their finances (Shimray 2018). The findings are similar to the portfolio theory assumptions which states that investors are generally risk averse, given a certain level of risk they seek to maximise return and given some level of return they seek to minimise risk (Reilly and Brown 2011).

7.4.1.6 Asset pricing

Table 22 shows that understanding of asset pricing was very challenging as 91.9% of the entire sample failed to show an understanding of the concept. Only a few educated entrepreneurs have knowledge on company bonds and how they are priced. Similar results were also noted by Lusardi (2017). The asset pricing assessed the knowledge of the relationship between the price of a financial bond and interest rates in the economy. There is an inverse relationship between the price of a financial bond and interest rates. The price of a product or service is generally the yardstick used in deciding whether one should consider buying a product or not. Lack of knowledge of how to price a financial asset means agribusiness entrepreneurs cannot independently decide of whether an asset is overpriced or underpriced and thus unable to make informed decisions. Pricing of a financial asset is a major determinant of the investment decision.

These results are consistent with Jain *et al.* (2022a) who reported that the concepts of bonds price and sale were the most difficult in financial literacy surveys. Most university employees

in India who were considered the elite were clueless about the relationship between bond prices and interest rates (Jain *et al.* 2022a). Qualitative data from interviews further revealed that these university employees were not willing to invest in bonds due to their lack of understanding (Jain *et al.* 2022a). These results explain low participation in capital market instruments in Zimbabwe and other developing nations like India.

Investment in financial markets is a crucial avenue for wealth accumulation and retirement planning (Alessie *et al.* 2021). Agribusiness entrepreneurs do not have knowledge on shares and pricing of bonds and thus explain slow participation in the capital markets. If not addressed this can lead to higher levels of poverty among agribusiness entrepreneurs during old age.

7.4.1.7 Loan interest

An understanding of loan interest is crucial for agribusiness entrepreneurs as loans are availed to agribusiness farmers from time to time and it is crucial for them to be able to weigh and select one loan from several options and loan providers. Around 73.7% of the surveyed population were able to show an understanding of loan interest by choosing the loan which provided low interest payments for the same principal amount. The results are similar to OECD (2020) results which showed that the majority of people understand simple interest charged on a loan.

Murta and Gama (2022) argued that knowledge of financial concepts improves loan uptake, reduce credit risk, and improves credit portfolios of banks. Hence efforts to improve financial literacy in Zimbabwe has potential to improve financial sector and economic growth (Murta and Gama 2022). In the same vein Jiangcheng, Jingdong and Ao (2022) established that knowledge of financial concepts related to debt promotes farmers entrepreneurship by reducing farmers informal and traditional credit constraints, increase the availability of entrepreneurial funds, and promote farmers entrepreneurship. However, in Zimbabwe knowledge of loan interest and interest compounding is not contributing to good borrowing behaviour among agribusiness entrepreneurs (Mutambara, Darkoh and Athlopheng 2016).

7.4.1.8 Tax collection

The concept of tax collection is fairly understood among agribusiness entrepreneurs as only 51.3% of the total sample understood that if one owes tax to the government, the relevant authority Zimbabwe Revenue Authority can take possession of assets equivalent to the owed amount. Hence the importance of tax administration issues when conducting business activities.

Payment of government tax is a fundamental financial literacy skill required in formalising of business endowers and registration of companies. Government institutions usually provide tender to institutions that remit taxes to the government and thus having a general knowledge of the concept was considered vital. After formal registration of a company for tax purposes agribusiness entrepreneurs are mandated to understand that remitting tax becomes compulsory, and failure might lead to possession of assets owned by companies or director or ultimate closure of the company.

Jain *et al.* (2022a) argued for tax planning to be considered a crucial financial planning concept as most postgraduate students in India were unaware of tax and financial planning. Knowledge of tax administration and making considered plans to remit tax is a requirement for all registered organisations in a country. Hence the importance for agribusinesses entrepreneurs to be tax literate.

7.4.1.9 Hyperinflation

Around 57% of the surveyed respondents does not understand the concepts of hyperinflation. Hyperinflation refers to the rapid increase of commodity prices of more than 150% per annum. Zimbabwe experience hyperinflation during the period 2000-2009 (Zimbabwe Ministry of Finance and Economic Development 2009), however, individuals have a general knowledge of inflation. This implies that agribusiness entrepreneurs do not understand the implications of trading with a currency that consistently depreciates in value. Hence failure to constantly increase farm produce to meet increase in the inputs needed for the next seasons.

Agribusiness entrepreneurs who lack the basic understanding of hyperinflation are prone to making losses in their business, resulting in business failure. There is an urgent need for policy

makers to equip agribusiness entrepreneurs with business survival skills that they can implement during a hyperinflationary currency crisis.

Sarpong-Kumankoma (2021) empirical results of a financial literacy survey of formal workers in Ghana showed that most workers lack knowledge of basic concepts of finance, only about 27% of respondents were able to correctly answer three simple questions on inflation, interest compounding and risk diversification. Financial literacy has a positive significant impact on the probability of saving for retirement (Sarpong-Kumankoma 2021).

7.4.1.10 Time value of money

A dollar in hand today is usually considered worthy than a dollar to be received in the future due to the concept of time value of money. The research also sought to measure if agribusiness entrepreneurs understand the concept of time value of money. There is a fair understanding of the concept among agribusiness entrepreneurs (44.3%). Which implies that agribusiness entrepreneurs do not understand that each investment should compensate for time even without incurring risk. Lusardi and Mitchell (2014) also argue that individuals lack the basic concepts of time value of money.

Generally, due to the time value of money lenders prefer to lend in the short term while borrowers wish to prolong borrowing time. Hence the trade-off between risk and return (Reilly and Brown 2011). Agribusiness entrepreneurs are responsible for both lending and borrowing decisions in their business and should understand the need to reduce the period given to debtors whilst increasing the time they negotiate to pay their creditors. The generic leading and lagging techniques in financial management are also crucial for agribusiness entrepreneurs to apply in managing their finances.

The concept of time value of money is theorised in human rationality concepts explained by the theory of games and the portfolio. Humans are theorised to be rational and hence tend to maximise utility and return in their financial decisions (Reilly and Brown 2011). Financial literacy promotes farmers entrepreneurship by improving farmers financial decision-making concerning taking credit and making an investment (Jiangcheng, Jingdong and Ao 2022). Where farmers can only consider future use of money if the return of an investment surpasses associated risk and utility is maximised in the future.

7.4.1.11 Financial knowledge score

Financial knowledge is defined as the theoretical understanding of financial concepts (Binoy and Subhashree 2019). It relates to an individual basic knowledge of financial concepts and the capability to apply numeracy skills in a financial setting (Lusardi, Michaud and Mitchell 2017). The minimum financial knowledge score was seven (Lusardi and Mitchell 2014), constituting 70% of the financial knowledge questions(OECD 2020). About 59% of agribusiness entrepreneurs were financial knowledge illiterate as they failed to score the minimum score. This implies that there is need for conducting training programs, seminars, or workshops to equip agribusiness entrepreneurs with the required financial knowledge. Financial knowledge is the foundation of financial literacy however it does not imply financial literacy as the information will need to be processed and applied effectively into practical financial behaviours. Figure 23 shows the financial knowledge score of agribusiness entrepreneurs.

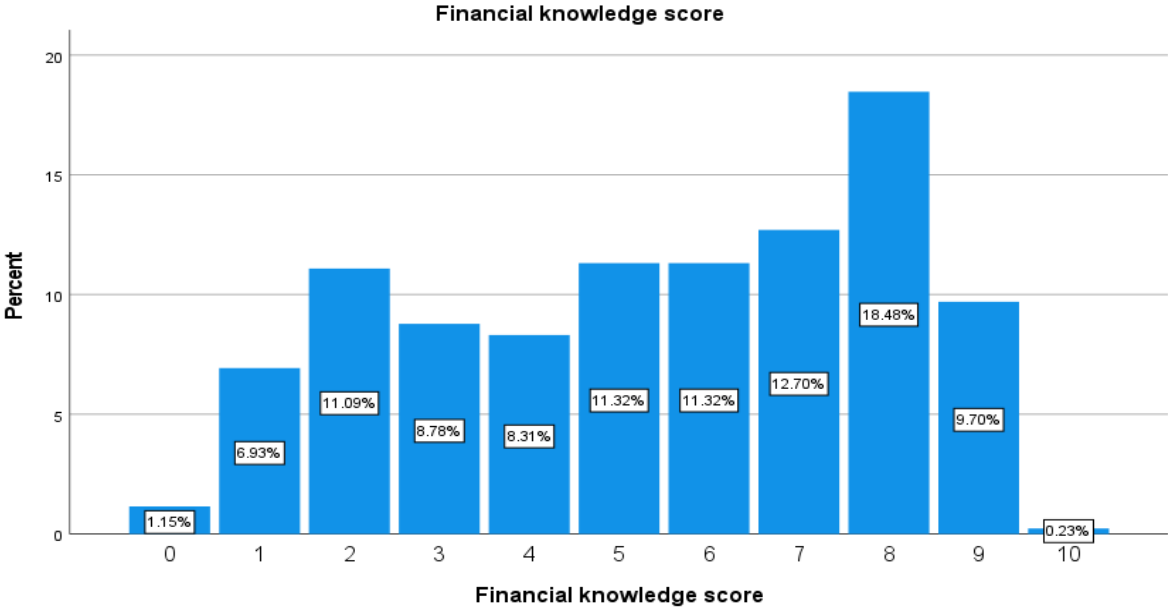


Figure 23: Financial knowledge score

Source: SPSS analysis of primary data (2022)

Figure 23 shows the financial knowledge scores of agribusiness entrepreneurs. The score is a summation of the 10 financial knowledge questions related to interest compounding, inflation, risk diversification, time value of money, choosing loan options, financial asset pricing, portfolio diversification and hyperinflation. Most agribusiness entrepreneurs scored below the minimum score of 7 (70%) and this implies that agribusiness entrepreneurs have low levels of

financial knowledge. Hence, this research provides evidence that agribusiness entrepreneurs were not financially knowledgeable about choosing loan options, financial asset pricing, portfolio diversification and hyperinflation. Knowledge of how interest on loan should be calculated is fundamental to all agribusiness entrepreneurs choosing loan options. Klapper and Lusardi (2020) argued that individuals with low financial literacy borrow at higher rates and pay higher fees.

There was consensus among extension officers that agribusiness entrepreneurs have lower financial knowledge. The officers suggested that when offering loans, banks should educate farmers on how to manage the money and monitor the progress of the farmers until their loans are paid back. One participant, Mr Muza, said, *“Farmers generally have low levels of financial knowledge, which varies according to level of education, gender, age, and previous experiences. Hence the need for lenders to educate farmers about loan repayment and on how to effectively utilise the money before issuing out loan”*. Mrs Zano, another participant, further alluded that *“financial knowledge should span from personal financial management of funds to business related financial management. However, agribusiness farmers still have a lot to learn on how to manage finances both in their business and in their households.”*

Mrs Vee, one of the extension officers, said, *“We encourage them to do mukando amongst themselves and avoid bank loans which are currently changing higher prices. If they take these loans, they will fail to pay due to poor management and lower yields.”* Due to previous loan defaults, and the consequences associated with loan defaults, extension officers encouraged agribusiness entrepreneurs have rotational savings (*mukando*) amongst themselves. Rotational savings involve a group of people who take turns to give a significant lump sum of money to one or two group members and rotate until everyone benefits. The interviews reviewed that the yields in farms were very low so agribusiness entrepreneurs cannot afford to pay higher interest rates. The results concur with Chiromo (2019) who reported that more than 76% of smallholder farmers in Zimbabwe lived in poverty despite having access to land.

These research findings are consistent with Gaffney *et al.* (2019) who established that loans offered to the rural farmers in Ghana failed to add the intended value but made farmers more vulnerable to indebtedness and financial assistance. Offering wrong financial services to agribusiness entrepreneurs at higher interest rates might not be adding any value to agribusiness

entrepreneurs. Hence, agribusiness farmers in Zimbabwe need loans at relatively affordable rates considering their lack of experience in financial matters and low production yields.

This study recommends embracing of financial technology, revision of interest rates and the development of new products that suit the needs of the farmers. Banks should also operationalise a rotational savings system as one of their financial services by opening group savings accounts for such schemes. Policymakers, AGRITEX, or non-governmental organizations (NGOs) should develop personal education programs that emphasise on the concepts answered incorrectly, that is time value of money, financial asset pricing, portfolio diversification and hyperinflation.

7.4.2 Measuring financial behaviour

A person’s actions and financial habits like actively saving money, paying bills on time, budgeting and financial planning may have an impact on an individual financial wellbeing (Atkinson, Monticone and Mess 2016). The financial behaviour score was calculated from several questions related to financial decision making, saving, budgeting, long term planning and avoiding indebtedness. Table 23 shows the frequencies of respondents who answered correctly and incorrectly to the eight behavioural questions. Budgeting has the least scores whilst financial decision making has the highest scores.

Table 23: Financial behaviour number of correct and incorrect responses weighted data

Scores of responses	0	1
Financial decisions	5.10%	94.90%
Budgeting	70.90%	29.10%
Saving	61.90%	38.10%
Debts	35.10%	64.90%
Emergency preparedness	64.40%	35.60%
Financial goals	10.60%	89.40%
Retirement	67.20%	32.80%
Financial resilience after a bad farming season	67.00%	33.00%

Source: SPSS analysis of primary data (2022)

7.4.2.1 Financial decision making

The first question in measuring financial behaviour was determining the ability of an individual to manage finances personally. Almost the entire sample indicated that they manage their finances either personally, with their partners or with another family member. Only 5.1% indicated that household expenses were handled by another family member. These results are consistent with Mutengezanwa (2018) and OECD (2020) who established that adults are responsible for their finances.

Lusardi (2019) argues that individuals are increasingly becoming more responsible for their finances than before. The results confirm that agribusiness entrepreneurs are responsible of their daily financial matters, therefore, financial literacy is a prerequisite for them to be able to manage their finances effectively. Failure to manage personal finances and entrusting financial matters completely to another family member reflected financial behaviour illiteracy.

Tan, Cai, Han and Zhou (2022) extended the concept of financial decision making to land transfer by farmers and concluded that financial literacy has a significantly positive effect on farmers households' land transfer. Tan *et al.* (2022) argued that higher financial literacy enables families to evaluate the opportunity cost and other benefits of retaining/transferring land rationally, which helps reduce farmers' excessive worries about risks. Financial literacy was associated with retaining and expansion of land possession since households who have advantages in experience and information were less likely to be credit-constrained to the extent of selling land Tan *et al.* (2022). Since landownership is linked to patriotism in Zimbabwe, this measure of personal financial decision making is crucial to Zimbabwean agribusiness entrepreneurs' sovereignty.

7.4.2.2 Budgeting

Most of the surveyed population (70.9%) do not prepare a budget or keep records of income and expenditures. This implies that agribusiness entrepreneurs spend their incomes without proper apportionment of earned income to related expenditures. Madura, Casey and Roberts (2014) argue that money should be allocated to savings first before apportioning to current expenditure. That is agribusiness entrepreneurs should determine the proportion of the money to be saved before using their income. Budgeting is crucial in controlling expenditure and

managing daily spending. Kapoor (2015) stipulates that the three crucial money management skills are record keeping, budgeting, and saving.

OECD (2018), survey established that on average, only three in five households have a budget (60%). Budgeting involves recording and planning of household or individual expenditure and incomes. Budgeting is a vital human capital skill that every household or individual should conduct before spending money to avoid impulse buying and overspending. Budgeting can help households to identify how much money they can afford to save each month; however, it is not a priority in most households, despite its clear advantages in terms of financial control and planning (OECD 2018).

Considering the highlighted importance of budgeting, policy makers should consider prioritising budgeting in their financial education programmes. Since the entrepreneurs are directly responsible for their day-to-day finances, budgeting would also directly influence agribusiness entrepreneurs' finances.

7.4.2.3 Saving

The study also enquired if the respondents had managed to save any money in the past two years. A follow up open-ended question was also added to enquire on how the respondents' saved the money (if they indicated that they have been saving money). The follow up question was not scored, but it was added to avoid general guessing of preferred answers and just indicating saving without adequate proof. Most of the population (61.9%) did not manage to save any money during the past two years, mainly due to the challenges posed by the COVID-19 pandemic. Business was low due to travel restrictions, and most respondents survived on previous savings. However, the concept was measured because it is an essential skill during and posts the COVID-19 pandemic. Individuals need to be financially resilient to financial shocks by saving for emergencies like the COVID-19 pandemic.

These results are consistent with Chhatwani and Mishra (2021a) who established that the majority of households failed to meet food, medical, and other expenses during the COVID-19 pandemic especially due to salary cuts, job losses, and restrictions on the operation of

businesses. The pandemic revealed that households have poor savings behaviour and are not financially prepared for emergencies.

In the follow up open ended question most women Agribusiness farmers indicated that they save through rotational savings (*mukando*), where they take turns to give each other money, and after receiving a lump sum, they invest in their business, buy farm equipment or buy livestock. In case of an emergency, the order of the rotation is changed to benefit the member-facing financial challenges. This study recognised rotational savings as a vital way of saving money, therefore, members who indicated that they save money through the rotational savings were awarded a score.

Styles (2018) posits that saving is a fundamental financial literacy competence crucial for big financial purchases and preparing one for emergencies. Financially literate Individuals were found to be more likely to hold formal and informal forms of savings than those who have lower financial literacy scores Morgan and Long (2020). Savings behaviours of agribusiness entrepreneurs in Zimbabwe are poor and detriment to financial wellbeing.

7.4.2.4 Debts

Around 64.9% of the surveyed population indicated that they do not have outstanding debts that they are failing to pay on time. Delaying payment of debts is costly as it increases interest payments and recall of principal amount (Styles 2018). Very few agribusiness entrepreneurs are indebted. However, these results could result from limited borrowing opportunities available for agribusiness entrepreneurs in the country (Mutambara 2016) or borrowing from family and friends who can provide lenient repayment periods depending on the financial situation of the relative.

AGRITEX officers concurred that agribusiness farmer yields are still very low, and they cannot afford high interest rates charged by banks. The Reserve Bank of Zimbabwe increased the bank rate from 60% to 80% on 2020 (Reserve Bank of Zimbabwe 2020) and further fluctuated it to 200% in the year 2021 (Zimbabwe Ministry of Finance and Economic Development 2021). Without government assistance these entrepreneurs cannot afford to pay the exorbitant interest rates demanded by banks. Lusardi and Tufano (2015) established that individuals with low

levels of debt literacy made poor choices of loans options and transacted in high-cost manners and resultantly become over-indebted.

The results of this study are consistent with Abubakar (2015), Priyadarshini *et al.* (2017) and Parlasca, Johnen and Qaim (2022) who noted low debt levels among farmers due to financial exclusion and financial illiteracy. Parlasca, Johnen and Qaim (2022) noted that even the farmers with access to mobile money do not use the platform for savings or to access credit. Most of the farmers only used mobile money for payments only Parlasca, Johnen and Qaim (2022). Abubakar (2015) reports noted difficulties in access to finance, access to market, policy support and entrepreneurship culture as the main problems and constraints on entrepreneurship development in Africa.

In the same vein Tan et al (2022) further argued that good debt literacy helps farmers to understand formal financial institutions' lending procedures and rules, leading to information symmetry between the loan supplier and demander. This reduces the difficulty for farmers to borrow money from banks and motivate them to choose formal channels for borrowing. Hence the need for Zimbabwean policy makers to improve farmers debt literacy.

7.4.2.5 Emergency preparedness

Due to poor budgeting and saving behaviour among agribusiness entrepreneurs 64.4% of the sampled population indicated that they were not prepared to cover an emergency worth one month income without borrowing. Financially literate individuals are expected to save for both known and unknown expenditures. Emergency preparedness is vital especially during the COVID-19 pandemic to meet medical and safety related cost. Financial resilience is a crucial consequence of financial literacy. An individual with the three dimensions of financial literacy is expected to be financially secure to be resilient against financial emergencies (Atkinson, Monticone and Mess 2016). Budgeting, saving and proper financial management are the main building blocks to financial resilience.

Emergencies are prevalent to agribusiness entrepreneurs due to the nature of their business. The rains are erratic and from time-to-time livestock are affected by various infections. Farmers should be prepared for emergencies. Lack of emergency preparedness could be the main reason why high levels of food insecurity are reported from time to time in Zimbabwe (Chiromo 2019).

On that note, due to the prevalence of natural disasters, financial crises and global pandemics, individuals should save and prepare for emergencies.

These results are consistent with Chhatwani and Mishra (2021a) who established that individuals and households were not financially prepared for the adverse effects caused by the COVID-19 pandemic due to a lack of savings for emergencies and low financial literacy. Resultantly, most households failed to meet basic needs like food and medical expenses (Akinleye *et al.* 2020). The mitigation measures associated with the pandemic caused labour hiring challenges, contraction in vegetable production, price volatility (Jie-hong, Fei, Kai and Yu 2022), high levels of food insecurity (Stephens *et al.* 2022) and increase in the cost of production (Rahman, Mujumder, Sujan and Manjira, 2021) in the agribusiness sector. Hence evidence of absence for emergence saving and wealth accumulation across nations.

7.4.2.6 Financial goals

Table 23 shows that the majority (89.4%) of agribusiness entrepreneurs have financial goals that they want to achieve in the future. Existence of financial goals reflects an individual financial planning towards long term goals. Styles (2018) argues that purchasing of physical assets require deliberate financial planning and active saving since purchase of such assets entails a significant outlay and cannot be bought through impulse buying. Thus, agribusiness entrepreneurs should have well laid down financial plans.

A follow up question further investigated if an individual has already acted in achieving the desired goals. A score was indicated to respondents who indicated that they have financial goals and has a laid done plan on what they will do to achieve the set goal. Adding a follow up question was a major contribution of this study to curb guessing of answers cited by previous authors. Lusardi Lusardi and Mitchell (2014); Lusardi, Mitchell and Curto (2014); Mitchell and Lusardi (2015); Lusardi, Michaud and Mitchell (2017) argued providing closed ended answer options only prompt research participants to guess answers, thus the authors proposed the need to add the options 'I don't know' and 'refuse to say'. This study added the suggested options on financial knowledge questions however on financial behaviour questions follow up questions were added to improve the validity of answers provided for analysis.

Entrepreneurs are usually responsible for planning, organising, and managing of their business ventures, therefore it was norm for agribusiness to have long term financial goals. Extension officers further indicated that most farmers need to invest more in their farms to improve productivity. Hence, the reason most of them have laid down financial goals. Literature also noted underutilisation of land by agribusiness entrepreneurs due to lack of adequate funding (Chiromo 2019). Hence, improving financial literacy capabilities of agribusiness entrepreneurs could fulfil the desired financial goals.

Jain *et al.* (2022a) study of financial planning reaffirmed the importance of financial goals and planning by developing a financial planning pyramid based on Maslows hierarchy of needs. The pyramid indicated that an individual should plan to meet basic needs like healthy, safety and social needs early in middle age before moving to esteem and self-actualisation needs. The lifecycle hypothesis theory concurs with Jain *et al.* (2022a).

7.4.2.7 Retirement plan

The majority (67.2%) of agribusiness entrepreneurs had no retirement plan and were not aware of the importance of a retirement plan. The life cycle hypothesis emphasised the importance of accumulating wealth during middle age to secure old age financial well-being. A follow-up open-ended question was posed to allow respondents to explain how they plan to retire from daily farming business. However, most entrepreneurs believe that they do not need a retirement plan as they will continue with their daily farming business even if they are old. Others plan to leave the business to a family member especially a son. Transferring a business to a son or a family member does not imply that the family member will provide all the financial needs of a relative.

Guided by literature, the study recognised a formal retirement scheme as a good retirement plan. However, considering hyperinflation and the failure of formal retirement schemes in the country to remit significant retirement pay-outs to retirees the study contributed by recognising investment in capital assets like real estate and shares as crucial retirement schemes to be awarded a score. Lusardi and Mitchell (2011) argue that individuals were more vulnerable to suffering financial challenges after retirement and, hence, the need for retirement planning.

Government and policy makers should educate farmers on formal retirement schemes and how best they can translate their farming business ventures into good retirement platforms. Considering the proposition of the lifecycle hypothesis that individuals accumulate wealth during their working lives and live on the wealthy once they have retired. Agribusiness farmers need more education on wealth accumulation and formal retirement platform that can assist them when they are old.

These results implies that aged agribusiness farmers in Zimbabwe have no retirement schemes to provide for their financial needs and hence could be having challenges to make ends meet. Famine Early Warning System (2022) factsheet indicates the need for food assistance among farmers in various districts across the country due to low yields in the 2021/2022 season.

7.4.2.8 Financial resilience after a bad farming season

Failure of an agribusiness entrepreneur to plan for adverse financial effects of a bad farming season can have a negative effect on the entrepreneur's financial situation and wellbeing. Therefore, an entrepreneur should actively save and prepare for adverse farming conditions. Table 24 above shows that most (67%) agribusiness entrepreneurs could not continue to survive for more than six months without borrowing money. This implies higher levels of food insecurity and financial challenges associated with every bad farming season. Due to global warming, Zimbabwe has not been spared from climate change and low rainfalls, it is against this backdrop that farmers are expected to be financially prepared for a bad farming season.

Reserve Bank of Zimbabwe (2020) indicated that a total of 8 million people (6 million rural population and 2 million urban population) needed food assistance to make ends meet before the following farming season. Zimbabwe used to be the breadbasket of Africa two decades ago, however the country currently relies on imported food to fulfil national food consumption. Agribusiness farmers are expected to have granaries for agricultural produce adequate for their perennial consumption. Government efforts to educate farmers to adopt farming of small drought resistant cereals should also be complimented by financial training of how farmers could save for a bad farming season.

A financially resilient agribusiness farmers will secure family financial wellbeing and provide the need of the family even after a bad farming season. This would probably reduce food insecurity in households and the need for government to import food from other countries. Hence translating to reduction in national budget deficit and government expenditure. This study contributes by providing evidence that a financially literate agribusiness sector contributes greatly to the growth of the Zimbabwean economy. Hence, the urgent need to address financial illiteracy among agribusiness entrepreneurs.

7.4.2.9 Financial behaviour total score

Financial behaviour was measured by eight questions which measured a variety of practical financial concepts related to an agribusiness daily financial decision making. Hence, the maximum behavioural score for this study was eight (8) scores from the eight measured concepts. The minimum score expected from a behaviour literate individual was calculated as 70% of the total score (OECD 2020) which is six (6). Hence the minimum expected score was six (6). Financial behaviour is argued to be a good proxy of financial knowledge as various authors (Lusardi, 2019) concur that individuals should be able to apply knowledge in financial decision making. However due to behavioural psychological factors cited by the prospect theory, application of this knowledge depends on the attitude or emotions of an individual at the time of decision making. Figure 24 shows financial behaviour scores of agribusiness entrepreneurs. Most individuals exhibited the presence of only two to three financial behaviours.



Figure 24: Financial behaviour total score

Source: SPSS analysis of primary data (2022)

Only 26.55% of the surveyed population scored the minimum behavioural score of 6 scores and above whilst the majority scored 3 (26.10%) and 2 scores (19.86%). Most agribusiness entrepreneurs do not have household or personal budgets, have no savings and borrow to cover any financial emergencies, have no retirement plan and were not financially prepared to cushion themselves if they experience a bad farming season. Hence, this study established that financial behaviour literacy of agribusiness entrepreneurs in Zimbabwe was very low.

Agribusiness entrepreneurs in Zimbabwe have lower levels of financial behavioural literacy and hence do not practise financial savvy behaviours. Budgeting and savings are crucial financial behaviours and the foundation of wealth accumulation and financial wellbeing (Styles 2018). Considering that the majority of agribusiness entrepreneurs in Zimbabwe are aged and close to retirement age, lack of savings and emergency preparedness shows that these entrepreneurs have failed to save and accumulate wealth for the largest part of their life. Lack of savings and wealth during old age results in financial poverty at old age. Hence, the reason why these entrepreneurs mainly depend on family and friends to make ends meet.

These results imply the need for agribusiness entrepreneurs to improve their financial behaviours. However, literature has documented that financial behaviour of individuals was difficult to change. Binoy and Subhashree (2019) argue that financial behaviours could not be easily influenced by theoretical training programs but however advocated for financial socialization, mock sessions and workshops can be conducted to give first-hand experience on various methods to finance the entrepreneurial technical endeavours. Binoy and Subhashree (2019) further argue that financial literacy was a great influencer of entrepreneurship and hence poor financial behaviours of agribusiness entrepreneurs in Zimbabwe also translates into poor entrepreneurial development in the sector.

There is an urgent need for improving financial behaviours of agribusiness entrepreneurs. However, considering literature, educational programs should entail practical sessions and financial socialisation with experts. Extension officers advocated for exchange visits with financial experts. One extension officer said *“Financial experts should visit farmers and share their knowledge and experiences and they should also allow farmers to visit the banks for financial advice, the continuous visits and relationship between the financial experts and the*

farmers will improve their financial literacy and thus improve loan repayment.” The need for exchange visits concurs with the financial socialisation theory which posited that financial behaviour of individuals develop through socialising with family, friends or experts. Johan, Rawlinson and Appleyard (2020) further argue that financial behaviour and financial attitudes were mainly influenced by income, work experience, family financial socialisation and discussing money issues with friends. Hence the need for policy makers to schedule workshops and experience sharing seminars in their financial education programs.

The Blooms taxonomy in education also posited educational objectives that span from psychological, psychomotor, and effective objectives. Psychomotor educational objectives posited by Bloom should be considered in developing financial education programs for agribusiness entrepreneurs. According to the life cycle hypothesis saving, wealth accumulation and retirement planning are basic financial savvy behaviours expected from all individual to practise during their life cycle.

7.4.3 Measuring financial attitude

Binoy and Subhashree (2019) define financial attitude as the mental and psychological judgement of an individual in financial matters. The OECD (2020) argues that even if a person has sufficient financial knowledge and ability to act in a particular way, their financial attitude will influence their decision of whether to act. Therefore, financial literacy should be a combination of financial services awareness, financial knowledge, financial skill, financial attitude, and behavior necessary to make sound financial decisions and in the end achieve individual financial wellbeing. OECD (2018) financial attitude questions focused only on attitudes toward long term financial planning and use of money over preferences for the short-term living for today and spending money. This study added two more questions which measured financial illiteracy behaviors that have been noted among agribusiness entrepreneurs. However, the questions were dropped due to factor analysis and reliability analysis results. Table 24 shows the financial attitude responses of agribusiness entrepreneurs. Agribusiness entrepreneurs generally have good financial attitudes.

Table 24: Financial attitude number of correct and incorrect responses weighted data

Scores of responses	Financial attitude 1	Financial attitude 2	Financial attitude 3	Financial attitude 4	Financial attitude 5
0	11.1%	22.9%	16.9%	21.2%	49.9%
1	88.9%	77.1%	83.1%	78.8%	50.1%
Total	100%	100%	100%	100%	100%

Source: SPSS analysis of primary data (2022)

7.4.3.1 Financial attitude 1

Financial attitudes related to an individual’s preference of long-term financial planning to spending the money for current use. Table 24 shows the financial attitude of agribusiness entrepreneurs is quite good, with the majority of entrepreneurs disagreeing with the statement that they find it more satisfying to spend money than to save it for the long term. Although agribusiness entrepreneurs prefer to save than to use money, results from financial behaviors showed that these entrepreneurs have not been saving for the past two years. Thus, their positive attitude to saving than spending has not been translated into actual saving. Income and other socio-economic demographic factors could be hindering agribusiness entrepreneurs to save. Information from qualitative interviews revealed that the majority of agribusiness farmers have been harvesting very low yields and the demographics has shown that most agribusiness entrepreneurs earn a monthly income of less than USD500 per month.

Considering the dilapidation of farm equipment, the need for farm mechanization in the farming business and the fact that the majority indicated that they have financial goals they intend to achieve, agribusiness entrepreneurs are left with nothing to save for future use. Furthermore, qualitative data revealed that agribusiness entrepreneurs channel excess income to farm equipment and developments on their farms. There is a need to educate these agribusiness entrepreneurs on how they can save for (1) emergencies, (2) short term needs, (3) bad farming season and (4) long term financial goals.

Among all the three dimensions of financial literacy, financial attitude is considered the most difficulty dimension to be influenced by financial education. Hence, Johan, Rowlingson and Appleyard (2020) propounded the need to improve financial attitudes through family financial socialisation and discussing money issues with friends or experts. The authors also concurred

with the findings of this research by documenting that financial attitudes and financial behaviours were greatly influenced by income (Johan, Rowlingson and Appleyard 2020).

7.4.3.2 Financial attitude 2

Rai *et al.* (2019) further defined financial attitude as personal inclination towards financial matters. Table 24 shows that most (77.1%) agribusiness entrepreneurs disagreed with the statement that money is there to be spent. Which imply that agribusiness entrepreneurs understand that apart from immediate spending and satisfying of current needs money can be saved for future needs. However, a few (22.9%) still believed that money is there just to be spent

Triangulating with qualitative information one of the extension officers said, “*Concerning financial attitude towards spending, one should understand that the majority of landowners in Zimbabwe are aged and mature and therefore they have positive attitudes towards saving to reckless youthful spending of money.*” Hence, this study concludes that agribusiness entrepreneurs have positive attitude towards long term use of money.

Educational programs to improve financial literacy of agribusiness entrepreneurs should translate these attitudes to practical financial behaviors. Kapoor (2012) argues that budgeting of income before spending, and record keeping are the foundations of effective saving. Given proper guidance and knowledge agribusiness entrepreneurs can easily translate their positive attitudes to saving for the long term. However, the results were not consistent with Reilly and Brown (2012) who argue that although an individual saved during his working life, the level of spending will increase during old age through gifts to the less disadvantages and to family members.

7.4.3.3 Financial attitude 3

Table 24 shows that most agribusiness entrepreneurs disagreed with the statement, "I tend to live for today and let tomorrow take care of itself." Farmers are in the habit of planting the seed and waiting long months before harvesting and during the farming processing, various activities like weeding, spraying of chemicals are conducted. Hence, these entrepreneurs generally have

patience, resilience, and long-term planning as part of their entrepreneurial characteristics. This research cleared the allegation that agribusiness entrepreneurs have typically bad attitudes towards the management of finances. Implicating that agribusiness entrepreneurs exhibit good financial literacy attitudes towards planning for the future. Policymakers should work on enhancing the good financial attitudes that agribusiness have towards use of money apart from their attitude of diverting money for business to personal use.

Furthermore, agribusiness entrepreneurs indicated that they are responsible for the daily to day management of their household finances, thus previous experiences of spending money unwisely could have built a positive attitude of planning for next day finances. Rai *et al.* (2019) argued that children especially women should be given opportunities to manage finances as they grow to improve their financial skills. Literature documents that financial attitudes and behaviors are built through experience and socialization, hence why entrepreneurs have developed good financial attitudes through practical management of both business and household finances (Binoy and Subhashree 2019).

7.4.3.4 Financial attitude 4

Most agribusiness entrepreneurs disagreed with the notion that government loans should not be paid back because it is the government's responsibility to support agribusiness. Reports and literature have documented agribusiness entrepreneurs' default and fail to honor debts to both government and financial institutions (Masiyambiri *et al* 2011). Zimbabwe Democratic Institute (2019) established that more than 55% of farmers who benefitted from the command agriculture scheme defaulted. To investigate if agribusiness entrepreneurs were intentionally defaulting to pay loan, this study contributed by adding two questions which enquired on observed agribusiness entrepreneurs' behaviors and attitudes.

Interviews among agribusiness entrepreneurs revealed that farmers have challenges paying back loans due to incapacity to pay back and not unwillingness to payback. Mrs Nee suggested that *"Banks should consider lowering their interest rates when offering loans because if farmers take these loans, they will definitely fail to pay. However, there is a need for serious farmer training on the benefits of being faithful in loan repayments regardless of financial challenges"*.

This study posits that agribusiness entrepreneurs are willing to pay back government loans availed to them, however low productivity and other factors hindered them to fully own their debts. Qualitative data from interviews also revealed that the prices pegged by government also hinder farmers to honor their obligation to deliver farm produce to the Grain marketing Board. Grain Marketing Board prices were generally lower than the prevailing market prices. Thus, agribusiness entrepreneurs end up selling their farm produce directly to the market and failing to deliver farm produce to the Grain Marketing Board.

7.4.3.5 Financial attitude 5

Almost half of the surveyed population strongly agreed that they divert a portion of business loans for personal use. Funds intended for business purposes is diverted for consumption purposes which do not generate any income and thus cause failure to payback loan interest and principal amount. Although other attitudes reflect apposite attitude to long term saving, diversion of business-related loans for personal use aggravates the challenge of loan defaults. Among all the financial attitudes examined in this study. This attitude concerning diversion of funds should gain more emphasis in financial educational programs. Agribusiness farmers should be trained to separate household consumption funds from business funds if they want their business endeavors to grow.

This study contributes to literature by documenting that most agribusiness entrepreneurs divert agribusiness loans to personal use. Hence, the reason why there is an observable inverse relationship between the increase in government expenditure and farm productivity. The diversion shows higher levels of financial illiteracy and in cases where the government protects the agribusiness entrepreneurs, the defaults increases.

The construction of this financial attitude statement was guided by researcher observations, experience and allegation from various nonacademic sources which postulated that the funds availed to agribusiness entrepreneurs for farming were usually diverted to consumption. The implications of this research finding are that funding to agribusiness entrepreneurs should be given in form of inputs, equipment, and machinery instead of real money/ cash. This study supports the nature of government programs like the command agriculture which avails all the inputs required by farmers and in return the farmers payback by delivering farm produce to the

grain marketing board. However, the prices of farm produce should be fair to both the farmers and the government to avoid default.

7.4.3.6 Financial attitude total score

Figure 25 shows total scores of financial attitudes. Financial attitude total score was measured by the first three attitudes (attitude 1, attitude 2, and attitude 3). Attitudes 4 and 5 although there were crucial were excluded from calculating attitude and the level of financial literacy score due to their low factor loadings. Low factor loadings highlighted that the statements were not valid measures of financial literacy. Agribusiness entrepreneurs have good financial attitudes towards long term financial planning as shown by high scores. Considering the average age of these entrepreneurs of 52 years, and the vast experience of mean 13 years, these entrepreneurs have been developing good financial attitudes. However due to low yields, low income and low financial literacy the majority of these entrepreneurs have not been practically saving.

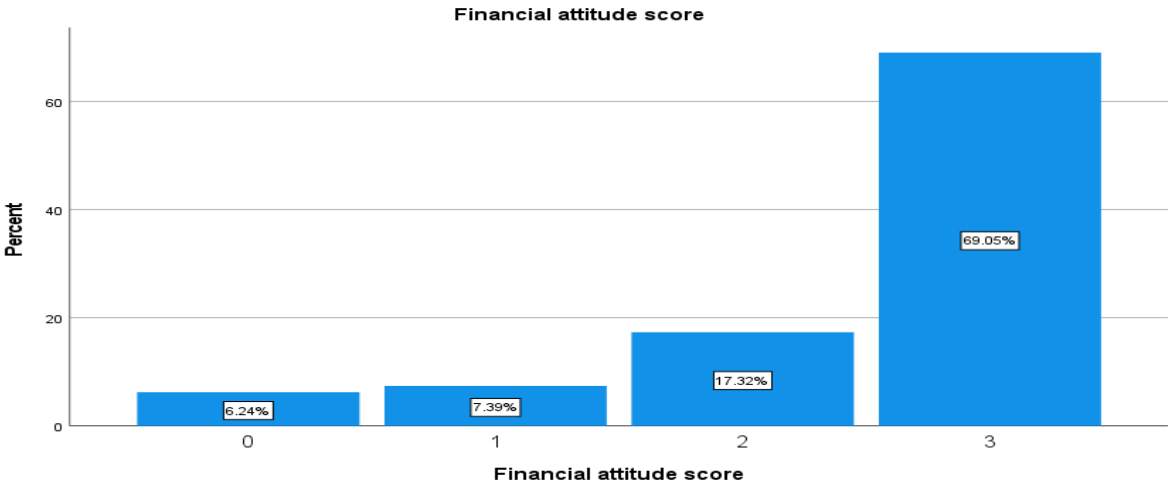


Figure 25: Financial attitude score

Source: SPSS analysis of primary data (2022)

The majority (69.05) of agribusiness entrepreneurs scored 3 scores (out of 3) by disagreeing to statements that favored current use of money rather than long term financial planning. Agribusiness entrepreneurs have generally good financial attitudes toward use of money. However, 0.24% or one individual failed all the three questions and thus exhibiting low financial attitude literacy. The individual was an outlier as generally all the other entrepreneurs exhibited two to three attitudes.

Based on the analysis of the three financial questions that proved to be reliable and valid, the study established that agribusiness entrepreneurs have positive financial attitudes towards long term saving. However, it is crucial to consider the diversion of business loans to personal use as this causes high loan defaults in the financial markets. Such financial illiteracy behaviours can destabilize the whole financial system. Various stakeholders in the Zimbabwean economy, have been urging the government to reconsider the funding of the agribusiness sector.

Faily good financial behaviors exhibited by agribusiness entrepreneurs in this study should be used as the basis of financial education programs, where attitudes towards long them saving should be translated to actual saving. Arifin (2018) argues that financial attitude relates to a state of mind, opinion, and judgment about finance which affects financial decision making. Hence, through intensive training positive financial attitudes can be easily translated to positive financial judgements and financial behaviours.

7.5 The level of financial literacy of agribusiness entrepreneurs

The study sought to determine the level of financial literacy of agribusiness entrepreneurs. Financial literacy was operationalized into three dimensions namely financial knowledge, financial behavior, and financial attitude. After measuring the elements of the three dimensions of financial literacy, a financial literacy score was computed by summing up all the scores answered correctly. The scores were then normalized to 100. Figure 26 represents the composite financial literacy score.

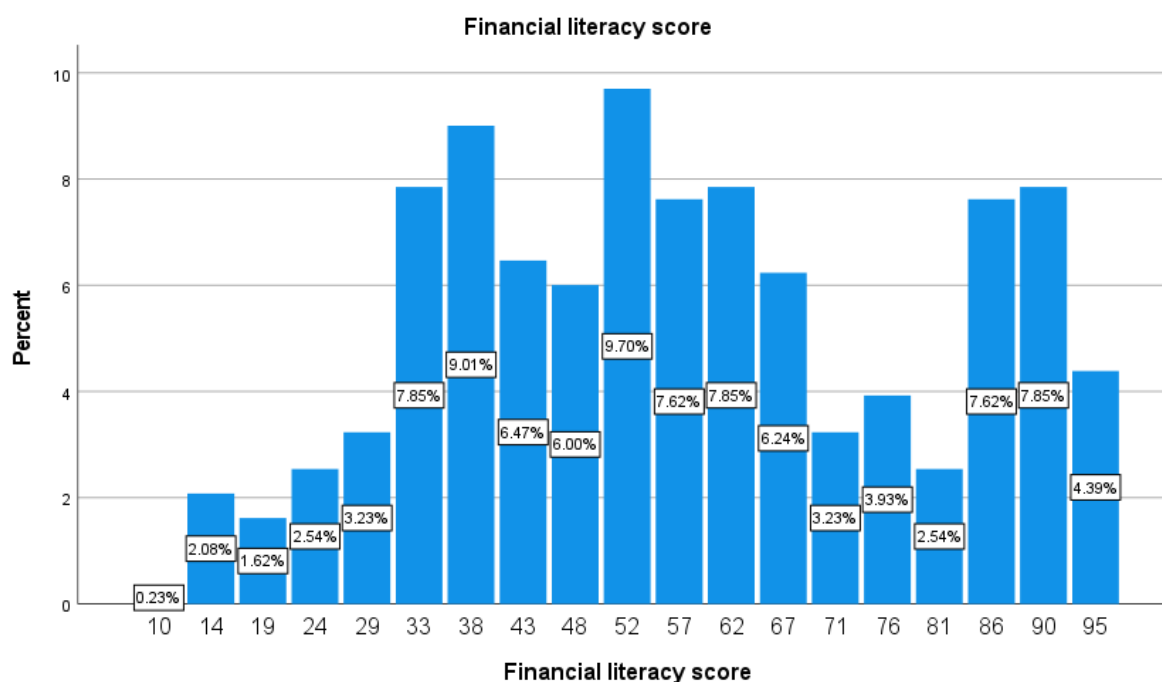


Figure 26: Financial literacy score normalized to 100 (21=100)

Source: SPSS analysis of primary data (2022)

The minimum score for financial literacy was pegged at 70 % according to OECD (2020) methodology. Only 29.56% (3.23 + 3.93 + 2.54 + 7.62 + 7.85 + 4.39) of the surveyed population attained the minimum financial literacy score, with the majority scoring below 70%. This research thus established that the level of financial literacy of agribusiness entrepreneurs was generally low. All the concepts measured in this research were basic to an individual’s daily financial decisions. Lack of some of the concepts could ultimately lead to financial illiteracy consequences. The maximum score was 95%, whilst the minimum score was 10%. The majority of the surveyed population attained 33%-67%. There was, however, variability in the total scores of financial literacies due to various demographic factors that will be analyzed in the next chapter.

The results of the study consisted of various authors in literacy who has documented lower levels of financial literacy. Lusardi and Mitchell (2011) and Lusardi (2014) established that the world was flat with lower level of financial literacy across the world. Cossa, Madaleno, Mota (2021) also established that financial literacy was very low in Mozambique to an extend that individuals were not qualified to make the most appropriate financial decisions. Financial literacy was considered low for both developed and developing nations alike and thus the reason

various nations in developing countries are working on developing financial literacy capabilities (Lusardi 2019).

Agribusiness entrepreneurs in Zimbabwe exhibited lower levels of financial knowledge and financial behaviours and hence do not understand the basic concepts of financial markets and do not practise fundamental financial savvy behaviours like budgeting, saving and retirement planning. Table 25 shows financial literacy descriptive statistics which further explain level of financial literacy of the surveyed population.

Table 25: Financial literacy descriptive statistics

Financial literacy dimension	N	Minimum	Maximum	Mean	Std. Deviation	Skewness	Kurtosis
Financial knowledge score	433	0	10	5.39	2.566	-.291	-1.136
Financial behaviour score	433	1	8	4.18	2.123	.560	-.923
Financial attitude score	433	0	3	2.49	.880	-1.687	1.779
Financial literacy score	433	10	95	57.46	21.825	.099	-.947

Source: SPSS analysis of primary data (2022)

The average financial knowledge score of agribusiness entrepreneurs was 5.39 out of 10 questions. Which was lower than the minimum score of 70%, hence indicate low levels of financial knowledge. The financial knowledge scores were negatively skewed, reflecting that most respondents failed to answer the questions correctly. The minimum score attained was 0 whilst the maximum score was 10 (out of 10). This study will further present the major socio-demographic factors which affected the financial literacy scores among agribusiness entrepreneurs in chapter eight.

The average score for financial behavior was 4.18 (out of 8). The minimum expected score was six (6), hence agribusiness entrepreneurs have low levels of financial behavior literacy. All the sampled respondents scored at least one financial behavior score, with most respondents indicating that they were responsible for their daily management of personal or household finances. However, most agribusiness entrepreneurs were not practicing basic financial behaviors like budgeting, saving and retirement planning which indicate low behavior literacy.

The average score for financial attitude was 2.49 (out of 3), indicating that the majority of agribusiness entrepreneurs have positive attitudes towards longer-term financial planning rather

than short term satisfaction and use of money. The total financial literacy score is a summation of the financial knowledge, behavior and attitude scores and ranges between 0-23. The average financial literacy score is 57.46% which is far below the minimum score of 70%. That is, the majority of agribusiness entrepreneurs are financially illiterate. The scores ranged from a minimum score of 10% to a maximum of 95%.

7.6 Financial literacy self-assessment.

Apart from analyzing actual financial literacy, agribusiness entrepreneurs were also asked to rank their own financial literacy. The question was used to measure confidence of an individuals in personal finances. Figure 27 shows agribusiness entrepreneurs’ self-assessment

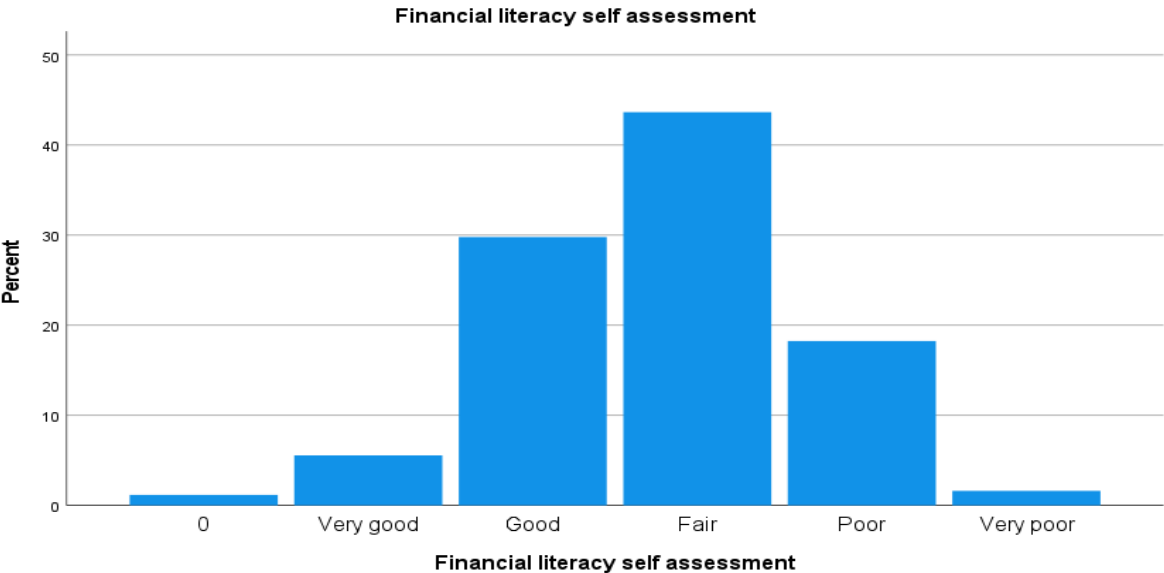


Figure 27 Financial literacy self-assessment

Source: SPSS analysis of primary data

Most agribusiness entrepreneurs regarded their levels of financial literacy to be fair. Very few agribusiness entrepreneurs rated their levels of financial literacy as poor or very poor. The results do not concur with the actual financial literacy scores which established that agribusiness entrepreneurs have generally low levels of financial literacy. This implies that agribusiness entrepreneurs overrate their levels of financial literacy and hence are prone to making financial mistakes. Atkinson (2016) also established that most of the population preferred to rank their financial literacy as average. Lusardi and Mitchell (2014) argue that generally the level of

financial literacy self-assessment is related to actual assessment, where those with lower levels of financial literacy rate themselves lower than those with higher levels of financial literacy. However, the result of this study reflects a disassociation between the actual level of financial literacy and the self-assessed financial literacy where even individuals with lower levels of financial literacy regarded themselves as having a fair level of financial literacy.

7.7 Chapter summary

The research sought to assess the level of financial literacy of agribusiness entrepreneurs. Financial literacy was operationalized into financial knowledge, financial attitude, and financial behaviour. The study established that agribusiness entrepreneurs have lower levels of financial behaviour and financial knowledge. As a result, agribusiness entrepreneurs do not practice basic agribusiness entrepreneurs like budgeting, saving, retirement planning and lack knowledge of financial assets like shares and bonds. The study also established that agribusiness entrepreneurs have good financial attitudes towards long term use of money, however, they have a tendency of diverting business loans to personal use and hence the major cause of high defaults in the sector. The diversion of funds to personal use was considered a reflection of lack of the other two dimensions of financial literacy where due to poor savings and budgeting skills money is generally used before proper financial planning.

There was a fair representation of both women and men in the study and most of these entrepreneurs were earning an income of less than \$500USD per month. Most agribusiness entrepreneurs are aged 52 and above and were married. Hence educational programs should consider the age and the life cycle stage of these entrepreneurs. The chapter concludes that there is a need to improve agribusiness financial knowledge and financial behavior skill. Therefore, the study recommended an operationalization model to solve financial literacy issues in the agribusiness sector where all the dimensions of financial literacy were analyzed and strategies to improve the competences was proposed.

CHAPTER EIGHT

FACTORS THAT AFFECT FINANCIAL LITERACY AND FINANCIAL SERVICES REQUIRED BY AGRIBUSINESS ENTREPRENEURS

8.1 Introduction

The previous chapter presented and discussed the level of financial literacy of agribusiness entrepreneurs. Financial literacy was measured as a combination of financial knowledge, financial behaviour, and financial attitudes. This chapter assesses the various factors that affect financial literacy of agribusiness entrepreneurs. Standard multiple regression was conducted to determine the factors. The chapter also discusses financial products and services needed by agribusiness entrepreneurs.

8.2 Multiple Regression model of factors that affect financial literacy.

A Standard Multiple Regression (SMR) model was estimated to determine the demographic factors that affect financial literacy. The dependent variable of the model was financial literacy scores, whilst the explanatory variable included age, gender, marital status, level of education and children below 18. Diagnostic tests to check for multi-collinearity, normality, linearity, homoscedasticity, and independence of residuals were conducted and discussed before conducting regression analysis as described in research methodology section.

8.2.1 Standard Multiple Regression results

The SMR results are represented in Table 26. The unstandardized beta coefficient (B) represents the estimate of likely change in the dependent variable for each one-unit change in the explanatory variable, they represent the regression coefficients of the model. The standardised beta coefficients represent regression coefficient expressed in standard deviation for the sample. The standardised beta coefficients indicated the change in the dependant variable for each standard deviation change in the explanatory variable (Martin and Bridgmon, 2012).

Table 26: Regression results

	Unstandardized		Standardized		Sig.
	Coefficients	Std. Error	Coefficients	T	
	β		β		
(Constant)	20.722	5.319		3.896	0.001
Gender binary	6.612	1.367	0.152	4.836	0.001
Actual age	-0.043	0.061	-0.022	-0.711	0.478
Marital status	-0.965	0.577	-0.054	-1.672	0.095
Level of education	3.262	0.44	0.313	7.421	0.001
Monthly income	2.144	0.29	0.336	7.38	0.001
Children below 18	-1.223	0.457	-0.078	-2.677	0.008
Financial products held	5.806	1.423	0.143	4.079	0.001
Financial choice influences	0.266	0.606	0.013	0.438	0.661
Dependent variable: Financial literacy					
R	0.852				
R Square	0.726				
Adjusted R Square	0.721				
Std Error of the Estimate	1.527				
F Statistic	140.608				
Sig	0.001				

Source: SPSS analysis of primary data (2022)

The model goodness of fit was determined by the adjusted R Square, which showed how much of the variance in the dependant variable was explained by the model. Table 26 above show that the adjusted R Square of the model was 0.721 reflecting that the explanatory variables of the model explained 72.1% of the dependant variable financial literacy. Gender ($\beta=0.152$, $p=0.001$), level of education ($\beta=0.313$, $p=0.001$), monthly income ($\beta=0.336$, $p=0.001$), children below 18 ($\beta=-0.078$, $p=0.008$) and financial products held ($\beta=0.143$, $p=0.001$) variables were statistically significant with significance values of less than 0.05, whilst three variables, age, marital status and financial choice influences were not statistically significant. Gender, level of education and financial products held made the strongest unique positive contribution to explaining the dependent variable.

8.2.1.1 Income

Regression results in Table 26 indicate that income had a positive significant ($\beta=0.336$, $p=0.001$) relationship with financial literacy. Thus, an increase in income by one standard deviation will lead to a 0.336 increase in the dependent variable financial literacy standard

deviation. This implies that financial literacy of agribusiness entrepreneurs increases with the level of income earned. Hence, agribusiness entrepreneurs who earn high income were more financially literate than low-income earners. Most agribusiness entrepreneurs indicated that they earn less than USD500 per month and thus lacks the capacity to afford various financial services and subsequently have low financial literacy. Through financial utilization, individuals gain experience in making financial decisions related to the services and hence improve their level of financial literacy.

These results concur with Nanziri and Leibbrandt (2018) who established that financial literacy scores increase as the level of income earned increases. Nanziri and Leibbrandt (2018) further added that there was an increase of the demand of financial products demanded as income increases. Hence income improves the capacity of individuals to utilize more borrowing and investment services thereby gaining more practical experience in the financial market. RBZ (2014) cited failure of rural population to afford account opening charges as a major barrier to financial inclusion among rural population and hence the importance of income in utilizing financial products

Anshika, Singla and Mallik (2021) established the gross profit ratio as the most influencing determinant that affects the financial literacy of the entrepreneurs. The authors argued that income influences all the three dimensions of financial literacy. Bhushan *et al.* (2020) also concurred that income has a positive contribution to financial literacy. The results implied that small scale farmers who earn less than \$500USD are more vulnerable to the consequences of financial literacy than their counterparts who earn more. Consequences of financial illiteracy ranges from poor accumulation of wealthy, borrowing at higher interest rates, indebtedness, vulnerability to financial fraud and poor financial decision making (Lusardi, 2019).

Low financial literacy and poor farm finances management practices result in low farm productivity Fairfax (2012). Interviewed AGRITEX extension officers further argued that poor farm management by small scale farmers largely affects farm productivity. There is an urgent need for financial education among low-income agribusiness entrepreneurs in order to boost financial wellbeing and farm productivity. Non- governmental organizations and policy maker educational programs concerning financial literacy should be targeted more at smallholder farmers.

8.2.1.2 Level of education

Level of education had a significant ($\beta=0.313$, $p=0.001$), positive relationship with financial literacy. This implies that an increase in the level of education will also lead to an increase in financial literacy. The level of education ranged from individuals who did not go to school to individuals with a Doctorate qualification.

Educated agribusiness entrepreneurs with higher levels of education (a diploma or a degree) were more financially literate than those with basic education. This confirmed that financial literacy increased with improvement in the level of education. Descriptive statistics showed that most agribusiness entrepreneurs only have basic primary and ordinary level education. Financial concepts of investment and interest compounding are usually taught in higher and tertiary education curriculum. In that vein Falahati *et al.* (2022) opined that individuals with a business-related degree qualification were more financially literate than those without. These results were also consistent with Twumasi *et al.* (2021) who established that farmers with higher education were more financially literate than those with lower educational levels.

Policy implications of this result are that financial education programs should be targeted to those with lower levels of education since they are the ones who lack the necessary financial skills. Policy makers should consider adding financial concepts in basic education curriculum such that both those with tertiary and those without tertiary education can make informed financial decisions.

Anshika, Singla and Mallik (2021), Cossa, Madaleno, Mota (2021) and Johana *et al.* (2021) established that individuals with higher level of education have significantly higher level of financial literacy. The mean age of agribusiness entrepreneurs was 52 years, reflecting that most of these entrepreneurs are aged and attained their educational qualifications during the colonial period where bottlenecks were implemented to limit the number of locals who proceed with their education (Bolding, Mutimba and Van der Zaag 2003). Hence, the need for financial education programs with basic financial information.

8.2.1.3 Gender

Gender explained the dependent variable more than all the other variables as shown by the unstandardised β coefficients in Table 32. The gender variable was represented by 0 for female and 1 for male, a positive relationship was expected between gender and financial literacy. The result showed a positive significant relationship between gender and financial literacy. That is financial literacy increases as gender changes from zero (0) to one (1). This implies that males exhibited more financial literacy than females.

This study confirmed the relationship documented by literature that males are more financially literate than females (Lusardi 2019; Kurowski 2021). Kurowski (2021) established that man performed better in all financial literacy questions compared to females due to household daily roles that women are expected to fulfill while man deal with monetary and sourcing of finance.

Financial illiteracy was widely common among women agribusiness entrepreneurs, implying that women in agribusiness do not understand how to choose loan options, they have difficulties in applying the concepts of time value of money and hyperinflation when managing finances and they do not budget their funds. Women are more susceptible to financial emergencies and mostly affected by bad farming seasons.

Horna, Kiss, and Lenard (2021) argue that gender differences in financial literacy can be a result of differences in preferences and personality traits of women and males, whilst Chen and Volpe (2002), attributed low financial literacy to difference in roles between man and households. Where man usually manages finances whilst women take care of household chores.

Policies organise to close the gender gap should consider the role of financial literacy in ensuring financial wellbeing and financial resilient. If the financial literacy gap is not addressed among agribusiness entrepreneurs, the livelihoods of women will become poorer than that of their male counterparts. Considering the higher rates of separation and divorce in the country women headed agribusiness entrepreneur businesses will perform less than male lead agribusiness businesses.

In contrast to the results of this study, Grohmann, Hubler, Kouwenberg and Menkhoff's (2021) study of middle-class women, who earned at least a minimum wage in Bangkok Thailand

established that women showed the same high level of financial literacy as men, in terms of financial knowledge and financial behaviour. The authors argued that the countries gender equality principles in school enrolment, involvement of women in financial matters and high employment ratios of women explained the missing financial literacy gender gap. This implies that improvement in school enrolment, equal chances in employment and financial literacy programs targeted at women by the government can assist in closing the gender gap among agribusiness entrepreneurs in Zimbabwe.

8.2.1.4 Financial products held

Data for financial products held was categorized as payments products, savings, investment and retirement, credit products and insurance where (1) indicated an entrepreneur who holds no product, (2) who holds one product (3) holds more than one product. This research expected the variable to have a positive effect on financial literacy.

Table 26 shows that financial products held has a significant ($\beta=0.143$, $p=0.001$) positive relationship with financial literacy. Apart from gender with unstandardized β coefficient of 6.612, the variable explained the dependent variable more significantly than other variables (5.608) Agribusiness entrepreneurs with various categories of financial products were more financially literate than entrepreneurs' without or with only one financial product. Most agribusiness entrepreneurs hold only one type of financial product, usually payments products. Specifically, the majority of small holder farmers do not have bank accounts, they only have mobile money accounts like Eco cash and one money. Fin scope (2014) established that there were higher levels of financial exclusion among the rural areas in Zimbabwe. Binoy and Subhashree (2019) argue that individuals who lack financial literacy shy away from financial transactions since they lack knowledge about the financial products and services.

This research established that agribusiness entrepreneurs who held more financial products were more financially literate. (Atkinson, Monticone and Mess 2016) argue that financial awareness gained through financial knowledge creates demand for more financial products. Therefore, those who are aware and knowledgeable of the products are willing to use the financial products. Zimbabwe is struggling to capture the financially excluded and to mobile deposits from the public. The financial inclusion strategy confirmed higher levels of financial

exclusion and devised strategies to improve financial inclusion in the country. Policy makers should consider the impact of financial literacy in improving the demand of financial products. The theory of planned behavior by Ajzen and Kruglanski (2019) asserted that financial behavior is a result of behavioral intentions, and these behavioral intentions are usually created by social and objective norms. Financial information gained through various sources creates intentions which are either rejected or processed to financial behavior. Financially literate individuals have more intentions under their consideration than financially illiterate individuals. Policy makers should consider creating financial products awareness through financial literacy programs and radio/television Medias as a first step to improving financial inclusion.

8.2.1.5 Children below 18 years

Family composition which includes the number of children below 18 years, and the number of people living in the same household above 18 years, has an impact on family expenditures and welfare. This research expected a negative relationship between the number of children in a household and financial literacy (Atkinson, Monticone and Mess 2016). The variable had a significant negative relationship with financial literacy where an entrepreneur from a household with more children aged 18 years and below had low financial literacy compared to an entrepreneurs from a household with few dependents. It is worrisome that entrepreneurs from households with more children have low financial literacy. Hence the need for allocating funds effectively is high for bigger families. The effect of children below 18 years on financial literacy concurs with the effect of income on financial literacy, which advocates that the bigger the family and the associated cost the lower the disposable income for the family hence low financial utilization.

8.2.1.6 Marital status, age, and financial information sources

The study also considered financial information sources as a potential determinant of financial literacy. The variable was categorized into zero (0) use of informal financial information sources and one (1) for use of formal information sources. The variable was not significant, and this implies that the use of formal or informal sources of information does not influence financial literacy. Marital status and age did not have a significant relationship with the dependent variable financial literacy. Mutengezanwa (2018) and Lusardi (2019) argue that single women were less financially literate than their male counterparts, whilst Nanziri and Leibbrandt (2018)

argue that the divorced and the widowed usually acquire more financial literacy after separation from partner, therefore the widowed and the divorced can be more financially literate. This research concludes that marital status has no significant relationship with financial literacy. The married can either be financially literate or financial illiterate regardless of marital status. Marital status should not be used as a yardstick for financial literacy.

Surprisingly, the variable age was not statistically significant. Van Rooji and Lusardi (2011), however, posits that there is an inverted U-shaped relationship between financial literacy and age. Younger people and the old exhibiting lower financial literacy levels than the middle aged. This research expected a negative relationship as most of the population were middle to old people. Very few young people own land in Zimbabwe.

The estimated financial literacy regression model for this study can be stated as.
 Financial literacy = 20.72 + 6.61gender + 3.26 level of education + 2.14 monthly income -1.22 children below 18 + 5.81 financial products held.

8.2.2 Post estimation diagnostic test

The standard multiple regression model was conducted based on meeting all the assumptions of the ordinary least squared assumptions of heteroscedasticity, normality, and collinearity. This section discusses the various regression post estimation diagnostic tests.

8.2.2.1 F-Test (Model fitness)

First, the test of regression model fit was confirmed by a significant F-statistic of 0.001(p-value). The F-Test tests if the model beta coefficients are not equal to zero. These results confirm that the SMR model was significant. Table 27 represents model fitness.

Table 27: Model significance

F-Test (Anova table)						
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	149450.481	8	18681.310	140.608	.000 ^b
	Residual	56333.141	424	132.861		
	Total	205783.622	432			

a. Dependent Variable: Financial literacy score

b. Predictors: (Constant), Financial choice influences, Actual age, Gender binary, Children below 18, Financial products held, Marital status, Level of education, Monthly income

Source: SPSS analysis of primary data (2022)

The Anova table p-value was less than 0.05 and the F-statistic is 140.6, showing that the coefficients were jointly significant and different from zero, thus the researcher rejected the null hypothesis that all the *B* coefficients are equal to zero and proceeded to use multiple regression.

8.2.2.2 Normality

Regression post-estimation results showed a normal distribution of data. Normality is a crucial assumption of all linear regression models. The histogram in Figure 28 below indicates data distribution.

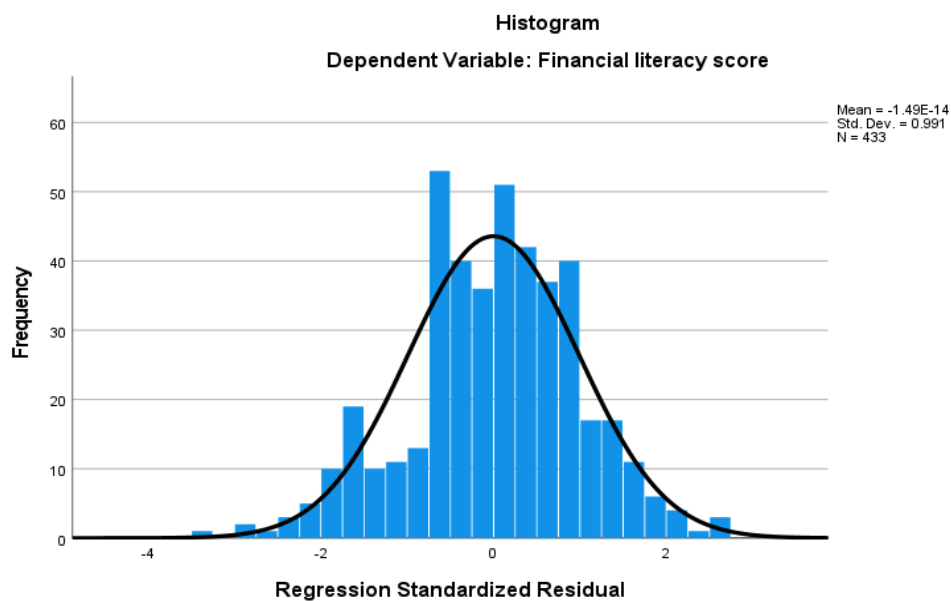


Figure 28: Regression normality histogram

Source: SPSS analysis of primary data (2022)

The data for this study was normally distributed and fit for multiple linear regression model. The researcher also used the normal P-P plot of regression residuals to check for normality and linearity. The expectation was that variable point lie diagonally is a reasonable straight line from bottom left to top right (Pallant, 2020). Where the straight-line commands that the

relationship between the variables were linear (Pallant, 2020). Figure 29 below shows the Normal P-P plot of regression residuals. The normal P-P Plot showed no major deviations from normality as indicated by a reasonably straight diagonal line from bottom left to top on the P-P plot.

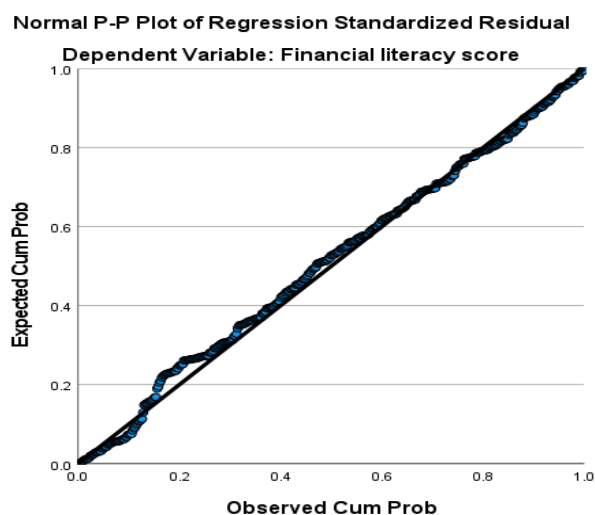


Figure 29: Normal P-P Plot of regression standardized residual

Source: SPSS analysis of Primary data (2022)

The straight-line presented in the normal p-p plot commands that the relationship between the variables were linear (Pallant, 2020). Thus, the data was fit for a linear regression model. Hence the data from this study did not violate normality and linearity assumptions of the model.

8.2.2.3 Durbin Watson

The Durbin Watson test showed that there was no correlation between model successive residual error terms. Table 28 shows the Durban Watson test results.

Table 28 :Durban Watson test results

Model Summary					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.852 ^a	.726	.721	11.527	2.004
a. Predictors: (Constant), Financial choice influences, Actual age, Gender binary, Children below 18, Financial products held, Marital status, Level of education, Monthly income					
b. Dependent Variable: Financial literacy score					

Source: SPSS analysis of Primary data (2022)

The Durbin Watson was within the acceptable region of 2 and, therefore, provides evidence that there was no auto correlation among error terms. Hence the use of a standard linear regression model.

8.2.2.4 Correlation matrix

The post estimation regression results also presented the correlation matrix presented by Table 29. The correlation matrix test for multicollinearity of independent variables. Explanatory variables had generally low to medium correlation coefficients except for farm size and level of income with a Pearson correlation coefficient of 0.908. Gujarati (2014) argued that variables with Pearson correlation coefficients (r) ranging from 0.1 to 0.8 were linear and within the range. However, variables with (r) above 0.8 show evidence of multi-collinearity between variables (Gujarati, 2014). To deal with the problem of multi collinearity, Gujarati (2014) suggests that researchers: (1) search for a priori information regarding the variables, (2) combine cross sectional data with time series data I (3) drop a variable if does not cause a transformation bias or (4) transform the variables. The researcher chose to drop the variable farm size since it did not cause any specification bias. Agribusiness entrepreneurs with medium to large scale farms tend to earn more income than small scale entrepreneurs.

Table 29: Correlation matrix

	GR	AG	MS	EDT	IN	CH	FL	FS	FPH	FCH
GR	1									
AG	0.53	1								
MS	0.441	0.331	1							
EDT	0.39	0.142	-0.427	1						
IN	0.445	0.177	-0.268	0.722	1					
CH	-0.171	-0.26	0.13	-0.348	-0.402	1				
FL	-0.499	-0.10	-0.419	0.536	0.577	-0.035	1			
FS	0.379	0.178	0.243	0.703	0.908	0.395	0.729	1		
FCH	0.428	0.03	0.315	0.574	0.655	-0.297	0.431	0.593	1	
FCH	0.178	0.122	0.234	0.371	0.427	0.288	0.377	0.487	0.265	1

Source: SPSS analysis of Primary data (2022)

**Where GR represents Gender, AG (Gender), MS (Marital status), EDT (Education), IN (Income), CH (Children below 18), FL (Financial literacy), FS (Farm Size), FPH (Financial Products Held) and FCH (Financial Choice Influences).*

Marital status has a positive correlation with age, showing that people get married as they grow older. Financial products held by agribusiness entrepreneurs had a positive correlation coefficient with gender, level of education and monthly income. The educated and those who earn higher income utilize more financial products than their counter parts. Males also utilized financial product than females. Gender was represented by 0 for women and 1 for males. These results are consistent with Baihaqi *et al.* (2022) who established that education and income had a positive effect on financial literacy. A financial literacy gender gap in favor of man was also documented in literature (Tinghög *et al.* 2021)

Multi-collinearity was further tested by tolerance and the value inflation factor (VIF). Tolerance indicates the extent to which the variability of a predictor variable is not explained by the other independent variables in the model. It is calculated by 1- R squared of each variable. Tolerance is expected to have values above 0.1, very small tolerance values of less than 0.1 indicates high multi-collinearity of the variable with other variables in the model (Pallant 2020). All tolerance values of explanatory variables have values above 0.1, reflecting low chances of multiple correlation in the model.

The variance inflation factor (VIF) provides a factor by which the correlations amongst the predictor variables inflate the variance. The factor assists in the identification of multicollinearity in multiple regression models. Values above 10 generally indicate multicollinearity in the model. All VIF values were less than the recommended cut-off of 10, therefore the model did not violate the multi collinearity assumption Pallant (2020). Table 30 presents the collinearity tolerance and VIF values.

Table 30: Tolerance and variance inflation factor

	Collinearity Statistics	
	Tolerance	VIF
(Constant)		
Gender binary	.657	1.523
Actual age	.673	1.487
Marital status	.619	1.614
Level of education	.362	2.764
Monthly income	.311	3.218
Children below 18	.756	1.322
Financial products held	.525	1.904
Financial choice influences	.769	1.300

Source: SPSS analysis of Primary data (2022)

8.3 Results on financial product/service preferences.

The study also sought to determine financial services demanded by agribusiness entrepreneurs after taking note of higher levels of financial exclusion and uptake of financial products. Access to finance is a vital catalyst of sustainable agribusiness entrepreneurship however, the ability to access different sources of finance depends on various supply side and demand side factors (Bharuch *et al.* 2021).

8.3.1 Financial products held.

Table 31 below shows the financial products held by agribusiness entrepreneurs. Financial products were categorized into payment products, savings products, investment and retirement products, credit products and insurance products. The variable was coded depending on the categories of financial product held.

Table 31: Financial products held

	Frequency	Valid percent
Holds no product	9	2.1%
Holds one form of financial product	223	51.5%
Hold more than one form of financial products	201	46.4%

Source: SPSS analysis of primary data (2022)

Most agribusiness entrepreneurs hold one form of financial product. Around 51.5% of the surveyed Agribusiness farmers only hold payment products to make transactional payments and receive money. These payment products include mobile money like Ecocash and bank current account. Majority of Agribusiness entrepreneurs with payment products use mobile money like Ecocash and One money to conduct their financial transactions.

Around 46.4% hold various forms of financial products other than payment products. These hold more than one form of financial product. The majority of these entrepreneurs indicated that they hold mobile money products and a secured bank loan. About 2.1% of the sample holds no financial product at all. Very few agribusiness entrepreneurs indicated that they hold investment products like company shares and corporate bonds.

This implies that the majority of agribusiness entrepreneurs do not have bank accounts and have no access to services offered by financial institutions. Access to credit is crucial to the success of agribusiness considering the time between the time cost are incurred during the planting season and the period of harvest (Ugwu, 2019). Bearing in mind the high cost of seed and fertilisers in the open market and the delay of government aided inputs, there is need to improve access to credit among agribusiness entrepreneurs. The high level of financial exclusion in the sector is a result of low levels of financial literacy among agribusiness entrepreneurs. Murta and Gama (2022) established that financial literacy is the lifeblood of all lending activities by financial institutions since knowledgeable individual demand more financial literacy and payback on time, thus avoiding problem loans.

Parlasca, Johnen and Qaim (2022) established that more than 80% of agribusiness farmers in Kenya use mobile money, but only a few uses mobile money for agriculture related payments or utilise mobile loans. The authors concluded that mobile services have been adopted but are being underutilised and thus the need for financial literacy and awareness. The results of Kenya can be generalised to other African countries like Zimbabwe since Kenya is a leading nation in financial innovation.

8.3.2 Financial choice influences

The variable represents the sources of information agribusiness use when considering using a financial product. Table 32 shows financial choice influences of agribusiness entrepreneurs.

Table 32: Financial choice influences

Financial choice influences	Frequency	Valid percent
Used personal experiences	206	47.60%
Used informal sources of information	112	25.90%
Used formal sources of information	90	20.80%
Used various sources of information	9	2.10%
Not applicable/prefer not to say	16	3.70%

Source: SPSS analysis of primary data (2022)

A significant proportion of surveyed sample used personal experiences and informal sources of information to choose the financial products they hold. Only 20.8% of the sample used formal sources whilst 2.1% used various sources of information which were both informal and formal. Use of informal sources of information usually causes unjustifiable heading behaviour in financial markets. Use of widely used media like radios and televisions could provide more reliable information to agribusiness entrepreneurs.

This implies that agribusiness entrepreneurs' financial decisions were greatly influenced by their lived experiences and informal financial information from family and friends. Joan (2021) argues that family financial socialisation had the greatest influence on all the forms of financial literacy followed with discussing money issues with friends. To improve financial literacy of agribusiness entrepreneurs, policy makers, need to utilise community cell groups and community heads.

8.3.3 Ends meet

The end meets variable measured the sources of income used by entrepreneurs when they face a financial shortfall or household working capital shortfall. OECD (2020) argues that financially literate individuals should utilise personal savings as the first backup for short term financial shortfall. In case of borrowing OECD (2020) argued for the use of formal sources of funding. Table 33 shows how agribusiness entrepreneurs manage their working capital shortfalls.

Table 33: Ends meet

Ends meet	Frequency	Valid percent
Personal savings	160	37.00%
Borrow from family and friends	116	26.80%
Sell something that I own	110	25.40%
Borrow from a microfinance institution	13	3.00%
Borrow from a bank	25	5.80%
Borrow from informal money lenders	9	2.10%

Source: SPSS analysis of primary data (2022)

To make ends meet of short-term shortfall of money, the majority of agribusiness farmers make use of personal savings, borrow from family and friends and sell something that they own, like livestock. The majority of women are members of burial societies and rotational savings. Members of these clubs can borrow money in times of difficulties and these savings clubs were also considered as savings that can assist to make ends meet in this study. AGRITEX officers indicated that they encourage agribusiness entrepreneurs to conduct rotational savings among themselves.

A significant number of agribusiness entrepreneurs, especially women relied on children and family members in times of financial shortfalls. Very few entrepreneurs indicated that they borrow from the bank. Agribusiness entrepreneurs also own livestock and other farm produce which they can easily liquidate to finance temporary financial shortfall. These results are similar to (Atkinson, Monticone and Mess 2016) research which established that only financially literate individuals make use of formal sources of funding. Due to low financial literacy most entrepreneurs use informal sources of finance to cover up temporary shortfall. However, because this study recognised rotational savings as a good form of financial service in times of short fall the savings choice, majority of the entrepreneurs indicated that they rely on these savings in tomes of shortfall. Bharuch *et al.* (2021) argued that majority of start-up businesses fail because they run out of money. Therefore, the urgent need for financial education programs among agribusiness entrepreneurs in Zimbabwe.

8.4 Confidence to invest in the Zimbabwean financial sector

The research established that agribusiness entrepreneurs do not have confidence to investing in the financial sector. They are more interested in investing in their farms to boost their business rather than investing in money and capital markets. Therefore, the study broadened the

objective to determine the nature of financial services required/ needed or recommended by agribusiness entrepreneurs, and this became one of the contributions of this study.

Table 34: Confidence to invest in the financial sector by gender cross tabulation

Gender	No confidence	Have confidence	Total
Male	200	17	217
Female	188	28	216
Total	388	45	433

Source: SPSS analysis of primary data (2022)

A large proportion of agribusiness entrepreneurs (89.6%) of the population have no confidence in investing in the Zimbabwean financial sector. Table 35 below shows the various reasons why the majority of entrepreneurs lack confidence in the financial sector. Burchi *et al.* (2021) argue that financial literacy of individuals in a financial market is a resource that improves financial relationships and mitigates the information asymmetry between users of financial services and the providers of financial services. Lack of confidence to invest in the financial market could be due to lack of financial information concerning investment avenues in the Zimbabwean financial market.

Table 35: Reason for no confidence

Reason for no confidence		
	Frequency	Valid percent%
Not applicable	80	18.5%
Inflation/ Hyperinflation	214	49.4%
High transactional charges	55	12.7%
Low returns/interest	8	1.8%
Previous experiences	12	2.8%
Policy inconsistencies in the financial sector	6	1.4%
Overall macro-economic conditions	43	9.9%
Zimbabwean dollar currency depreciation	6	1.4%
Required investment services not available	3	0.7%
Bank exchange rates	1	0.2%
No idea	5	1.2%

Source: SPSS analysis of primary data (2022)

The majority of sampled population indicated inflation (49.4%), the overall macroeconomic conditions (9.9%), and high transaction charges (12.7%) as the major reasons for lack of

confidence in investing in the financial sector. Inflation eroded the purchasing power of money hence money deposited in banks losses value. Previous experiences were also cited as major contributors to lack of confidence. Considering inconsistencies in currency issues in the country and the fluctuating exchange rates in the parallel market agribusiness entrepreneurs have lost confidence in financial institutions. This implies poor financial intermediation in the country. If a large proportion of population in the country losses confidence in the financial sector like the way agribusiness entrepreneurs have indicated, the Zimbabwean financial institutions will have difficulties in mobilising deposits. The question was not applicable to those who indicated that they have confidence in the financial sector.

8.5 Financial services preferences and needs.

Considering the high levels of financial exclusion cited by the FinScope (2011) survey in Zimbabwe and other related documented literature (Priyadarshini *et al.* 2017; Ngwenya, Pelser and Chivaura 2018) the study also sought to investigate the nature of financial services demanded or required by agribusiness entrepreneurs. Income earned from farming activities is seasonal, hence the need for financial institutions to make necessary adjustments when offering services to agribusiness entrepreneurs. The results of this study also confirmed that most agribusiness entrepreneurs in Zimbabwe do not have bank accounts.

An open-ended question was used to gather data on financial services preferences of agribusiness entrepreneurs. This permitted gathering of a variety of information by allowing agribusiness farmers to explain the nature of financial services they require. Content and thematic analysis were used to analyse the qualitative information on the financial services preferences of agribusiness entrepreneurs. However, 21% of the surveyed respondents indicated that they had nothing to recommend, showing lack of financial knowledge.

8.5.1 Theme one: Input loans

Agribusiness entrepreneurs indicated that they preferred receiving loans in form of farm inputs than in monetary terms. Most of these entrepreneurs cited erosion of the local currency and the delay in processing loans as a major reason for preferring input loans. Considering the inflationary environment in the country, unnecessary delay in disbursement of loans ultimately

result in the failure of securing goods at previous quoted prices. Financial attitude results of this study established that these entrepreneurs have a tendency of diverting business loans to personal use. Thus, policy makers should consider facilitating offering input loans than monetary loans. These results are consistent with Zimbabwe Democratic Institute (2019) who reported consistent loan defaults by agribusiness farmers in Zimbabwe. Quisumbing and Pandolfelli (2010) argued that when offering input loans, policy makers should consider interactions between inputs and offer a complete set of inputs. Quisumbing and Pandolfelli (2010) also advocated for smaller input packages that are affordable for the poor and opportunities for groups to buy using economies of scale.

Information from interviews conducted with Extension officers applauded government input schemes to small holder farmers like the pfumvunza as a major contributor to ensuring food security and promoting agribusiness. However, the officers advocated for an adjustment in input loan repayment schemes as most agribusiness farmers face challenges in supplying goods at a price lower than prevailing market rate prices and thus sometimes defaults intentionally. To operationalize the preferences of agribusiness entrepreneurs of input loans to monetary loans, this study recommends that banks work hand in hand and integrates with suppliers of farm inputs. Masiyandima, Chigumira and Bara (2011) also proposed offering of input loans as a sustainable financing model for farmers in Zimbabwe.

8.5.2 Theme two: Capital loans

A significant proportion of agribusiness entrepreneurs indicated that they required medium to long term loan with tenure exceeding 5 years and a few managed to specify that they required capital loans to buy farm equipment. The tenure of bank loans in Zimbabwe is usually medium to short term in nature due to the prevailing economic environment. Scoones, Murimbarimba and Mahenehene (2019) noted that farm equipment was vandalised and needed urgent repair to sustain agricultural production.

This implies the need for longer term loan schemes which will cater for farm mechanisation. Previous farm mechanisation policy by government during the hyperinflationary environment was associated with high default rates as farmers failed to pay back the loans and the government ultimately assumed responsibility for the payments of the defaulted loans. Thus, new strategies to curb default should be explored before issuing out such loans. This notion is

in line with Elahi (2022) who opined that productivity gains of using agricultural loans are mainly associated with proper utilization of funds for agricultural purposes. Elahi (2022) advocated for rigorous evaluation of agricultural policies to ensure effectiveness and the need for bottom-up agricultural development policies promotes demand oriented financial services.

The need for capital loans is vital for agribusiness farmers in Zimbabwe to invest in farming equipment. Due to the economic crisis in the country the majority of farmers failed to break even financially and to development farm equipment. The study established that most farmers earn an income below USD500 on a monthly basis, which cannot sustain farming activities and land development. These results are consistent with Bustin and Matteu (2007) who established that coffee farmers who accessed loans in Ethiopia mainly used it for consumption purposes instead of capital investments due to prolonged economic crisis in Ethiopia.

8.5.3 Theme three: Contract farming financial arrangements.

Agribusiness entrepreneurs also advocated for contract farming financial arrangements. Although this is not a financial service, agribusiness farmers advocated for its consideration by policy makers and banks. Contract farming has proved to be a sustainable agribusiness financing scheme in Zimbabwe for the past years (Masiyandima *et al.* 2011). Since provision of farm inputs and sale of farm produce is guaranteed. The scheme dominates in Cotton and Tobacco farming and agribusiness farmers advocates for the scheme to be extended to other farming activities.

Extension officers confirmed the importance of contract farming by advocating for banks to be more involves in farmers activities from loan disbursement to securing the sale of farm products. *“Banks just issue loans to farmers and experts’ payment, without monitoring the loans, they need to finance the loan, monitor all farmer activity and secure sale of the products through the value chain system since they are well connected”* said Mr Zee. Thus, the need to finance loans, monitor the loan during farm activities and finally facilitating the sale of the farm produce to ensure repayment.

The implication for advocating for contract farming although vital for agribusiness farmers might be too costly for financial institutions like banks and, thus, the need for improving financial literacy capabilities of agribusiness entrepreneurs such that they manage their

finances on their own effectively throughout the farming process.

8.5.4 Theme four: Group borrowing (Bank rotational services facility and loan guaranteeing)

Agribusiness entrepreneurs had challenges in securing loans due to lack of collateral required by banks and thus advocated for group borrowing. Through the advice and monitoring of AGRITEX extension officer's agribusiness entrepreneurs are involved in group farming projects, irrigation scheme cooperatives and community farming groups and, thus, advocated for securing loans as community farm groups. The feasibility of group borrowing depends on the liability and honest of every group member.

This study recommends the application of group borrowing to members of rotational savings schemes. Agribusiness entrepreneurs indicated that they have been saving through rotational savings scheme in their community and such savings can be used as group collateral if deposited in banks. Omar et al (2021) applied the theory of reasoned action behavior intentions to the adoption of an electronic Agri finance application. The authors established social influence and perceived cost as the strongest predictor of the service adoption. Group financial services has potential to improve financial inclusion of agribusiness entrepreneurs.

8.5.5 Theme five: Flexible loan payment periods

Agribusiness entrepreneurs advocated for flexible loan repayments but there was no consensus on characteristics of flexible payment period. Agribusiness entrepreneurs argued that the nature of agribusiness was risk and easily affected by weather conditions, thus in such cases they expect banks to adjust their payment period by postponing payment to another season or by restructuring the loan. A significant portion of agribusiness entrepreneurs were against monthly payment periods and advocated for Bullet/once off payment loans where payment is done once off from the proceed of the harvest.

These results are a major contribution to the structuring of financial products by financial institutions. There is a need to consider the seasonal nature of business of agriculture and structuring of financial services specifically for the sector. Taking into consideration that

agribusiness loans are different from salary-based loans and payment is processed the proceed of the harvest which is not earned monthly is crucial for policy makers.

Scoones, Murimbarimba and Mahenehene (2019) and Bustin and Matteu (2007) argued that lack of full land ownership acts as a constraint on agricultural productivity by diminishing incentive for farmers to develop the land and by hampering the financial capacity of farmers to borrow using land as collateral. Hence farmers acquire unsecured loans due to lack of collateral required by banks.

8.5.6 Theme six: Instant/quick processing of loans, bank overdrafts, mobile application of loans in native language and revolving loans

Agribusiness entrepreneurs advocated for quick processing of loans and recommended the use of technology, mobile phones, provision of an overdraft facility and revolving loans as a way for facilitating quick provision of finances. Due to the inflationary pressure in the economy, agribusiness entrepreneurs indicated that the delay by banks in processing loans usually results in them failing to secure enough farm inputs on time. Agribusiness entrepreneurs further mentioned that an overdraft facility could be of assistance in managing temporary short term financial needs of the business.

A significant portion of the entrepreneurs advocated for mobile application of loans arguing that visiting banks constantly for loan approval was costly since their farms were far from bank branches. Considering that the results of this study established that the use of mobile services is more dominant in the sector than the use of banking services. Financial institutions should consider developing financial innovations that improves the delivery of financial services through mobile phones. In contrast Yue *et al.* (2021) argued that these new technologies, when inadequately regulated, may also hurt households by increasing the risk of financial distress.

Although quick processing of loans is crucial in an inflationary environment, instant processing of loans advocated by some entrepreneurs might not be feasible for all entrepreneurs and thus the importance of banks to make thorough credit risk analysis before issuing out a loan. However, banks can offer revolving loan facilities to agribusiness entrepreneurs with a good track record.

8.5.7 Theme seven: Farm produce derivatives market

A few knowledgeable agribusiness entrepreneurs advocated for the establishment of a farm produce derivatives market. There is no formal derivative exchange platform in Zimbabwe and the Reserve banks of Zimbabwe had been reporting on the establishment of a commodities market in the past few years. Hull (2009) defines a derivative market as a financial asset which derives its value from an underlying asset. Trading of derivatives are a vital source of funds in other countries as it provides the farmer to source sell farm produce forward before harvesting with a future delivery date(Choudhry 2018).

This study recommends the establishment of an organization commodities derivatives market to facilitate mobilization of funds and hedging of risk in the agribusiness sector. Policy makers should also consider financial technologies like the blockchain systems adopted in developed countries for consideration in the establishment of the derivatives market (Fujiki 2020).

8.5.8 Theme eight: Farmers pension fund and crop insurance

Quite a few agribusiness farmers advocated for the establishment of a pension fund for farmers and crop insurance. These services are already available in the market through private pensions schemes and micro insurance offered by insurance companies. Financial institutions need to educate farmers about the use and availability of pension schemes and crop insurance.

The results of this study are consistent with the lifecycle hypothesis which theories the need for people to acquire wealth during working years for use during retirement. Prasada (2020) and Mijatović (2010) argued that farmers pension insurance should be mandatory to all farm owners. The author rejected farmers' opinions like they will work for the rest of their life even at old age, can pass farming responsibility to a descendant or rent their property. Mijatovic (2010) argues that it was very difficult for old people to do farm physical work and working at old age is inefficient and reduce farming productivity. Finally, rentals from land will not be able to sustain other household members should they remain dependent hence the need for mandatory farmers pension fund(Mijatović 2010) .

8.5.9 Theme nine: Collateral substitution/non collateral security loans

Agribusiness entrepreneurs also indicated that they do not have collateral required by financial institutions in securing loans. Banks in Zimbabwe mainly consider title deeds of owned land as a form of security (Ngwenya, Pelser and Chivaura 2018). Considering most agribusiness farmers who gained the land during the fast-track land reform program and who have not yet received title deeds for the land, collateral becomes a barrier to accessing loans (Mijatović 2010).

Agribusiness entrepreneurs advocated for consideration of immovable assets like cars, tractors and livestock for consideration as collateral by banks. They also advocated for provision of loan without the collateral requirements. The consideration of movable assets like cars and vehicles as collateral is feasible as micro finance institutions and money lenders already consider movable assets as collateral but consideration of livestock and removal for the collateral requirement could have negative repercussions to banks.

A significant proportion of the surveyed population prefers to be given inputs instead of monetary loans, mainly due to inflation and the rapid loss of purchasing power of the Zimbabwean dollar. Others went further to recommend the provision of loans in a stable currency like the United States dollar, whilst other advocated for quick processing of loans. Agribusiness entrepreneurs prefer transaction with the bank through mobile applications since they stay away from banks' branches.

8.6 Financial fraud awareness

Literature documents the importance of financial fraud awareness due to the complexity and prevalence of financial fraud. Cases of information phishing, card cloning, account hacking has been on the rise in Zimbabwe. Financial literate individuals need to be aware of financial scams and possible fraud as they participate in the financial market OECD (2020). However, this variable has not yet been developed in literature on how it can be operationalised into the measurement of financial literacy. Thus, this study also enquired on the awareness of agribusiness entrepreneurs to financial fraud. This characteristic is important for individuals living in distressed macroeconomic environments like Zimbabwe since individuals are willing to take greater risk with their personal finances during an economic crisis. Table 36 shows financial fraud awareness results of agribusiness entrepreneurs in Zimbabwe.

Table 36: Financial fraud awareness

	Response	Frequency	Valid percent
Invest in a pyramid scheme	No	325	75.1
	Yes	36	8.3
	Not applicable	72	16.6
Responded to phishing e-mails	No	341	78.8
	Yes	20	4.6
	Not applicable	72	16.6
Use of card or details without authorisation	No	355	82.0
	Yes	6	1.4
	Not applicable	72	16.6
Queried a transaction	No	338	78.1
	Yes	23	5.3
	Not applicable	72	16.6
Formal complaint about service provided	No	224	51.7
	Yes	137	31.6
	Not applicable	72	16.6
Refused to open account	No	353	81.5
	Yes	8	1.8
	Not applicable	72	16.6
Refused a claim on an insurance	No	285	65.8
	Yes	76	17.6
	Not applicable	72	16.6
Complained about high transactional charges	No	235	54.3
	Yes	126	29.1
	Not applicable	72	16.6
Lost money through hacking or phishing scams	No	361	83.4
	Yes	0	0
	Not applicable	72	16.6

Source: SPSS analysis of primary data (2022)

Seventy-two (72) agribusiness entrepreneurs indicated that the questions on financial fraud were not applicable to them. Since the question was a closed question no further probing was available. However, considering that a significant portion of entrepreneurs indicated that they have no bank account and only use mobile phone Ecocash/Onemoney services some questions were not applicable to such entrepreneurs.

A significant portion of agribusiness entrepreneurs (29%) indicated that they complained about high transactional charges, made a formal complaint about service provided (31.6%) and refused a claim on an insurance. Very few agribusiness entrepreneurs indicated that they Invested in a pyramid scheme, was refused to open an account and responded to phishing e-mails and lost money through hacking or phishing scams. The results indicate that agribusiness entrepreneurs are not easily susceptible to financial fraud. However, this could be a result for not participating in the formal financial markets.

8.7 Financial education

Literature documents financial education as a crucial remedy to improving financial literacy (Lusardi 2019; Johan *et al.* 2021). The results of this study can assist policy makers to formulate a financial literacy educational program for agribusiness entrepreneurs. Therefore, the study inquired on the willingness of the entrepreneurs to enrol for a financial literacy or a personal financial management course.

Table 37: Financial education

Gender * Financial education Cross tabulation			
Gender	Financial education		Total
	Yes	No	
Male	190	27	217
Female	194	22	216
Otal	384	49	433

Source: SPSS analysis of primary data (2022)

Majority of agribusiness entrepreneurs, both males and females, were willing to take a financial literacy course if given an opportunity. Agribusiness entrepreneurs were willing to learn the concept of record keeping, financial planning, money management, retirement finance, financial markets and investments, insurance, mortgage, and home buying.

Johan *et al.* (2021) postulated that financial education course has a significant impact on improving financial knowledge, however, has no statistical significance in influencing other dimensions of financial literacy, financial attitude and financial behaviour. The authors established family financial socialisation as a major influencer of all the three dimensions of financial literacy. Financial behaviour was greatly influenced by income, work experience and discussing financial issues with friends.

Yue, Korkmaz, Yin, Zhou (2021) argue that although digital finance has brought financial inclusion, it has increased the risk of households getting into a debt trap as access to credit through digital finance increases household consumption by changing the marginal propensity to consume and resultantly increase the risk of households falling into a debt trap.

8.8 Chapter summary

This chapter discussed the major factors that affected the level of financial literacy of agribusiness entrepreneurs and identified the nature of financial products/services demanded by agribusiness entrepreneurs for their farming business. Multiple linear regression analysis was conducted to identify the determinants of financial literacy whilst content and thematic analysis were conducted to identify financial products demanded by agribusiness entrepreneurs. The study established gender and level of education as the major determinants of financial literacy of agribusiness entrepreneurs in Zimbabwe followed by income, number of dependents and financial products held. Women exhibited low levels of financial literacy than their male counterparts, which confirmed the financial literacy gender gap identified in literature (Lusardi 2019). This implies that women are more prone to the consequences of financial literacy than men. The level of education is a major influencer of financial literacy as most agribusiness entrepreneurs with higher levels of education had higher levels of financial literacy. Considering that the majority of agribusiness entrepreneurs do not have higher levels of education, most agribusiness entrepreneurs have low levels of financial literacy. Policy makers should consider developing financial education programs that equip agribusiness entrepreneurs with the vital financial literacy capabilities.

This study established that income was a major determinant of financial literacy, agribusiness entrepreneurs who earn higher income also possess higher levels of financial literacy. Reviewed literature concurs that income is a major influencer of financial literacy as participation in formal markets is funded by money. In Zimbabwe, high bank charges and account opening charges are cited as major barriers to financial inclusion (RBZ 2014). Thus, agribusiness entrepreneurs with high income were the ones utilising more financial products and practising good financial behaviours.

The study identified a dissociation of financial services required by agribusiness entrepreneurs with the ones offered by banks. Agribusiness entrepreneurs advocated for input loans, capital loans, flexible payments periods which caters for seasonal nature of agribusiness, contact farming facilities, quick processing of loan, group loans and no for no collateral security loans.

CHAPTER NINE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

9.1 Introduction

The study sought to assess the level of financial literacy of agribusiness entrepreneurs in Zimbabwe. Financial literacy is a vital human capital skill for all adult individuals, especially during and post COVID-19 pandemic with its associated financial innovations and technological advancements. Specifically, the study sought to operationalise the concept of financial literacy into its major dimensions and measurable elements to determine the level of financial literacy of agribusiness entrepreneurs. Financial needs for agribusiness entrepreneurs and the determinants of financial literacy were also examined. The study contributed by developing a financial literacy operationalisation model for agribusiness entrepreneurs. This chapter will summarise the research study from Chapter One to Chapter Eight providing conclusions and recommendations of the study.

9.2 Summary

The agricultural sector is the cornerstone of the Zimbabwean economy with 70% of the population surviving on agricultural related activities and providing 60% of manufacturing sector raw materials and 60% of formal and non-formal employment (Masiyandima, Chigumira and Bara 2011). The sector experienced low productivity for several years, and government expenditure to the sector had not been successfully translated into high productivity. There exists a debate that the sector is unbackable, given loans, the money is diverted to other non-agribusiness activities, and resultantly loans are not fully paid back (Chiromo (2019). This study, therefore, sought to investigate on the level of financial literacy of these agribusiness entrepreneurs who are the major beneficiaries of the fast-track land reform program.

The concept of financial literacy is diverse, multi-dimensional and evolving. There was no consensus in the literature on the definition of financial literacy, and the concept evolved with changes in financial markets (Lusardi 2019). Kadoya and Khan (2017) defines financial literacy as an evolving state of competency that enables each individual to respond effectively to ever-changing personal and economic circumstances. Amid the current COVID-19 pandemic, financial institutions are digitalising their services and operations, leading to introduction of

more complex financial services and a change in the financial landscape to suite the new normal. Consequently, the need for acquiring of new financial competences and recognising financial literacy as an evolving and ever-changing financial capability. This research defined financial literacy as a combination of financial knowledge, financial behaviour, and financial attitude necessary to make sound financial decisions and ultimately achieve financial wellbeing (OECD 2020).

Theories guiding financial literacy developed the concept of financial literacy as an inseparable constituent of financial knowledge, financial attitude, and financial behaviour. Due to the complexity of measuring psychological variables, for example, attitudes some authors tend to measure one component of financial literacy, that is, financial knowledge and generalise the results to financial literacy. However, preceding financial illiteracy behaviour of some individuals regarded as financially literate justify measuring all the components of finance as explained by OECD (2020).

The theory of behavioural finance postulated that decisions are made by individuals with feelings, emotions, and attitudes. These factors can cause some irrational behaviours that cannot be explained by traditional economics (Kahnen and Tryvesky 1989). Ajzen (2019) further argues that human behaviour is influenced by intentions which are a result of attitudes subjective and social factors. Therefore, the need to assess financial attitudes and financial behaviours when measuring financial literacy (Kadoya and Khan 2017).

The family socialisation theory added the concept of learning financial concepts through financial socialisation. Financial concepts are also gained through participating in financial markets and socialising with financially knowledgeable individuals. The concept was further extended by various authors to family and parental financial socialisation where parents through discussing financial issues with children share financial knowledge with their children. Considering this theory, financial literacy can be shaped by family background, society, and financial environment.

Financial literacy is widely measured as a combination of financial knowledge, financial attitude and financial behaviours (OECD 2016; 2018; 2020). Therefore, this research measured financial literacy as a combination of financial knowledge, financial behaviour and financial attitudes. These concepts were measured using internationally recognised questions by (Lusardi

and Mitchel 2014) big three questions and OECD (2018) financial literacy toolkit. Questions were adopted and adapted to Zimbabwean financial system and agribusiness entrepreneurs' nature of financial decisions. The researcher also added two financial attitude scores which were related to agribusiness financial illiteracy behaviours of (1) diverting business loans for personal use (2) refusal to pay back government loans. Three financial knowledge questions were added in the financial knowledge scale which investigated on the knowledge of diversification through farming activities, tax collection and hyper-inflation. Lusardi (2019) argues that financial literacy questions should be related to individual daily financial decisions, Zimbabwe has passed through different economic hyperinflationary phases therefore the need to include the concept in measuring financial literacy.

Financial behaviours were all adopted from OECD (2016, 2018 and 2020) international survey of financial literacy however, the problem of guessing answers given standardised options was noted (Lusardi and Mitchel 2014), and this previously produced wrong conclusions about financial literacy. This research added a follow-up question to explain how some behaviours were conducted to avoid guessing and the tendency of lying or making a choice to please the researcher. The question for saving, which usually enquired if an individual has been saving in the past two years and a score was normally awarded for those who answered yes was added a follow up question to explain how and where the money has been saved. The question of financial goals and retirement planning also had follow up question.

Various stakeholders in industry (CZI 2022), human rights (ZDI 2021) and financial sector are arguing against the continuous burden on the fiscal budget in financing the agricultural sector. However, considering the agricultural sector's contribution to the economy's development and the worldwide call for using the sector for poverty alleviation of rural people (World Bank, 2014), there is an urgent need for effective and efficient use of funds in the agribusiness sector.

The research also sought to determine the factors that affected agribusiness entrepreneurs' financial literacy level. Literature documented a persistent and wide gender gap in financial literacy which could be widening if not addressed with urgency. The standard regression model was used to explain the contribution of marital status, gender, age, income, level of education, number of children below 18 years and financial products held.

The research also sought to determine the nature of financial services/products needed by agribusiness entrepreneurs for their businesses or personal finances. There was an un-researched notion that the traditional financial services offered by banks to farmers were not congruent to the farmers' seasonal and national hazards related business. Therefore, the need for this research to explore the financial services required by agribusiness entrepreneurs and the basis on which this research was given authority by Ministry of Lands, Agriculture, Fisheries, Water and Rural Development. This study is crucial to the Zimbabwean economy as the Zimbabwean government National Development Goals (NDS1) prioritise the agricultural sector and programs that capacitate the farmer productivity and capabilities.

The reviewed literature argues that there are individual micro and macro-economic benefits of financial literacy. Individual benefits of financial literacy include making informed decisions (OECD/INFE, 2020) wealth accumulation (Lusardi, 2020) retirement planning (Lusardi and Mitchell, 2011) effective money management skills (Kapoor 2015), debt management, financial resilience and financial well-being (OECD, 2020). Economic benefits of financial literacy involve financial sector stability (Chhatwani and Mishra 2021a), financial inclusion, financial depth (Morgan and Long 2020), reduction in poverty, and economic growth (Fonjong and Gyapong 2020).

Explanatory sequential mixed research methodology where quantitative and qualitative data was collected through questionnaire (open ended questions and closed ended questions) and semi structured interviews were conducted. A sample size of 623 agribusiness entrepreneurs was determined using the Slovin (1960) sample size formulae and multistage sampling technique was used to draw research participants. Interviews were conducted among 6 AGRITEX officers selected through purposive and convenience sampling. Data was analysed by IBM SPSS version 27 software through descriptive statistics, Pearson correlations, multiple regression, and factor analysis.

The study established that the majority of agribusiness entrepreneurs have low levels of financial knowledge, the majority of the respondents lacked understanding of hyperinflation, how to choose cheaper loan options, tax collection, and time value of money and capital market financial products. Extension officers confirmed that agribusiness entrepreneurs lacked knowledge of basic financial concepts, and this translates to poor management of their agribusiness ventures and low productivity.

Agribusiness entrepreneurs exhibited poor financial behaviours like the absence of a written down plan for allocating expenses and incomes (budget), poor saving behaviours, lack of retirement planning and having no financial cushion for a bad farming season. However, agribusiness entrepreneurs have low amounts of debts, and they usually relied on their *mukando* [rotational savings] and family/friends to cushion short term financial shortages. Low financial literacy is usually associated with high debt levels. However, extension officers argued that they have been discouraging farmers from taking loans with high interest rates from banks because they will fail to pay back the loans from the low yield and low profit, they are currently earning but to conduct rotational saving *mukando* [rotational savings] among each other. Majority of agribusiness entrepreneurs earn less than \$500USD per month which is not sufficient to sustain household expenses and the agribusiness related activities. It is evident that agribusiness farmers still need government and financial institutions funding. However, extension officers complained about the nature of financial products offered to agribusiness entrepreneurs by banks. They argued that banks offer loans at exorbitant interest rates, offer loans based on types of collateral like title deeds and immovable property which farmers do not possess, and after issuing out loans they are not interested in how the farmers will manage the funds, conduct their farming business, or market their products. Banks should consider applying the concept of structured finance in agribusiness lending where they conduct thorough screening before offering a loan and monitor the use of the money and the progress of the borrowers' farming activities during loan repayment. Banks should also consider facilitating marketing of agricultural related through partnerships with retailers.

Agribusiness entrepreneurs exhibited good financial attitudes across gender, farm size and level of income. Financial attitude was measured by the preference to save money for use in the long term. Most of the entrepreneurs disagreed with financial attitude statements which enquired on the preference of current spending to saving money for future use. This research also sought to investigate financial attitude of agribusiness entrepreneurs toward repayment of government loans and setting aside business finance money for personal consumption use. Research findings revealed that agribusiness entrepreneurs are willing to pay back government loans however given business loans, they tend to set aside a portion for consumption purposes. Using business loans for personal unproductive use usually results to failure to payback especially when the borrower has no other sources of finance.

Considering the overall financial literacy score, most agribusiness entrepreneurs are not financially literate. Specifically, most of the surveyed population scored less on financial knowledge and financial behaviour scores. Financial risk and asset pricing were among the most difficult questions for respondents, while a significant proportion scored high in financial attitude questions. Financial literacy programs should emphasise content on financial behaviours and financial knowledge.

There is a wide and significant gender financial literacy gap among agribusiness entrepreneurs. Women scored significantly less than their male counterparts in both financial knowledge and financial behavioural scores. Considering the benefits of financial literacy which relates to wealth accumulation (Lusardi and Klapper, 2020), financial wellbeing (OECD/INFE, 2018) and financial resilience (OECD/INFE, 2020) and the consequences of financial illiteracy like indebtedness (Styles, 2018), poverty during old age (Lusardi and Mitchell 2014) and borrowing at higher cost. Financial capabilities of women should be addressed to reduce the gap.

Financial literacy also varied according to income, level of education and children below 18 years and financial products. Agribusiness entrepreneurs with a higher and tertiary education diploma or degree scored better than those with lower levels of education, whilst high-income agribusiness entrepreneurs performed better than low-income entrepreneurs. Agribusiness entrepreneurs who hold more financial products were found to be more financially literate, while entrepreneurs who lived with many dependents had lower financial literacy than those with fewer dependents.

Most agribusiness entrepreneurs indicated that they have no confidence to invest in the Zimbabwean financial market due to high inflation, poor macroeconomic fundamentals, lower return and previous experiences. Zimbabwe experienced hyperinflation during the period 2007-2009 where depositors' money lost its purchasing power constantly, and resultantly, depositors lost confidence in the local currency and the financial markets.

The research established that Agribusiness entrepreneurs need long term loans of more than five years or capital loans that can allow them to buy farm equipment and pay back the loan over a long period of time. Majority of these entrepreneurs do not have collateral to secure loans and, therefore, recommend that banks consider other forms of collateral like livestock, group guarantee and rotational savings as forms of collateral. Government aided loans tend to take

long to be processed and the money is usually received after being eroded by inflation. Agribusiness entrepreneurs advocated for quick processing of loans, mobile phone application for loans and for United States Dollar loans. Financially literate agribusiness commercial farmers indicated that they prefer to invest and to store their money in crypto currencies. The study developed a financial literacy operationalisation model for agribusiness entrepreneurs.

9.3 Conclusions

The study added new knowledge to the existing body of knowledge through the following study conclusions:

- ❖ Knowledge of financial concepts is still low among agribusiness entrepreneurs. Hence, the need for educational programs to equip agribusiness entrepreneurs with adequate knowledge.
- ❖ Financial behaviours such as budgeting, saving and retirement planning were not practised among agribusiness farmers. Resulting in agribusiness farmers spending income without careful planning and allocation of income to expenditure. Consequently, nothing is saved for emergencies and for planned financial goals.
- ❖ Most agribusiness entrepreneurs are financially illiterate. This justifies the consistent low productivity amid increase in government funding, high levels of food sufficiency amount the owners of land and the diversion of agricultural loans to household use.
- ❖ Agribusiness entrepreneurs have a good financial attitude towards long term planning. Educational programs should use these positive attitudes as a foundation for teaching new concepts.
- ❖ Agribusiness entrepreneurs divert a portion of agribusiness loans to consumption purposes. This explains the consistent loan defaults documented by literature in the sector and low productivity amid government support.
- ❖ Agribusiness farmers prefer contract farming to monetary loans. However, prices of harvested farm produce should be priced based on market prices.
- ❖ Major determinants of financial literacy were gender, income, level of education, children below 18 years and financial products held. Thus, improvement in income and level of education will positively affect financial literacy and educational programs should give a priority to women and the financially excluded.

- ❖ There is a dissociation between financial products needed by agribusiness entrepreneurs and the products offered by financial institutions. Agribusiness entrepreneurs prefer input loans and contract farming to cash loans due to hyperinflation and the prolonged period banks take to process loans.
- ❖ Financial institutions should consider the seasonal nature of agribusiness and the natural hazards associated with farming. Thus, financial institutions can tailor their loan tenure and payment period in relation to the seasonal nature of agribusiness.
- ❖ Banks should consider lowering interest rates when lending to agribusiness entrepreneur.
- ❖ Agribusiness' entrepreneurs are currently earning low profits due to lower yields.
- ❖ Banks should consider the structured finance business model when lending to the agribusiness sector.

9.4 Recommendations

Considering the findings of this research, the study developed and recommended a financial literacy operationalisation model for agribusiness entrepreneurs in Zimbabwe. The model provides operational definitions of the dimensions of financial literacy and provide recommendations to policy makers, financial institutions, agribusiness entrepreneurs and parents, among other stakeholders.

9.4.1 Financial literacy operationalization model for agribusiness entrepreneurs in Zimbabwe

Financial literacy, as an abstract concept, was operationalised in this study by using observable and measurable elements related to three dimensions of financial literacy, namely (1) financial knowledge, (2) financial attitude, and (3) financial behaviour. Literature has documented that the three dimensions of financial literacy cannot be separated or ignored and a scale that will include only one or two dimensions would not be a valid scale for financial literacy (OECD, 2020). Bougie and Sekaran (2019) argue that a valid operational scale of an abstract construct should include quantitatively measurable questions/elements/items that adequately represent the universe of the construct and its dimensions. The financial literacy operationalisation model of financial literacy of this study assessed financial literacy by measuring behavioural dimensions and characteristics one would expect to find in a financially literate agribusiness

entrepreneur. Table 38 below represents the financial literacy operationalisation model for agribusiness entrepreneurs in Zimbabwe.

Table 38: Financial literacy operationalisation model for agribusiness entrepreneurs in Zimbabwe

OPERATIONAL VARIABLE	OPERATIONAL DESCRIPTION AND MEASUREMENT	RESEARCH FINDINGS	OPERATIONALISATION STRATEGY
FINANCIAL BEHAVIOUR	1. Taking an individual control of financial decision-making. 2. Budgeting and keeping track of cash flows 3. Active saving 4. Paying debts on time 5. Avoiding borrowing to make ends meet 6. Planning for long term goals 7. Retirement planning 8. Financial resilience	-The research established that Agribusiness entrepreneurs were involved in the day-to-day management of their finances, they do not have outstanding debts they are failing to pay back and have financial goals they plan to achieve in the future. -However the majority of these entrepreneurs do not have a budget of income and expenditures, have not been saving in the past, were not prepared financially to cover emergencies, do not have a retirement plan and were not financially resilient to a bad farming season - Majority of agribusiness entrepreneurs (73.44%) failed to score the minimum behavioural score of 6 scores and above, reflecting lower levels of behavioural literacy -agribusiness women saved through rotational savings and	-adopting group rotational savings (<i>mukando</i>), in the formal financial system. -Financial education programs on key financial behaviour competences like budgeting, saving and retirement planning. -Serious farmer training on the benefits of being faithful in loan repayment and creating a good loan record - offering government inputs after extensive financial literacy training. -creating awareness among agribusiness farmers about various savings services offered by financial institutions. -exchange visits -Experience sharing platforms for farmers to allow farmers to meet financial institutions and other participants long the value chain -exchange visits between financial institutions and agribusiness farmer groups who would have received financial loans -innovation platforms for agribusiness entrepreneurs -study circles -developing defined benefit pension schemes for farmers

		<p>burial societies savings. These women relied on these savings for emergencies and for making ends meet.</p> <p>-There exist a wide and worrisome financial behaviour gap between woman and man in agribusiness.</p> <p>-Agribusiness entrepreneurs who earn high income were more financially literate than low-income earners</p>	<p>who deliver farm produce to the Grain Marketing Board.</p>
<p>FINANCIAL KNOWLEDGE</p>	<ol style="list-style-type: none"> 1. Interest compounding 2. Inflation 3. Financial assets risk and diversification 4. Farming risk diversification 5. Risk and return 6. Asset pricing 7. Interest on loan 8. Tax collection 9. Hyperinflation 10. Time value of money 	<p>-Agribusiness entrepreneurs have knowledge of interest compounding, inflation, farming diversification, risk and return and loan interest.</p> <p>-However, they lack basic knowledge of share investment risk, financial bond asset pricing, hyperinflation, and the time value concept.</p> <p>-Most agribusiness entrepreneurs (58.9) scored below the minimum 70% financial literacy score, reflecting low levels of financial knowledge among agribusiness entrepreneurs in Zimbabwe.</p> <p>-Those without tertiary education lack knowledge of basic financial literacy concepts, reflecting that basic education in primary and secondary schools is not</p>	<p>-development of financial education programs that equip agribusiness entrepreneurs with knowledge of financial concepts</p> <p>-Government should consider introducing a finance related course from primary to ordinary level</p>

		<p>equipping individuals with financial literacy.</p> <p>- agribusiness women have lower levels of financial knowledge than their male counterparts</p>	
FINANCIAL ATTITUDE	<p>1-3 Finding it more satisfying to spend money than to save it for the long term</p> <p>4. Attitude towards paying back government loans</p> <p>5. Divert a portion of business loans for personal use</p>	<p>-Most agribusiness entrepreneurs exhibited good, financial attitudes by disagreeing with the statement “I find it more satisfying to spend money than to save it for the long term” and the statement “I tend to live for today and let tomorrow take care of itself.”</p> <p>-The majority disagreed with the notion that government loans should not be paid back because it is the responsibility of the government to support agribusiness but indicated that they fail to repay back loan due to lower agricultural yields.</p> <p>-However, most agribusiness entrepreneurs indicated that they divert a portion of business loans for personal use.</p>	<p>-Loans can be provided in form of inputs or farm equipment’s rather than money, which can be diverted to consumption purposes. Thus, government programmes like Pfumvudza and Command Agriculture should be maintained</p> <p>-Loan processing time should be adjusted, taking into consideration the constant increase of prices of farm inputs and machinery.</p> <p>-Banks should consider offering structured financing options to agribusiness entrepreneurs.</p> <p>- Banks should consider lowering their interest rates when offering loans to farmers</p> <p>- After disbursing a loan bank should monitor farm related activities and use of funds until the produce is sold.</p> <p>-Agribusiness farmers should be trained to separate household consumption funds from business funds if they want their business endeavors to grow</p> <p>-Parent financial socialisation with children who will be successors of the business.</p>

Source: Authors compilation (2022)

9.4.2 To policymakers

The study established that financial literacy of agribusiness entrepreneurs is low especially in terms of financial behaviour and financial knowledge. Thus, this study recommends the development of financial education programs that equip agribusiness entrepreneurs with knowledge of financial concepts and financial practices like saving and budgeting. More emphasis should be targeted to women, the less educated, small holder farmers, low-income earners, household with a large number of depends below 18, the financially excluded and those who hold few financial services. There is lack of confidence among agribusiness entrepreneurs to invest in the Zimbabwean financial market due to inflationary pressures in the economy and previous financial experiences. Consequently, this study suggests that policy makers should develop strategies that can boost depositor's confidence.

The study established that agribusiness entrepreneurs prefer input loans to cash loans considering the attitude of diverting business loans for personal household use. The study recommends contract farming related programs like Pfumvudza and Command Agriculture as vital ways of financing the agricultural sector. However, there is a need for improvements in the pricing of farmer's produce offered to farmers when they deliver their farm produce to encourage repayment. Agribusiness entrepreneurs also advocated for loans with a longer-term repayment period and for the need for financial institutions to develop repayments periods that caters for the seasonal nature of agribusiness.

Agribusiness entrepreneurs are not practising fundamental financial behaviour and, thus, Government should consider conducting nationwide financial literacy campaigns across the nation's agricultural regions. The current financial illiteracy can cause irrational behaviours and financial system instabilities in financial markets as postulated by the prospect theory, hence, the urgent need to address financial illiteracy in the agribusiness sector.

There is a disassociation between financial products offered by banks and the products needed by agribusiness entrepreneurs. This study highlighted the major financial products needed by agribusiness entrepreneurs for consideration. Therefore, there is a need for wide consultations with relevant departments like farmer representatives, AGRITEX field officers and banks on how the proposed products can be operationalised.

Agribusiness entrepreneurs although they lack financial knowledge and certain financial literacy behaviours, they have good financial attitude, and they are willing to payback government loans. Hence educational programs should emphasise on improving financial knowledge and financial behaviours

9.4.3 Financial institutions

This study highlighted the nature of financial services demanded by agribusiness entrepreneurs. Hence, the study recommends the development of financial products that meet the needs and nature of business of agribusiness entrepreneurs. Banks should also consider alternative forms of collateral like opening group savings accounts and offering group loans to such individuals backed by the rotational savings in the bank. Considering low financial literacy and information asymmetry between the banks and agribusiness entrepreneurs, it is crucial for banks to boost financial services awareness and education programs for agribusiness farmers.

Majority of agribusiness entrepreneurs only utilise payments products like Eco cash, one money and transactional bank accounts. There is a need to create awareness of all banking services and developing financial products depending on financial needs and preferences identified by this study.

9.4.4 Agribusiness entrepreneurs

The aftermaths of COVID-19 pandemic might avail a myriad of financial innovations that might be complicated and difficult to use. The level of financial literacy is still low among agribusiness entrepreneurs, therefore, the need to enrol for personal financial management courses.

Banks consider previous loan repayment track record before issuing out a loan. Therefore, there is an urgent need to owner debts to improve the credit scoring of the agribusiness sector. Defaulting on loan repayment will increase loan interest payments and, thus, the need to be faithful in loan repayment.

Financial behaviours like budgeting, saving, investing and long-term planning are good financial behaviour which can guarantee financial wellbeing, financial satisfaction, and financial resilience. Thus, the need for all agribusiness entrepreneurs to prioritize good practices of personal financial management.

There are more effective formal retirement schemes and avenues of investing apart from farming, investment in livestock and transferring the farming business to the children. Agribusiness farmers should consider exploring financial markets for retirement options

9.4.5 Parents

Financial literacy of women is very low, parents should consider discussing financial issues with all their children regardless of gender. Considering that women are also responsible for managing their personal and household finances. Practising good financial behaviours like budgeting, saving, and acquiring more financial knowledge is more crucial for households with children below the age of 18 years in order to maximise utilisation of the available financial resources.

9.4.6 Non-governmental institutions

Agribusiness entrepreneurs are still earning very low yields and profits, hence a need for financial assistance to ensure food security and poverty reduction in the country. Apart from offering financial assistance and providing financial education, agribusiness entrepreneurs will have longer term effects to poverty eradication and improving the financial wellbeing of agribusiness entrepreneurs. programs to equip their businesses.

9.5 Suggestions for further study

This study assessed financial literacy among five agricultural districts in Zimbabwe where financial literacy of registered agribusiness farmers was measured. There is a need for financial literacy studies that investigates the major causes of the financial literacy gender gap identified by this study and assessment of other special groups like unregistered micro entrepreneurs who conduct farming activities at their homesteads. Since financial literacy is an evolving capability,

there is a need for further research to investigate more on how financial resilience could be incorporated more as a component of financial literacy.

9.6 Chapter summary and final conclusions

This chapter provided a summary of how the research was conducted to address all research objectives. Research findings were summarised in this chapter and conclusions were provided. The study advanced vital contributions on determinants of financial literacy and the level of knowledge on financial literacy of agribusiness entrepreneurs which was not known. The study contributed much on exploring financial products required by agribusiness entrepreneurs and their level of financial utilisation.

The study developed and recommended a financial literacy operationalisation model for agribusiness entrepreneurs in Zimbabwe. Financial literacy was operationalised into three major dimensions, namely, financial knowledge, financial behaviour and financial attitude. The elements to be considered for measuring the dimensions were well-articulated for future researchers who would want to adopt similar methodology. The strategies proposed in the financial literacy operationalisation model can solve financial literacy challenges currently faced in the country if implemented effectively.

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APPENDICES

Appendix A: Letter of Information



LETTER OF INFORMATION

Title of the research

Dear Research Participant thank you for taking your time and interest in the study. My name is Lilian Gumbo, a Doctor of Philosophy in Management sciences Business Administration student undertaking a research study titled: “*The level of financial literacy of agribusiness entrepreneurs*”.

Principal Investigator/s/researcher: Lilian Gumbo

(Doctor of Philosophy in Management Sciences: Business Administration student)

Co-Investigator/s/supervisor/s: Dr. Edson Vengesai and Dr. Ferina Marimuthu

Faculty and department:

Name of Faculty: Faculty of Management Sciences

Name of Department: Department of Business Administration

Brief Introduction and Purpose of the Study: Due to the increasing complexity of financial markets, many authors concur that financial literacy is a vital human capital skill for all individuals to have. The purpose of this study is to assess the level of financial literacy of entrepreneurs in agribusiness, to analyse factors influencing the financial literacy and to determine investment preferences of agribusiness entrepreneurs towards various financial products.

Outline of the Procedures and nature of participation: It is my pleasure to inform you that you have been selected as one of the key informants of this study. You have been selected for this research because you are an agribusiness entrepreneur, and the nature of your work is vital for the nation’s food security, nutrition, and economic growth. A multi-stage sampling technic was implemented in randomly selecting all research participants for this study. A research questionnaire will be distributed to you, please respond to every question with uttermost truth and honesty. The questionnaire is categorized into five sections; section I: demographics and family set up, section II; financial knowledge test, section III; financial behavior questions, section IV financial attitudes, and lastly section V financial services preferences. The questionnaire will be collected back after 7 days from the date of distribution. For any question or clarification please call the researchers number +263773576458.

Risks or discomforts to the Participant: The nature of the research is based on personal financial literacy, which require assessment of personal financial knowledge, behaviors and attitudes. This can be challenging and worrisome to other participants. Where a Participant is not comfortable disclosing information to a particular question s/he can choose the last option ‘refuse to answer’ and where the participant has no idea pertaining to the question s/he can choose the ‘I do not know question’. Willing participants are expected to read and sign the letter of consent that will be provided. Where one does not understand English the questionnaire will be translated to his local language. For participants who cannot read or write, I will conduct an interview and fill the questionnaire on their behalf.

COVID-19 Risk: Due to the implications related to COVID-19 pandemic, the researcher is determined to follow all COVID-19 health guidelines and the following measures will be taken:

- The researcher and the participants are required to wear face masks during the data collection process. Adding to the mask, the researcher will wear a face gear protective shield.
- The researcher and participant should adhere to the 1.5m social distance during data collection.
- Personal contact like shaking of hands will be avoided and the researcher will utilise laboratory gloves for questionnaire distribution and collection.
- To limit unnecessary visits during data collection, the researcher has provided an e-mail address and WhatsApp contacts, that can be used for communication and any feedback related to the research.

Potential benefits and remuneration of taking part in the study: The results of this study will highlight the average financial literacy level of all agribusiness entrepreneurs; this can be a hint to your personal level of financial literacy level. In case policymakers consider the recommendations of this research vital, agribusiness entrepreneurs will benefit from agribusiness financial literacy-related programs and policies. No incentive or remuneration will be provided as a reward for participating in this research and no social cost or monetary cost is expected from the participants.

Reason/s why the Participant can withdraw from the study. There will be no adverse consequences for the participant should they choose to withdraw at any stage.

Information Confidentiality: The researcher will not discuss or disclose any confidential information and guarantee that the responses you provide for this research will not be identified with you personally. A number code will be assigned to each questionnaire and your name will not be related to the information that you say. Please note that a report of the study will be submitted for publication, but names of participants will not be identifiable in such a report.

How will the information be stored and ultimately destroyed: Hard copies of questionnaire, researcher's notes and any information obtained from the research will be kept in a locked cupboard at the researcher's home and will be destroyed after a reasonable time (5 years). All electronic documents will be stored on a password protected computer (a personalized password will be created for each document).

How will the participants be informed of findings of the study: A copy of the final document with research results will be published on Durban University of Technology official website. Please sign on the dotted lines of the consent form to show that you have read and understood the contents of this letter. Participants may enquire from the contacts provided below for any inquiry or complaints.

Persons to Contact in the Event of Any Problems or Queries:

Dr Edson Vengesai PhD Finance VengesaiE@ufs.ac.za My personal cell number +263773576458 or the Institutional Research Ethics administrator on 031 373 2900. Complaints can be reported to the DVC: TIP, Prof F. Otieno on 031 373 2382 or dvctip@dut.ac.za.



Mwadhi yeruzivo

Ongorororo yeruzivo rwekushandisa mari rwevana muzvina bhizimisi vezvirimwa

Mavambo

Makadini? Ndinokutendai nekuratidza chido chekubatira pamwe neongororo yandiri kuita muzvidzidzo zvangu. Ndikuita ongororo yeruzivo rwamunarwo mukushandisa mari mumagariro enyu mudzimba nemunharaunda kwaana muzvinabhizimisi vezvirimwa nezvipfuwo.

Zita rangu ndinoitwa Gumbo Lilian

(Doctor of Philosophy in Management Sciences: Business Management student)

Mudzidzisi wangu ndiDr Edson Vengesai (PhD Finance)

Zvinoda kuitwa: Mushure mokunge maverenga tsamba ino ndichakupai tsamba yechibvumirano chenyu nemi chekuti hamuna kumanikidza kubata paongororo ino. Makasununguka kuregera kana muchinge makundikana uyezve maita chisina kukufadzai. Kana pane vasingakwanisi kunyora sunungukai kundizivisa ndinokubatsirai.

Njodzi dzamungasangana nadzo: Handina njodzi yandinotarisa kuti ingakuwirai nokubatirana pamwe neongororo ino. Asi kana pane zvinenge zvisina kukufadzai makasununguka kusiya kana kusarudza sarudzo yekupedzisira yemuvhunzo inoramba kutizivisa nezvemafungiro enyu.

Denda yeCOVID-19: Munofanirwa kupfeka mask yenyu nguva yatichange tichibatirana pamwe neongororo ino uye munorambidzwa kukwazisana nemaoko. Munokurudzirwa kuparadzana 1.5m kubva kunevamwe, kuti muzvichengetedze mukutapurirana kwedenda re COVID-19.

Mubairo.

Hapana zvipo kana mubairo wemari unopiwa vanenge vabata muongororo ino. Zvisinei ongororo ino ino betsera vana muzvina bhizimisi vezvirimwa nekuziva ruzivo rwamunoda maererano nemashandisirwo anoitwa mari.

Makasununguka kubuda muongororo ino chero nguva pasina chakashata chingaitwa kwamuri. Mhinduro dzenyu dzichashandiswa muzvidzidzo zvangu chete, hakauna kumwe kwavzichaendeswa uye hapana achazivisa mazita enyu nekwamunogara.

Kana pane zvamunoda kunzwisisa kana zvamusina kufara nazvo bataiMudzidzisi Dr Edson Vengesai PhD Finance VengesaiE@ufs.ac.za Kana runhare rwangu +263773576458 kana bazi reInstitutional Research Ethics pa 031 373 2900. Zvichemo batai DVC: TIP, Prof F. Otieno on 031 373 2382 or dvctip@dut.ac.za

Appendix B: Letter of Consent



Faculty of Management Sciences

Department of Entrepreneurial studies and Management

1 June 2021

Dear Participant

Thank you for taking your interest in this study. My name is Lilian Gumbo I am a Doctor of philosophy in Management sciences (Business Administration) student undertaking a research study titled: titled *'The level of financial literacy of agribusiness entrepreneurs'*. The researcher aims to assess the level of financial literacy of agribusiness entrepreneurs, analyse factors that affect financial literacy and determine financial service preferences of agribusiness entrepreneurs.

It is my pleasure to let you know that you have been chosen to be one of the key informants for this study. Kindly assist by answering the questionnaire and note that participation is voluntary, and you may withdraw or refuse to participate at any stage/time with no negative consequence

Please give your uttermost truth and honest response. The results of this study will be treated with confidentiality, and it will be used for academic purposes only.

Gumbo Lilian
Student
Contact Details(+263773576458)

A handwritten signature in blue ink that reads 'Lumbo'.

Supervisors: **Dr Ferina Marimuthu** email: marimuthuf@dut.ac.za
Dr Edson Vengesai email VengesaiE@ufs.ac.za

Appendix C: Questionnaire

Section I: General demographic Questions.

Please indicate your answer by placing a tick/highlighting in the appropriate category.

Question 1: Please indicate your gender.

1. Male 2. Female 3. Transgender

Question 2: Please indicate your age?

1. 18-24 2. 25-34 3. 35-44
4. 45-59 5. 60 and above

Question 3: How would you describe your current marital status?

1. Married 2. Single 3. Divorced 4. Widowed
5. Other specify.....

Question 4: What is the highest level of education you have attained?

1. Did not go to School 2. Did not finish primary level 3. Primary level
4. 'O' level 5. 'A' level 6. Certificate
7. Diploma 8. Bachelor's Degree 9. Masters degree
10. Doctoral degree 11. Other (specify)

Question 5: How would you categorise your average monthly income (Income is stated in USD, please divide your annual income by 12 to get monthly income)?

1. Less than \$500 2. \$501-1500 3. \$1501-2500 4. \$2501-3500
5. \$3501-4500 6. \$4501-5500 7. \$5500-6500 8. \$6500-7500
9. \$7501-8500 10. Above \$8500

Question 6: How many children under the age of 18 live in your household?

Question 7: How many adults over the age of 18 live in your household? (Do not include Yourself)
.....

Question 8: How long have you been in agribusiness?

Question 9: How many employees did you have when you started your business?

1. No employees 2. 1-5 3. 6-30 4. 31-75
5. More than 75

Question 10: How many employees do you have now?

2. No employees 2. 1-5 3. 6-30 4. 31-75
6. More than 75

Question 11. Briefly describe the nature of your agribusiness.

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Question 12. Please indicate the year you were born.....

Question 13. Which of the following best describes the size of the farm you currently use for agribusiness operations?

1. Homestead land 2. Small scale farm 3. Medium scale farm.
4. Large scale farm

Section II: Financial knowledge.

Please indicate your answer by placing a tick/highlighting in the appropriate category

Question 1: Suppose you had \$1000 in a savings account that earns 10% interest per annum. After 5 years, how much do you think you would have in the account if you left the money to grow?

1. More than \$1100 2. Exactly \$1100 3. Less than \$1100
4. Don't know 5. Prefer not to say

Question 2: Imagine that the interest rate on your savings account was 1% per year and inflation was 2% per year. After 1 year, how much would you be able to buy with the money in this account?

1. More than today 2. Exactly the same 3. Less than today
4. Don't know 5. Prefer not to say.

Question 3. Please indicate whether this statement is true or false. 'Buying a single company's share usually provides a safer return than a share mutual fund.'

1. True 2. False 3. Don't know 4. Prefer not to say.

Question 4: Please indicate whether this statement is true or false. 'It is riskier to plant multiple crops than one crop.'

1. True 2. False 3. Don't know 4. Prefer not to say.

Question 5: An investment with high return is likely to be high risk.

1. True 2. False 3. Don't know 4. Prefer not to say.

Question 6: If interest rates rise, what will normally happen to bond prices?

1. They will rise 2. They will fall 3. They will stay the same
4. There is no relationship between bond prices and the interest rate

5. Don't know 6. Prefer not to say

Question 7: Suppose you can borrow RTGS\$10 000 from a local bank. Two Banks offer you a loan; one loan requires you to pay back RTGS\$11 000 in one year, the second loan requires you to pay back 10 000 plus 15% interest. Which loan would you take?

1. First loan 2. Second loan 3. Don't know 4. Prefer not to say

Question 8: A young farmer owes \$2000 in income taxes that was due three years ago. To collect this debt, the Zimbabwe revenue authority is able to

- 1. Take possession of property equal to the unpaid balance
- 2. Notify the police to arrest the young man
- 3. Suspend voting rights
- 4. Don't know.

Question 9: A hyperinflationary economy is one where (explain briefly)

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Question 10: Explain why generally lenders prefer getting back their money as quick as possible while borrowers prefer paying back as late as possible.

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Section III: Financial behavior

The next set of questions will help us to understand how people think about and plan their finances. There are no right and wrong answers to these questions, and your answers will be kept entirely confidential, so please do answer as accurately as you can. Indicate your answer by placing a tick in the appropriate category.

Question 1: Who is responsible for monetary transactions in your family?

- 1. You
- 2. You and your partner
- 3. You and another family member
- 4. Another family member
- 5. Someone else
- 6. Do not know
- 7. Prefer not to say

Question 2: Do you regularly prepare a budget or is your family used to keeping records of income and expenditures?

- 1. Yes, I/ we keep records of everything entering revenues and expenditures
- 2. Yes, I/ we keep records of everything, but not all revenues and expenditures
- 3. No I/ we do not keep records of everything, but we know how much money is received and spend during the month
- 4. No I/ we do not keep records of everything, and we do not even have an idea of how much money is received and spend during the month
- 5. I find it difficult to answer this question.

Question 3: In the past two years have you been personally saving any money?

- 1. Yes
- 2. No
- 3. Do not know
- 4. Prefer not to say

If your answer is yes, please explain how and where did you saved your money?

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Question 4: Do you have any debts that you have failed to pay in time?

- 1. Yes
- 2. No
- 3. Don't know
- 4. Prefer not to say

If you answer is yes, how do you intend to repay the debt

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Question 5: In case of an emergency that will require money equivalent to your one-month income will you be able to cover it without borrowing.

1. Yes 2. No 3. Do not know 4. Prefer not to say

Question 6: Some people set themselves financial goals, such as paying university fees, buying a tractor, or becoming debt free. Do you (personally, or with your partner) have any financial goals?

1. Ye 2. No 3. Do not know 4. Prefer not to say

If you answer is yes, what actions have you taken to meet these goals?

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Question 7: How do you intend to fund your retirement (withdrawal from daily farming business when you grow old)?

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Question 8: If you experience a bad farming season for a year, how long will you continue to cover your living expenses without borrowing any money (explain).

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Section IV: Financial attitude

Please indicate your answer by placing a tick/highlighting in the appropriate category

Question 1: Which of the following applies to you?

Please tick (v) the appropriate response on the 5 point likert scale of agreement and disagreement. 5 being strongly disagree, 4 disagree, 3 neither agree nor disagree, 2 agree and 1 strongly agree.

Statement	Strongly agree (1)	Agree (2)	Neither agree or disagree (3)	Disagree (4)	Strongly disagree (5)
AT1. I find it more satisfying to spend money than to save it for the long term					
AT2. I am prepared to risk some of my own money when saving or making an investment					
AT3. Money is there to be spent					
AT4. I tend to live for today and let tomorrow take care of itself					
AT5. I keep a close personal watch on my financial affairs					
AT6. I set long term financial goals and strive to achieve them					
AT7. Government loans should not be paid back, because it is the responsibility of the government to support agribusiness.					
AT8. I divert a portion of business loans for personal use					

Section V: Choice of financial products

The following set of questions is about financial products and services. The emphasis is not about the balance of any accounts you hold, but in whether you have heard of them or used them on your own or together with someone else.

Question 1: Of the financial products listed below, which ones do you currently hold? (Tick your answers).

1. A current account 2. A savings account 3. An unsecured bank loan
 4. A secured bank loan 5. A microfinance loan 6. Company shares
 7. Bond 8. A pension fund 9. Insurance
 10. Mobile money (Ecocash, Onemoney/ textacash)

Question 2: What influenced the choice of those products?

1. My own previous experience 2. Advice from friends and family

- 3. Professional financial advisor
- 4. Formal adverts from media (newspaper articles, television/ radio programmes)
- 5. Social media platforms (whatsApp,facebook/twitter)
- 6. Not applicable
- 7. Prefer not to say
- 8. Other source (please specify)

.....

Question 3: Which of the sources of finance do you usually use to make ends meet/ to cover short term financial obligations?

- 1. Personal savings
- 2. Borrow from family and friends
- 3. Sell something that I own
- 4. Borrow from a Microfinance Institution
- 5. Borrow from a Bank
- 6. Borrow from informal money lenders
- 7. Other source (please specify)

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Question 4. Apart from the traditional financial services cited above, please explain the nature of any other financial service/s you personally require/recommend

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Questions 5. Concerning financial products and services in general, in the last 2 years, have you experienced any of the following issues?

	Yes	No	Prefer not to say
Have you accepted advice to invest in a financial product that you later found to be a scam, such as a <pyramid> scheme?			
Have you accidentally provided financial information in response to an email or phone call that you later found out was not genuine?			
Have you discovered that someone has used your <card> details to pay for goods without your authorisation?			
Have you queried a transaction listed on your bank or credit card statement that you did not recognise?			
Have you made a formal complaint about the service you have received from a bank or other financial institution?			
Have you tried to open a bank account and been refused for any reason?			
Have you been refused a claim on an insurance product that you expected to cover you?			
Have you complained to a remittance provider about high charges when sending or receiving money?			
Have you lost money as a result of hackers or phishing scams?			

Question 6: How do you rate the level of your financial literacy?

1. Very good 2. Good 3. Fair 4. Poor 5. Very poor

Question 7: Given an opportunity are you willing to enrol for a personal financial management course (financial literacy course).

1. Yes 2. No

Question 8. If your answer above is yes, please identify the personal financial management topics which you would like to learn to improve your financial competences? (Tick as many as possible)

1. Record keeping 2. Financial planning
3. Money management skills 4. Retirement finance
5. Financial service 6. Financial markets and investments 7. Insurance and insurance products
8. Mortgage loans and home buying options 9. All the above
10. None of the above, I am not interested in any of such topics
11. Other, please specify.....

Question 9: Do you have confidence to invest in the financial sector (Yes/No)

.....

Question 10: If your answer above is yes, which type of financial investments would you prefer to invest in? (List in the order of your preference)

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Appendix D: Approval Letter

All correspondence should be addressed to
"THE SECRETARY"
Telephone: 706081/9
Fax: 734646
Telex: ZIM AGRIC: 22455 ZW



**MINISTRY OF LANDS, AGRICULTURE,
FISHERIES, WATER AND RURAL
RESETTLEMENT**
1 Borrowdale Road
Ngungunyana Building
Private Bag 7701
Causeway
Harare

11 May 2021

To whom it may concern

**Clearance for Lilian Gumbo to conduct a study on Financial Literacy in
Agribusiness Entrepreneurs (farmers) in Zimbabwe**

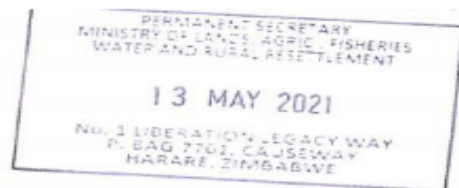
The Ministry wishes to advise that it has given clearance to Ms Lilian Gumbo ID No. 22-233909-R-03 a Ph.D. student at Durban University of Technology to conduct a study on Financial Literacy targeting farmers. The study will commence on 01 October 2021.

The scope of the study will be on the financial literacy of commercial and smallholder Agribusiness farmers in the relevant districts. The Ministry kindly requests that you assist her to conduct the study. The study will generate evidence to promote financial literacy amongst farmers. A financially literate Agribusiness sector will result in improved loan repayment, a good savings culture, increased demand for financial products, quality choice of appropriate loan facilities, and access to better markets and profitability, which are key to the success of NDS1 and the attainment of Vision 2030.

A handwritten signature in blue ink, appearing to read 'J. Basera', written over a horizontal line.

Dr. J. Basera

**SECRETARY FOR LANDS, AGRICULTURE, FISHERIES, WATER AND RURAL
RESETTLEMENT.**



Appendix E: Interview Guide

Interview guide for AGRITEX extension officers.

1. What is your view on the financial knowledge of agribusiness farmers?
2. In your opinion, what are the financial attitudes of agribusiness farmers?
3. Comment on the financial behaviours of agribusiness farmers
4. In your own view, what are the financial services needed by agribusiness farmers?

|

Appendix D: Turnitin Report

The level of financial literacy of agribusiness entrepreneurs in Zimbabwe

ORIGINALITY REPORT

16%	13%	10%	7%
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

PRIMARY SOURCES

1	researchspace.ukzn.ac.za Internet Source	1%
2	www.oecd.org Internet Source	1%
3	financialcapability.gov.au Internet Source	<1%
4	open.uct.ac.za Internet Source	<1%
5	Submitted to Midlands State University Student Paper	<1%
6	vital.seals.ac.za:8080 Internet Source	<1%
7	researchspace.bathspa.ac.uk Internet Source	<1%
8	www.researchgate.net Internet Source	<1%
9	www.scribd.com Internet Source	<1%

Student *Onko*
Date 03/11/2022

Supervisor *[Signature]*
Date 03/11/2022

Co-Supervisor *[Signature]*
Date 03/11/2022