THE ROLE AND USAGE OF SUITABLE FINANCIAL PRODUCTS FOR SAVING AND INVESTMENT PURPOSES IN SOUTH AFRICA

Mini-dissertation by

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DECLARATION

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LIST OF ABBREVIATIONS AND ACRONYMS

Table 1 below lists all the abbreviations used throughout the study.

Table 1: Abbreviations and acronyms used in this study

Abbreviation	Meaning
ANOVA	Analysis of Variance
BLCH	Behavioural Life Cycle Hypothesis
EFA	Exploratory Factor Analysis
FA	Factor Analysis
GDP	Gross Domestic Product
H0	Null hypothesis
HA	Alternative hypothesis
HSRC	Human Sciences Research Council
LCH	Life Cycle Hypothesis
NT	National Treasury
OECD	Organisation for Economic Co-Operation and Development
PIH	Permanent Income Hypothesis
RSA	Republic of South Africa
SA	South Africa
SARB	South African Reserve Bank
SASA	South African Social Attitudes Survey
SPSS	Statistical Package for the Social Sciences
TFIs	Tax-Free Investments
TFSAs	Tax-Free Savings Accounts

LIST OF DEFINITIONS

These are definitions that are used throughout this study.

This study involves numerous key concepts, including financial literacy, financial knowledge, formal financial products, informal financial products and saving behaviour. These key terms are defined below.

Table 2: Definitions of key terms

KEY TERM	DEFINITION
Accessible financial products	These refer to financial products that are available in the financial institutions (Prina, 2015).
Financial knowledge	In the context of this study, it is used similar to financial literacy as defined in the below statement.
Financial literacy	A combination of awareness, knowledge, skill, attitude, and behaviour necessary to make sound financial decisions and ultimately achieve individual financial well-being (Atkinson and Messy, 2011).
Formal financial institutions	These refer to banks and other financial institutions that offer savings and investment products which yield return (Dupas and Robinson, 2013).
Formal financial products	These refer to both savings and investment products that are offered by banks and other financial institutions, including savings accounts, retirement funds, education savings and unit trusts (Demirgüç-Kunt, Klapper, Singer, Ansar and Hess, 2018).
Informal financial products	These refer to both savings and investment products that are provided by non-financial institutions which include stokvels, storing savings at home and purchasing livestock (Clark, Paul, Aryeetey and Marquis, 2018).
Saving	In the context of this study, saving is referred to putting aside the unspent disposable income after spending on necessities in either formal financial institutions or informal savings clubs for future use (Newman, Tarp and Van De Broeck, 2014).
Saving behaviour	This refers to the attitude towards saving or spending (Garcia, Barros and Silvestre, 2011).
Suitable financial products	These refer to formal financial products that are tailored to be fully usable and which are simpler and affordable to cater the financial needs of every individual (Demirgüç-Kunt, Klapper, Singer and Van Oudheusden, 2015).

ABSTRACT

The study focused on examining the saving and investment behaviours of South Africans. There has been no extensive research in existing literature that has focused on this area of study. This study intends to extend the understanding of what factors contribute to the decisions individuals make about saving and investment. The primary research objective was to explore and empirically test the statistical significance of income, education and gender related to the use of suitable financial products and investigate optimal ways to save and invest. This was a quantitative study which used secondary data obtained from the Human Science Research Council database gathered through a structured questionnaire. A sample of 2,972 individuals across the country participated in and completed the survey. The results illustrated that low-income participants saved less through informal saving schemes than high-income participants, but the statistical significant difference between these groups is too small. The findings also showed that less-educated participants used predominantly more formal saving products than highly educated participants and the statistical significant difference between these groups is large. Finally, the findings highlighted that females make better investment choices than males, but the statistical significant difference between these groups is too small. This study illustrated that low savings and investment in South Africa is influenced by the type of financial products used and also demographic factors such as income, education and gender.

CHAPTER 1 – INTRODUCTION

1.1 BACKGROUND

Savings and investments play a crucial role in boosting the economic growth of every country (Demirgüç-Kunt, Klapper, Singer, Ansar and Hess, 2018; Zins and Weill, 2016; Chua, Kiong, Villa and Paguta, 2016). In the past decade, the economic growth of South Africa (SA) has deteriorated drastically from 3.2% in 2008 to 0.8% in 2018, and it is the lowest compared with other developing countries such as China, India and Mexico (National Treasury (NT), 2019). In SA, the general saving has declined from 16.9% of the gross domestic product (GDP) in the 4th quarter of 2008 to 14.0% in the same quarter of 2018 due to relatively low saving habits by corporates, households and the government (South African Reserve Bank (SARB), 2009, 2019). The NT has reported that the poor economic conditions in SA contributed to low investment which has steadily deteriorated for more than a decade, yielding a low 17.7% as the percentage of GDP in the 3rd quarter of 2018 (NT, 2019). Bayar (2014) discovered that an improved and sustained economic growth in any country is attained through both savings and investments.

Both savings and investments are essential to improve the personal wealth and financial security of everyone (Demirgüç-Kunt and Klapper, 2013; Hira, 2012). From an economic perspective, high levels of savings lead to economic growth, financial security, financial stability and wealth accumulation for both individuals and households (Organisation for Economic Co-Operation and Development (OECD), 2011). This is supported by Precious and Asrat (2014) in their study of determinants of household savings in SA, as the authors asserted that saving plays an important role in the enhancement of sustained economic growth and accumulation of personal wealth. In their study of the determinants of household savings in SA, Botha, Simleit and Keeton (2011) have established that there is a low level of saving by South Africans as compared with both corporate and government savings. The SARB has reported low individual savings over the past decade whereby they deteriorated from 1.7% as a percentage of GDP in the 4th quarter of 2008 to 1.2% in the same quarter of 2018 (SARB, 2009, 2019). The World Bank (2011) ascertained that there is a low level of investment by individuals in SA due to risk perception and limited knowledge about investment options, among other factors. Savings are necessary as they serve as protection

in case of unexpected changes in economic circumstances, and they are also vital during the redistribution of economic resources over their lifetimes (Kapounek, Korab and Deltuvaite, 2016). It is, therefore, imperative for individuals to save in order to smoothen consumption during periods of income uncertainty (NT, 2012).

In SA, the low saving rate can be attributed to a high level of spending on goods and services instead of setting money aside for future purposes or unforeseen circumstances (SARB, 2018). This finding is supported by Mongale, Mukuddem-Petersen, Petersen, and Meniago (2013) in their study of household savings in SA. The authors have discovered that high spending by individuals has a detrimental effect on savings. In addition, lack of saving, which has a negative impact on the financial health of individuals, is the outcome of poor financial choices, including limited knowledge about saving choices (Gale, Harris and Levine, 2012). The NT (2019) highlighted that the low growth in investments by South Africans is caused by lack of policy certainty which has a detrimental impact on risk perception and confidence of investors with regard to making sound investment choices.

Bucciol and Veronesi (2014) argue that individuals do not save adequately. This is a worldwide phenomenon which needs to be investigated thoroughly to establish the key determinants that have a negative impact on savings (Karlan, Ratan and Zinman, 2014). This low level of savings and investments by individuals is a huge concern because the individual sector has been found to contribute a bigger proportion to the national savings compared with corporate and government sectors (Kapounek *et al.*, 2016). The current study is motivated by this concern and it focuses exclusively on individual savings and investments in the South African context in order to investigate determinants that have a detrimental impact on saving and investment behaviours.

Poor financial choices are due to a lack of financial knowledge, and inaccessible financial institutions that offer highly-demanded financial products (Brown and Taylor, 2016; Gathergood, 2012; Karlan *et al*., 2014; Lusardi and Mitchell, 2014). Other determinants include demographic factors such as income, education and gender, economic factors, in particular, interest rates (Kapounek *et al.*, 2016).

Chowa and Ansong (2010) point out that lack of saving in developing countries is highly influenced by inaccessible financial products that are appropriate, safe, flexible and affordable to enable individuals to attain their financial goals. The inaccessibility of formal financial products influences individuals to use informal financial products and methods of saving which include stokvels and storing cash at home for a particular financial goal (Newman, Tarp and Van De Broeck, 2014). There is limited research into examining the usage of financial products which could contribute to making well-informed financial decisions, specifically saving and investment decisions. This study investigates the usage of the range of financial products on saving and investment choices in the South African environment.

1.2 PROBLEM STATEMENT

The NT (2019) asserts that in SA, there is a low level of saving and investment by individuals which troubles policymakers. This is evidenced by the report from the SARB in 2019 showing a decline in saving and investment by individuals over the past decade (SARB, 2009, 2019). It is argued that this is the outcome of the knowledge gap regarding the proper management of personal finances in order to make optimal financial decisions, which is also experienced by the rest of the world (Skagerlund, Lind, Stromback, Tinghog and Vastfjall, 2018).

Hira (2012) argues that low savings and investment by individuals is due to lack of the necessary knowledge required to survive during the economic dynamics as well as the failure to identify the determinants that influence their financial security. Brown and Taylor (2016) point out several factors, including limited financial knowledge, high levels of spending and over-indebtedness which can contribute to low levels of individuals' savings and investment in SA. The use of inappropriate financial products can also have a detrimental effect on making optimal financial decisions to improve personal wealth in the long term, and also maintain the living standard of individuals during income shocks (Bucciol and Veronesi, 2014). Lack of savings and investments can lead to financial instability and unhealthy financial well-being (Hira, 2012; Lewis and Messy, 2012).

The existing studies in the South African environment have extensively investigated the determinants of household saving and also examined the relationship between saving and

the economic growth of the country (Amusa, 2013; Precious and Asrat, 2014). It is pivotal for the South African government to focus on raising the low levels of individual savings and investments in order to boost their financial well-being (Botha *et al.,* 2011). This study is relevant as it focuses on both savings and investment in the South African context as there has been limited research conducted in this field. Limited access to suitable financial products offered by financial institutions can lead to low savings and investment by individuals (Demirgüç-Kunt and Klapper, 2013; Dupas and Robinson, 2013). This limited access might be due to barriers such as distance, affordability and limited range of highly-demanded financial products that could hinder individuals from selecting appropriate financial products for attaining their financial needs (Zins and Weill, 2016). Demirgüç-Kunt *et al.* (2018) ascertained that accessible and suitable financial products encourage individuals to save or invest. Therefore, it is imperative for this study to determine the usage of suitable financial products for saving and investment to address the research problem.

1.3 PURPOSE STATEMENT

This study will highlight the huge need to expand the knowledge of individuals related to making optimal financial decisions to attain their desired financial needs in order to be financially stable, independent and secured. This study focuses on the knowledge extension of individuals regarding how to select suitable financial products in order to smooth consumption during unexpected economic conditions and attain both savings and investment goals, especially education and retirement plans. Furthermore, the study contributes to the enhancement of knowledge about the significance, barriers and theories of savings and investments that have an impact on individuals' financial choices. Finally, the study will show that the results of this research will contribute to educating and equipping South Africans with the information necessary to make optimal savings and investment decisions that can boost their financial well-being.

1.4 RESEARCH OBJECTIVES

This study intends to investigate the usage of appropriate financial products for saving and investment purposes. The following hypotheses are developed to achieve this objective.

Demirgüç-Kunt *et al.* (2018) have pointed out that most low-income individuals have limited access to formal saving accounts and other banking services that are offered by formal financial institutions due to the high fee structure relative to their income. Demirgüç-Kunt and Klapper (2013) and Cole, Sampson and Zia (2011) argue that low-income individuals use less formal financial products in order to save due to expensive, fixed fees involved while they intend to hold formal financial products at lower fees than market prices. Predominantly, low-income individuals consider using informal techniques to save and create wealth which yield low returns that can only improve individuals' financial well-being over a short period (Chowa and Ansong, 2010). Low-income individuals tend to use mattresses to hide their savings and keep physical goods, including livestock as an investment when formal savings products are inaccessible at a financial institution (Demirgüç-Kunt *et al.,* 2018; Karlan *et al.*, 2014). Chowa, Masa and Ansong (2012) pointed out that low savings in developing countries, specifically sub-Saharan Africa are the consequence of low and irregular income, as well as inaccessible formal financial products, including deposit and savings accounts.

- **$H0_1$: Low-income individuals predominantly use informal savings products compared with high-income individuals to attain their savings needs.**

The increased number of accessible financial institutions which can provide various and affordable financial products, the greater the choice and benefit to low-income individuals to use formal financial products for saving purposes (Mookerjee and Kalipioni, 2010). Pailwar, Kaur, Saxena and Nijhara (2010) assert that having numerous financial institutions that provide financial products tailored to cater the financial needs of all individuals can encourage low-income individuals to save formally. This is supported by Nayak, Sethi, Bhujabal and Mallick (2016) who established that the greater availability of financial institutions not far away encourage low-income individuals to save formally. Dupas and Robinson (2013) found that when formal financial products are accessible, low-income individuals usually choose them to cater for their financial needs and this contributes to the improved financial health of every individual. Prina (2015) also found that low-income individuals tend to hold exclusively accessible formal saving products that meet their saving needs.

- **HA_1: Low-income individuals predominantly use formal savings products compared with high-income individuals to attain their savings needs.**

According to Nigus (2015), the level of education has a huge impact on the saving behaviours of individuals. Higher educational qualification is positively correlated with savings and thus, well-educated individuals tend to save more than individuals with little education (Kapounek *et al.,* 2016; Whitaker, Bokemeiner and Loveridge, 2013). Being well-educated about formal financial products promotes the use of more formal financial products because they are knowledgeable and familiar with them (Cole *et al.*, 2011). According to Cole and Shastry (2009) and Demirgüç-Kunt *et al.* (2018), highly educated individuals tend to use financial products offered by financial institutions, including financial products that generate more returns. Zins and Weill (2016) found that highly educated individuals usually save at financial institutions to attain their desired financial needs.

- **$H0_2$: Highly educated individuals tend to use formal savings products on a greater scale compared with less-educated individuals.**

Interestingly, De Bassa Scheresberg (2013) found that individuals with a high education possess limited financial knowledge, although it was indicated that the level of financial knowledge rises with the level of education. This results in highly educated individuals tending towards making sub-optimal savings decisions due to limited knowledge about financial choices. Financially knowledgeable individuals' information about a particular financial product tend to use that product for meeting desired financial needs (Iregui-Bohórquez, Melo-Becerra, Ramírez-Giraldo and Tribín-Uribe, 2018). This illustrates that less-educated individuals with more knowledge about formal savings products may tend to save more than highly educated individuals.

- **HA_2: Less-educated individuals tend to use more formal savings products compared with highly educated individuals.**

Males possess more financial knowledge than females (De Bassa Scheresberg, 2013). This is consistent with other previous studies (Fonseca, Mullen, Zamarro and Zissimopolous,

2012; Lusardi and Mitchell, 2014). Albaity and Rahman (2012) assert that females hold less risky financial products that lead to low investment compared with males.

- **$H0_3$: Males tend to make better investment decisions compared with females.**

Females are more financially knowledgeable compared with males (Grohmann, 2018). Bannier and Neubert (2016) assert that the willingness of females to participate in more risky financial products can lead to an accumulation of more personal wealth compared with males.

- **HA_3: Females tend to make better investment decisions compared with males.**

1.5 THE IMPORTANCE AND BENEFITS OF THE RESEARCH STUDY

1.5.1 The practical importance and benefits of the research study

The present study intends to add a valuable contribution to individuals, investors, economists, financial institutions, and policymakers.

Individuals can gain insightful financial knowledge regarding optimal financial choices, in particular savings and investments that have detrimental effects on the financial well-being of individuals. Thus, more knowledgeable individuals tend to choose suitable financial products with the intention of achieving their financial needs, including financial security and independence. Furthermore, the study is important for **investors** as it intends to provide more knowledge regarding investment options that can assist them to make well-equipped investment choices to accumulate greater personal wealth. This study intends to assist **economists** to identify the key factors that have an impact on the level of individuals' savings and investments which may negatively impact the financial stability of the economy.

Financial institutions can establish the importance of accessible financial institutions which offer highly-demanded financial products to individuals irrespective of age, gender, levels of income and education. Financial institutions can also identify the vital role of the financial professionals related to the provision of more financial information regarding financial facilities, products and advise on the advantages of saving. **Policymakers** can identify and

understand the main barriers that hinder individuals from entering the savings and investments arena. They can develop and implement appropriate policies and regulations that attracts individuals and motivates a saving and investment culture in the Republic of South Africa (RSA). Furthermore, policymakers can establish the significance of financial professionals by designing and developing reasonable fee structures that can eliminate the barriers of providing professional financial services to low-income individuals.

1.5.2 Academic importance of the study

This study is essential to extend the existing literature on savings and investment in the South African context, as it was established that there is little research in this field (Odhiambo, 2009; Rickwood and White, 2009). Ruefenacht, Schlager, Maas, and Puustinen (2015) outline the importance of empirically investigating factors that influence the financial decision-making of individuals. Although there are several studies that have been conducted about the various factors that impact financial decisions, the usage of accessible financial products on financial choices has been overlooked (Amusa, 2013; Bucciol and Veronesi, 2014; Precious and Asrat, 2014). Furthermore, little is known about the research that incorporates savings and investment in the South African context because these topics were usually investigated separately (Aren and Zengin, 2016; Botha *et al.,* 2011). This study intends to investigate and explore both savings and investment cultures of South Africans in order to understand the usage of accessible financial products to achieve financial goals. Furthermore, this study focuses exclusively on financial choices, in particular savings and investment choices in the South African environment, with reference to demographic factors such as income, education and gender in order to contribute to the existing literature in this field.

1.6 DELIMITATIONS AND ASSUMPTIONS

In order to accomplish the objectives of this study, there are several delimitations that need to be taken into account. **Firstly**, the study focuses on savings and investment choices by all individuals residing across the nine provinces of the country, the RSA. The study has targeted all individuals residing in SA as they have an equal opportunity of being selected in

the sample size regardless of family cultural backgrounds and diversity in terms of gender, age, income and educational levels of the participants.

Secondly, the study exclusively targets all South Africans aged 16 years and above in 2011. **Thirdly**, minor individuals who are below 16 years as well as individuals who are based in special institutions, recreational areas, industrial areas and empty enumerator areas have been excluded in the sample. The study excluded special institutions such as hospitals, military camps, old age homes, schools and university hostels.

Lastly, the study investigates both savings and investment choices by individuals which are related to income, education and gender by determining the usage of accessible financial products. Furthermore, the study determines the statistical significance of the aforementioned variables and, in case where there is a statistical significance, a further examination is conducted to identify where the significant difference occurs amongst the underlying categories.

The assumptions underlying this study are as follows:

- The units of analysis, namely, all individuals residing in SA originated from nine different provinces of the country when the study was conducted in 2011. Thus, all foreign nationals are assumed not to be in the sample.
- All participants aged 16 years and above are either employed or receiving income on regular basis, including salary, wages, allowances and rent income, and they are capable of deciding whether they spend or save it.
- The data was gathered through face-to-face interviews which gives the researchers an opportunity to explain and clarify the questionnaire that participants might have misunderstood in order to respond accurately.
- The data was collected in 2011 and therefore only applicable for the 2011 year.
- The results of this study are valid, as savings and investment decisions were examined statistically based only on income level, education level and gender.

1.7 SUMMARY

In this chapter, the background of the study was outlined as well as the problem statement, purpose statement and the necessity for conducting this study. The objectives of the study and the hypotheses developed to achieve these objectives were also outlined in this chapter. Finally, the assumptions and delimitations of the study were also pointed out in this chapter.

The study proceeds as follows. The next chapter discusses the review of necessary literature encompassing various financial products, theories of savings and investment as well as barriers for saving and investment. Such barriers include financial knowledge, accessible and suitable financial products, and demographic factors. In chapter 3, the research methodology of the current study is discussed. In chapter 4, the results of the study are presented, and the last chapter, chapter 5, comes to a conclusion and gives recommendations for further research as guided by this study.

CHAPTER 2 – LITERATURE REVIEW

2.1 INTRODUCTION

The previous chapter outlined the background of the study and also the necessity for conducting this study to address the identified research problem of low savings and investment in SA. In this study, the focus is primarily on investigating the behaviour of South Africans in relation to making appropriate financial decisions about savings and investment. Thus, the usage of different financial products for saving and investment purposes by South Africans is investigated in order to gain an insight and a deeper understanding of the reason for low levels of savings and investment. The knowledge about interest rates earned while holding these financial products plays a pivotal role in determining the level of financial knowledge about savings and investment. The attitude of individuals about whether they decide to consume immediately or set aside the money for the future is vital in establishing the personal behaviour of individuals as they make optimal financial choices. The intention of saving and investing will steer individuals to choose financial products that are most likely to meet their desired financial needs.

This chapter focuses on evaluating and critically integrating the existing literature on both savings and investment in the RSA. This chapter consists of four sections whereby the first section outlines the significance of saving and investment behaviours in general. The next section gives an overview of theories of saving and investment. The third section outlines various financial products that are appropriate for saving and investment purposes. Finally, the last section discusses three barriers that have an impact on making optimal financial choices which include the accessibility of financial products, financial knowledge, demographic and economic factors. In order to address the research problem of this study, it is vital to have a greater understanding about the usage of accessible financial products on saving and investment, and also a deeper insight into the impact of other barriers that can hinder individuals from making well-informed financial decisions.

2.2 THE NECESSITY OF SAVINGS AND INVESTMENT BY INDIVIDUALS

This section discusses the significance of saving and investment in detail. This study investigates saving and investment behaviours of individuals in the South African environment.

2.2.1 Savings by individuals

Savings have been defined differently in a number of prior studies. According to Ülkümen and Cheema (2011), saving occurs when individuals usually limit their present spending and set aside a portion of their income with the intention of attaining their future saving goals. Ashby, Schoon and Webley (2011) and Chua *et al.* (2016) argue that the act of saving shows the decision made by individuals to save any amount of money left over after spending on necessities. Furthermore, saving is not only to put aside the unspent disposable income after spending on necessities, but the individual considers whether the residual money is retained in formal financial institutions or through informal savings methods (Newman *et al.,* 2014). Finally, saving is when individuals decide ways to generate a return on unspent income (Samudra and Burghate, 2012).

Individuals need to understand that participating in saving is a choice made by individuals with the intention of planning to smooth consumption using financial products in case of anticipated and unanticipated events (Demirgüç-Kunt *et al.*, 2015). Savings are necessary as they serve as a protection in case of unexpected changes in economic circumstances and they are also vital during the redistribution of economic resources over the lifetimes of individuals (Kapounek *et al*., 2016). Savings are essential for the financial well-being of individuals and societal welfare as they assist in maintaining the standard of living during the period of income uncertainty and poor economic conditions, including job-losses (Demirgüç-Kunt *et al*., 2015; Karlan *et al.*, 2014). According to the NT (2012) and Winkler (2014), savings are necessary for several reasons such as:

- Smoothing consumption during anticipated events, including retirement periods and unexpected events such as job losses and emergencies.
- Saving for precautionary purposes through insurance policies such as medical aids and car insurance.

- Accumulating adequate assets or funds for specific motives, including education, homeownership, holidays and birthdays.
- Reducing poverty by giving low income individuals the opportunity to afford to pay their essential expenses in case of unanticipated events such as emergencies and job losses.

The NT (2012) outlines two limitations that hinder individuals from saving adequately and that is, lack of self-control since individuals' preferences are greatly biased towards immediate consumption rather than future consumption. Secondly, the way savings products are designed, particularly complex savings products can prevent most individuals from making better choices due to limited knowledge about choosing appropriate savings products for meeting saving goals. Karlan *et al.* (2014) point out that market frictions which include regulatory constraints and transaction fees as well as distrust in formal financial institutions, can also restrict individuals from participating in saving. Typically, financial institutions have regulations concerning holding a specific financial product which include the required balance to be retained at a minimum level, in particular when using savings account and this may restrict individuals from saving (Kendall, 2010). According to Prina (2015), financial products that have no transaction fees and are easily accessible at the formal financial institutions are mainly trusted by individuals and this influences them to use these financial products for saving purposes. According to Dupas and Robinson (2013), formal financial institutions refer to banks and other financial institutions that offer savings and investment products which yield return. Kendall (2010) argues that more affordable financial products with lower transaction fees may influence many individuals to participate in saving.

The NT (2012) points out that individuals make decisions that are not in their best interest in most cases because they tend to postpone saving and choose any default option to avoid complex decisions as they are susceptible to accepting bad advice. The NT (2012) further posits that:

- The development of policies to encourage saving should not focus exclusively on the impact of tax on the rate of return.
- The development of suitable saving products and saving incentives is important to encourage saving.

- Individuals fail to save due to lack of self-control as they prefer to spend immediately instead of saving for the future.

This study intends to investigate the saving behaviours of South Africans, particularly the usage of the available financial products in the market that are used for saving and investment purposes.

2.2.2 Investment by individuals

Investment refers to packages which individuals choose in order to yield potential wealth and income (Samudra and Burghate, 2012). As saving has been defined in the previous section, saving and investment are argued to be interlinked (Hundie, 2014). Investments are vital to assist in accumulating adequate personal wealth (Lewis and Messy, 2012). The level of financial knowledge and risk perceptions of individuals influence the financial choices that individuals make, in particular, investment choices (NT, 2019; World Bank, 2011). Financially knowledgeable individuals tend to invest in risky financial products, including either equities or portfolios while financially illiterate individuals prefer to invest using bank deposits (Aren and Zengin, 2016).

Skagerlund *et al.* (2018) argue that making optimal investment choices is hindered by individuals' lack of understanding numeracy, interest rates, inflation and risk diversification which are used to measure basic financial knowledge. Investment products generate higher interest rates over long periods and thus, limited knowledge about interest rates is crucial in order to accumulate more wealth (Standard Bank, 2019). Sulaiman (2012) argues that risk perception is the key determinant in making suitable investment decisions which include investing for retirement, purchasing shares and also investing in unit trusts.

2.3 THEORIES OF SAVING AND INVESTMENT

The preceding section has pointed out the necessity of savings and investment. In this section, an overview of theories of saving and investment is outlined.

2.3.1 Theory of saving

Saving theories consist of a life-cycle hypothesis (LCH), behavioural life cycle hypothesis (BLCH) and relative income hypothesis (Otto, 2013). The theory of LCH developed by Modigliani and Ando in 1957 emphasises that economic theories mainly focus on income and age as predictors for saving (Bazhenova and Krytsun, 2013). Chowa *et al.* (2012) have categorised the theories of saving into three perspectives which include individual-oriented, social stratification and institutional perspectives.

Individual-oriented perspective

This perspective consists of three theories, namely neoclassical economics, economic psychology and behavioural economics (Chowa *et al*., 2012). According to Han and Sherraden (2009), these three theories have the following three common key factors:

- Individuals are regarded as rational representatives who play an important role in optimising resource allocation.
- The processes of making saving decisions by individuals are prioritised instead of social context.
- All three theories aim to ensure that future consumption is secured.

Chowa *et al*. (2012) point out that **neoclassical economic theory** posits that individuals do not only respond to changes in predictable incentives, but they also have perfect knowledge regarding access to the perfect market. This theory consists of the **LCH** and **permanent income hypothesis (PIH)** which posits that the main concern of individuals is long term consumption opportunities about the anticipated future income (Han and Sherraden, 2009). The LCH and PIH predominantly consider savings as a function of income (Bazhenova and Krytsun, 2013). The **LCH** is the well-known theory used for analysing saving and it posits that individuals smooth consumption during their lifespans by saving more during employment periods while they save less during retirement and childhood periods (Ang, 2009; Chowa *et al.,* 2012). Bazhenova and Krytsun (2013) point out that consumption and saving amongst individuals vary according to age differences whereby the working individuals use their income for smoothing consumption and saving for their retirement

periods. Thus, this study focuses on determining the role of income on choosing suitable financial products for attaining desired savings goals.

The **PIH** developed by Friedman in 1957 posits that a decision to save depends on whether income is permanent or temporary, as individuals usually spend permanent income while they save temporary income (Curley, Ssewamala and Sherraden, 2009; Han and Sherraden, 2009). According to Chowa *et al.* (2012), the PIH is a setback in developing countries because most individuals have a low and uncertain income. That is, low-income individuals tend to struggle to save for long term savings, including retirement savings because they struggle to attain smooth consumption during emergencies and job losses. The PIH has necessitated this study as it examines the saving behaviours of all income groups, including low, middle and high-income individuals in SA, and individuals from urban and rural areas were selected in the sample to generate valid and reliable research results.

According to neoclassical economic theory, age is also a significant predictor for saving, specifically the age of the household head and other members of the household (Chowa *et al.,* 2012). In this study, the role of age on saving is not examined as most previous studies in developing countries, including India, China and Morocco have examined it extensively (Abdelkhalek, Arestoff, de Freitas and Mage, 2010; Ang, 2009).

Han and Sherraden (2009) point out that **economic psychology** and **behavioural economics** posit that personal attributes and attitudes have an impact on savings and wealth accumulation. These individual perspective theories consider savings as being influenced by economic factors such as income, and its size and frequency while different psychological attributes have an effect on decisions regarding savings and spending (Chowa *et al.,* 2012). The economic theory developed by Katona in 1975, and especially the socio-psychological theory, posits that the preferences of individuals alter in relation to economic and social differences (Curley *et al.,* 2009). Chowa *et al.* (2012) point out that **economic psychology** focuses on personal perception, expectation and attitude as psychological factors. It is assumed that the perception of an individual can predict the association between economic behaviour and conditions whereby when individuals expect pessimistic economic conditions, they tend to save more (Han and Sherraden, 2009).

Chowa *et al.* (2012) have pointed out that psychological theories have two main factors, namely the ability to save consisting of objective data mostly, and a willingness to save consisting of different psychological variables. That is, willingness to save is linked to the extent of optimism about economic conditions. Otto (2013) argues that the ability of certain individuals to save or spend is equivalent to disposable income while the willingness of certain individuals to save or spend is subject to financial expectations and attitudes. However, the ability to save provides no assurance that individuals may participate in saving, since saving depends on the willingness of individuals to save (Chowa *et al*., 2012). Personality characteristics such as optimism about economic conditions, future orientation, guaranteed ability to save and locus of control are linked to saving behaviour (Sherraden and McBride, 2010).

Figure 1 depicts the theory of economic psychology in terms of ability and willingness to save.

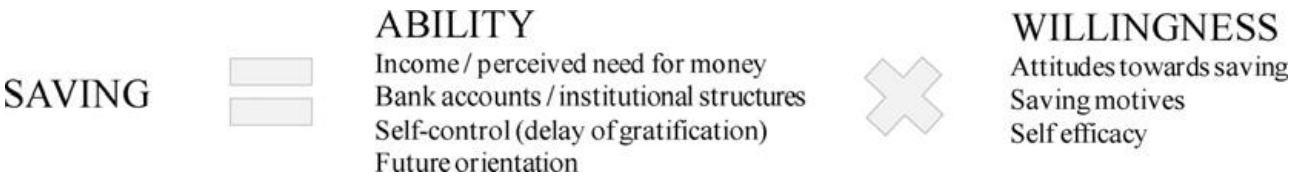

Figure 1: Saving in childhood and adolescence: demographic, social and psychological determinants.
Source: Adapted from Katona (1975)

The last individual-oriented perspective is **behavioural economic theory** which combines insights from psychological and economic theories to provide mechanisms that encourage savings (Baker, 2009). Behavioural economic theories guarantee assumptions of traditional economic theories which posit that individuals' optimised utility depends on the anticipated income levels over their lifespans to adapt consumption behaviours (NT, 2012). These traditional economic theories have three assumptions, namely perfectly self-centred individuals, perfectly rational individuals and individuals who do not hold time-inconsistent preferences. The BLCH is the well-known behavioural economic theory for saving and it was designed to consider the inconsistencies that exist between the LCH and observed behaviours (Chowa *et al.*, 2012). The BLCH theory indicates personal attributes that are usually significant in shaping the financial behaviour and economic decisions of individuals,

including self-control and ability to delay gratification and default selections (Otto, 2013). Chowa *et al.* (2012) argue that these attributes can restrict individuals to act in contradiction with their personal priorities. This study intends to examine whether individuals prefer to use formal or informal platforms in order to attain their desired financial goals.

Social stratification perspective

Chowa *et al.* (2012) define social stratification theory as a fundamental division of power in the society and the division in society depends on classes which are referred to as groups of individuals found in the same economic environment. Furthermore, the authors point out the following key points regarding this theory:

- These social classes are linked to either having or lacking suitable economic resources to participate in saving and creating wealth.
- Households and individuals in lower economic classes have little access to information, resources and services that can make saving and accumulation of assets possible over time.
- In economic perspective, the main explanation of inequalities in every class depends on the nature of access to resources and institutions that control such access.
- Class-associated factors such as education and income can predict the saving behaviour of individuals and households.
- The high level of education can lead to a high level of savings while individuals with a high level of income tend to save in both formal and informal institutions, but predominantly they use formal institutions.

This study intends to determine the usage of the accessible financial products by individuals for saving and investment purposes and also to determine the role of income and education on choosing suitable financial products to attain financial goals.

Institutional perspective

According to Han and Sherraden (2009), institutional theories can provide a better understanding of the interaction between individuals and institutions concerning the

accumulation of assets. This theory posits that individuals and households encounter institutional-level factors that making saving impossible (Chowa *et al.*, 2012). This theory indicates that low-income individuals and households cannot save and accumulate greater wealth because they have limited access to institutional opportunities than high-income individuals and households (Han and Sherraden, 2009). Demirgüç-Kunt, Klapper and Singer (2017) and Dupas and Robinson (2013) argue that low income individuals can save and accumulate more wealth if they can have access to similar institutional opportunities in the same way as high-income individuals.

There are seven dimensions of institutional-level that were introduced which have an effect on savings and wealth accumulation and these are information, expectations, facilitation, access, incentives, security and restrictions (Heckman and Hanna, 2015). **Information** refers to financial education about financial products, **expectations** refer to desired savings goals and **facilitation** refers to assistance provided when individuals participate and save (Curley *et al.*, 2009; Han and Sherraden, 2009). **Access** refers to the possibility of using and communicating with financial institutions by individuals while **incentives** refer to rates of return and non-financial considerations for encouraging participation in saving (Curley *et al.*, 2009; Heckman and Hanna, 2015). According to Sherraden (2017), **restrictions** refer to constraints regarding the accessibility and usage of financial products for saving by individuals while **security** refers to safety and protection of savings against market risks such as inflation and fluctuating interest rates. This study considers information, incentives and facilitation as the most crucial dimensions due to the available data for analysis. Lusardi and Mitchell (2014) state that individuals who are knowledgeable about saving are more likely to participate in saving compared with individuals with limited knowledge about saving. Han and Sherraden (2009) argue that improved savings depend on the contributions made by individuals and expectation of what is considered to be an intended amount of savings.

2.3.2 Theory of investment

This section outlines the overview of investment theories which include **prospect theory** and **mental accounting theory**. These have a huge impact on making optimal investment choices. Chandra and Kumar (2012) emphasise that prospect theory developed by Kahneman and Tversky in 1979 and mental accounting theory developed by Thaler in 1985

are the most probable explanations of investor behaviour. Prospect theory is when individuals frequently make unsound mathematical decisions involving risks, especially when using simple numerical skills to choose financial products that are simply making losses instead of gains (Peteros and Maleyeff, 2013). The current study focuses on determining whether individuals make sound financial decisions by choosing financial products that generate better returns to create more wealth.

Zhang and Sussman (2017) describes mental accounting as the way individuals plan, monitor and assess their financial affairs, including investment and saving behaviours because this can have a detrimental influence on the investment decisions. Milkman and Beshears (2009) point out that mental accounting theory gives individuals the opportunity to split saving and spending decisions in order to plan, monitor and assess these behaviours. This necessitated the current study as it focuses on examining the investment behaviour of individuals in SA.

Both theories of saving and investment play an important role in this study as they provide the theoretical foundation for saving and investment behaviours of individuals.

2.4 THE USAGE OF SUITABLE FINANCIAL PRODUCTS FOR SAVING AND INVESTMENT PURPOSES

This section discusses in detail the usage of suitable financial products for saving and investment purposes in the South African environment.

Suitable financial products refer to formal financial products that are tailored to be fully usable and which are affordable and simpler to cater the financial needs of every individual (Demirgüç-Kunt *et al.,* 2015).

The proximity of the formal financial institutions to all individuals plays a significant role in saving because individuals usually use other more accessible saving options if these institutions are inaccessible (Bendig, Giesbert and Steiner, 2009). The accessible financial products refer to financial products that are available in the financial institutions (Prina, 2015). In order to choose optimal financial products for attaining financial goals, the term

financial inclusion which refers to “the accessibility and affordability of formal financial products by all individuals needs to be considered” (Ghosh and Vinod, 2017). However, even though some individuals have access to formal financial products for saving and investment purposes at a reasonable price, they choose not to use them and thus, the usage of financial products is a personal decision (Demirgüç-Kunt *et al.,* 2015).

Financial products are either formal or informal. Formal financial products refer to “both savings and investment products that are offered by banks and other financial institutions, including savings accounts, retirement funds, education savings and unit trusts” (Demirgüç-Kunt *et al.,* 2018). Informal financial products refer to “both savings and investment products that are provided by non-financial institutions which include stokvels, storing savings at home and purchasing livestock” (Clark *et al.*, 2018). It is advantageous for individuals to consider saving in banks to earn interest that can sustain the value of savings when inflation is high instead of keeping savings at home whereby they have to secure them against theft by family members (Demirgüç-Kunt *et al.,* 2017).

2.4.1 Saving products

In this section, savings products, in particular savings accounts such as tax-free savings accounts (TFSAs), flexible and fixed savings accounts as well as informal savings products, including savings clubs are discussed. Most individuals in developing countries, specifically low-income individuals consider holding exclusively accessible formal savings products that meet their savings needs (Demirgüç-Kunt *et al.,* 2017; Prina, 2015).

Savings accounts usually form part of the total wealth of individuals because these accounts are mainly owned by individuals (Deuflhard, Georgarakos and Inderst, 2018; Van Der Cruijsen, De Haan Jansen and Mosch, 2012). Savings accounts refer to “accounts that individuals usually use to save money for a short period, and they are easily accessible, but their interest rates are very low” (Standard Bank, 2019). Individuals usually prefer savings accounts which are accessible in local financial institutions, including banks and where the opening, maintenance and withdrawal fees are free (Demirgüç-Kunt *et al.*, 2018; Pailwar *et al*., 2010; Prina, 2015). However, high transaction costs on savings accounts can hinder

some individuals from accessing the most suitable financial products to meet their financial goals (Demirgüç-Kunt *et al.,* 2015; Ehrbeck and Tarazi, 2011).

Tax-free savings accounts

TFSAs were introduced in 2012, during the Budget Review, with the intention of motivating individuals to participate in saving (NT, 2014). These types of savings accounts require individuals to deposit at least R1 000 to open them (Absa, 2019). The initial limit was R30 000 per annum which is expected to increase in line with the annual inflation rate (NT, 2014). This account is also limited to the contribution of R500 000 over the lifespan of any individual (Old Mutual, 2019). This limit set on the contribution is intended to encourage individuals to make immediate savings decisions instead of delaying participation in saving and also to encourage individuals to use short-term savings products for attaining their financial goals (NT, 2014).The returns generated from TFSAs are not subject to tax, but if the tax-free savings exceed the current annual contribution limit of R33 000, the surplus is taxable at a rate of 40% (Absa, 2019).

These TFSAs grant individuals the opportunity to have at least two accounts per annum whereby they can choose investments that yield either interest or equity instruments in every account, but the current annual contribution is restricted to R33 000 (NT, 2014). Individuals are allowed to make withdrawals at any time, but these withdrawals are not subject to replacement; instead, further contributions are restricted to the annual contribution limit of R33 000 (Old Mutual, 2019). This is intended to address lack of self-control by most individuals because they have access to their savings anytime they need them and it encourages individuals to monitor their savings in order to avoid making impulsive saving decisions (NT, 2014).

According to the NT (2014), the TFSAs are relevant to specific formal savings products, including savings accounts in the bank, fixed deposits and retail savings bonds in order to cater for the savings needs of all individuals. It is important for individuals to understand the types of savings accounts they intend to use to cater for their desired saving needs (Hira, 2012).

Flexible savings accounts

Flexible savings accounts allow individuals to save for a wider range of saving needs whereby there are no restrictions on the term and how much can be invested, except the minimum deposit required to open the account (Standard Bank, 2019). Furthermore, these savings are easily accessible at any time and they are affected by the economic conditions such as expected interest rates as they fluctuate throughout the savings term (Old Mutual, 2019).

Fixed savings accounts

Fixed savings accounts are intended to meet the saving needs of individuals as set to be attained by saving a certain amount over a fixed period of time for a specific purpose, including saving to buy a car or go on holiday (Standard Bank, 2019). This motivates individuals to be committed to their targeted saving goals (NT, 2012). However, this type of savings have its own purpose with rules to adhere to and thus, they cannot be used for any unplanned saving goals (Old Mutual, 2019).

Furthermore, fixed savings accounts allow individuals to select the appropriate period of time for meeting that specific saving goal, and they prevent individuals from accessing savings until the end of the set time period (Standard Bank, 2019). The interest rates earned on fixed savings remain the same throughout the entire saving period and the capital amount is guaranteed as it is not affected by the economic conditions (Absa, 2019). These interest rates are subject to taxation (Old Murual, 2019). Some fixed savings accounts have a notification period prior to accessing the savings which prevents individuals from making withdrawals from their savings when they lack self-control (Standard Bank, 2019). Fixed savings accounts are for planned educational needs, saving for retirement and to purchase the house (Old Mutual, 2019).

Informal savings products

According to Nasrin, Baskaran and Rasiah (2017), traditionally, informal savings include keeping money at home for savings purposes or buying physical goods and commodities

such as livestock. Many individuals use stokvels and rotating savings (Chowa and Ansong, 2010). These traditional savings have a high level of risk compared with formal banking services (Prina, 2015). Traditional savings are those that are not offered by formal financial institutions such as banks and other financial institutions (Demirgüç-Kunt *et al.,* 2015, 2018). Some researchers argue that traditional or informal savings affect individuals' savings negatively because they yield no return and thus, the value of these savings can be reduced by inflation rate over time (Dupas and Robinson, 2013; Nasrin *et al.*, 2017). This precludes individuals from saving adequately and appropriately in order to enhance their financial health (Clark *et al.,* 2018; Nasrin *et al.*, 2017).

2.4.2 Investment products

This section discusses the investment products such as tax-free investments (TFIs), flexible and fixed investments. According to Absa (2019), investment products refer to financial products that can be held ideally over a period of more than 5 years. Investments are highly volatile compared with savings and are high risk as they can be affected by diversifying risks, inflation and interest rates (Skagerlund *et al*., 2018). Financial institutions indicate that investment products are influenced by risks such as the volatility of the economic market. This could have a detrimental effect on the amount invested because the sum invested is not guaranteed at the end of a time period due to economic fluctuations (Old Mutual, 2019; Standard Bank, 2019)

Tax-free investments

TTFIs are treated similarly to TFSAs as outlined in the aforementioned section, but the minimum deposit required to open TFIs is R5 000.00 (Absa, 2019).

Flexible investments

According to Standard Bank (2019), flexible investments are accessible anytime they are needed, by giving a specific notice, when they mature and others can be accessed partially. Investment products such as unit trusts and other investment plans such as investing to buy

the house and car are easily accessible anytime when necessary, but these accounts require R500 and R350 minimum deposit per month, respectively (Old Mutual, 2019).

Fixed investments

Fixed investments are similar to fixed savings as explained in the previous section, but they differ in terms of the duration of holding those particular products in as investments are held over a longer time period compared with savings products (Standard Bank, 2019).

2.5 THE IMPACT OF VARIOUS FACTORS ON SAVINGS AND INVESTMENTS

The foregoing section has outlined theories of savings and investment which included the economic, psychological and behavioural theories that can affect the savings and investment behaviours of every individual. These theories are pivotal in order to build the theoretical foundation for this study. In this section, several factors that have an impact on savings and investments by individuals, namely accessible financial products, financial knowledge, and demographic and economic factors are discussed.

2.5.1 The accessible and suitable financial products

Demirgüç-Kunt *et al*. (2015) have emphasised the necessity for a deeper understanding of barriers that restrict individuals from choosing suitable financial products to meet their financial needs. Prina (2015) has pointed out that the proximity of the formal financial institutions that offer a variety of financial products to all individuals plays a significant role in choosing suitable financial products. Individuals usually use accessible savings and investment products that can cater their financial needs (Nasrin *et al.*, 2017). Bendig *et al*. (2009) assert that individuals are not only limited to the targeted financial products, but they can also choose other accessible financial products for saving and investment purposes. This is evident by Prina (2015) who has found that individuals prefer savings accounts which are accessible in local bank-branches and have no opening, maintenance and withdrawal fees.

It is challenging for financial institutions to design financial products that are suitable and fully usable and which are simpler and cheaper to suit the financial needs of all individuals (Demirgüç-Kunt, *et al*., 2015). The usage of the wider range of accessible financial products offered by formal financial institutions and also the variety of financial products accessible through informal methods has not been investigated extensively (Bendig *et al.,* 2009). This makes the current study relevant as there is a need for extensive research in this field.

Nasrin *et al.* (2017) have identified that the availability of financial facilities has a positive influence on individuals' financial decisions, including savings and investment decisions which can lead to a low level of savings. Dupas and Robinson (2013) have also argued that traditional ways of saving have a detrimental impact on savings as they yield no interest return on the amount of money saved. Furthermore, these savings can be negatively affected by inflation which reduces the value of savings over time. Having no return on informal savings can discourage individuals from saving effectively and this has a negative impact on their financial health and also on the entire economy of every country (Nasrin *et al.*, 2017). Demirgüç-Kunt and Klapper (2013) have discovered that most individuals widespread had no saving accounts at any formal financial institution.

2.5.2 Financial knowledge

Financial knowledge is the ability to make informed judgements and effective decisions regarding the use and management of money and wealth, as well as the ability and discipline to implement intended or desired saving behaviour (Gale *et al.,* 2012). Financial knowledge has an impact on making sound financial decisions, specifically saving and investment decisions (Bucher-Koene and Lusardi, 2011; Gathergood and Weber, 2017; Jappelli and Padula, 2013; Lusardi and Mitchell, 2014; Mouna and Anis, 2017). Bushan and Medury (2014) defined financial literacy as the ability to make well-informed judgements and to take effective decisions regarding the use and management of money. The OECD (2014) also defines financial literacy as a "combination of financial attitudes, behaviour and knowledge". Financial literacy and financial knowledge were used interchangeably by some researchers while other researchers considered financial literacy as a synonym of financial knowledge (Bushan and Medury, 2014). In this study, financial knowledge is used as a synonym of financial literacy.

Individuals with limited financial knowledge tend to make poor financial decisions in particular savings decisions while individuals with more financial knowledge tend to make optimal financial decisions (Gale *et al.*, 2012). Financial illiteracy is widespread as the existing literature indicates that most individuals across the world lack information about basic financial concepts which impact on saving, retirement planning and other financial decisions (Bucciol and Veronesi, 2014).

Investment products can be influenced by basic financial concepts, including risk diversification, interest and inflation rates which are the main determinants of investment decisions (Sulaiman, 2012). The quality of accessible financial information about a variety of investment products plays a crucial role because it influences individuals' choices about purchasing appropriate investment products for creating more personal wealth (Abdallah and Hilu, 2015). Van Geyt, Van Cauwenberge and Bauwhede (2013) have established that the accessibility of accurate information about investment choices motivates individuals to take risks and hold more investments products. Seasholes and Zhu (2010) point out that the accessibility of information influences individuals to participate in purchasing local shares which leads to the generation of better return on investment.

Investments are negatively influenced by risk, specifically risk perception which refers to the willingness of an individual to accept the level of risk and thus, the uncertainties of individuals regarding the economic conditions can discourage investment (Abdallah and Hilu, 2015). Van Der Cruijsen *et al.* (2012) argue that the past investments which have performed poorly can also have a negative impact on how individuals make investment decisions in the subsequent years.

Prior studies have found that most individuals who have knowledge about basic financial concepts, including interest, diversifying risk and inflation tend to accumulate more wealth for further investment purposes (Lusardi and Mitchell, 2011, 2014; Van Rooij, Lusardi and Alessie, 2012). The high level of financial knowledge leads to favourable financial behaviour and attitude which can have an impact on whether individuals make sound investment choices to yield higher return to enhance their financial well-beings (Bushan and Medury, 2014).

2.5.3 Demographic and economic factors

Both Savings and investment are influenced by various demographic factors which include income, education and gender (Dang and Rogers, 2015). Prior studies have found that demographic factors, including income, education and gender have a significant effect on savings and investment behaviours of individuals (Whitaker *et al.*, 2013; Yao, Wang, Weagley and Liao, 2011).

Income

Brounen, Koedijk and Pownall (2016) and Kapounek *et al.* (2016) argue that a low-income level has a detrimental impact on savings and investment as it determines their spending behaviours on non-essential items and ability to save for the future. In addition, income plays a pivotal role in financial planning, including savings and investment plans (Bucher-Koene and Lusardi, 2011). High-income individuals predominantly use formal financial institutions to save for the expense of further studies in higher learning institutions, while low-income individuals use circulating savings clubs to save for educational expenses (Vokes and Mills, 2015). Grohmann (2018) indicates that the high level of income leads to more savings which in turn influences financial institutions to consider increasing the number of formal financial products to meet the high saving needs of different individuals.

Hayhoe, Cho, DeVaney, Worthy, Kim and Gorham (2012) point out that most individuals assume that low- and middle-income individuals cannot put money aside as their savings because they earn too little, but some of them do manage to set aside an amount for saving. Previous studies have indicated that lack of savings resulted from low and irregular incomes (Chowa *et al.*, 2012; Wheeler-Brooks and Scanlon, 2009). Niculescu-Aron and Mihaescu (2014) emphasise that low individuals' savings is a result of low income as it has a detrimental impact on the living standard of the individuals, particularly retired individuals. Demirgüç-Kunt and Klapper (2012) have argued that saving inadequately by low-income individuals is due to having limited access to formal saving accounts and other banking services that are offered by formal financial institutions at an unaffordable fee. Limited access to financial institutions has led low-income individuals to consider using informal

techniques for creating wealth that yield no interest return on savings and it has the huge impact on the financial health of individuals (Chowa and Ansong, 2010).

Low-income individuals usually use physical goods such as livestock for investment purposes when formal savings products are inaccessible at the financial institutions (Karlan *et al.*, 2014). However, when formal financial products, specifically savings and investment products are accessible, low-income individuals usually consider using them for attaining their financial needs and this contributes to the improved financial health of every individual (Dupas and Robinson, 2013; Prina, 2015).

Chua *et al.* (2016), Nayak *et al.* (2016) and Pailwar *et al*. (2010) found that income and saving are positively associated whereby low-income individuals usually tend to save less while high-income individuals usually tend to save more. On contrary, Precious and Astrat (2014) discovered that the level of income is negatively linked to the level of savings whereby low-income individuals tend to save more while high-income individuals tend to save less.

Mookerjee and Kalipioni (2010) found that more accessible financial services and products offered by banks can benefit low-income individuals, but this is discouraged by the high minimum fees for opening a bank account which is required to access financial products.

Education

Education has a huge impact on savings and investment behaviours of individuals (Nigus, 2015). Educational qualification is positively correlated with savings and thus, well-educated individuals tend to save more than individuals with little education (Kapounek *et al.,* 2016; Khan, Gill and Haneef, 2013; Whitaker *et al.*, 2013). Loke (2015) has identified that highly educated individuals, specifically individuals with qualifications from tertiary institutions are more financially knowledgeable to make sound investment choices than less-educated individuals. It is consistent with the findings by Grohmann (2018) who has found that the level of education is associated with the level of financial knowledge amongst middle-income groups in Asia. Khan *et al.* (2013) point out that some previous studies have established a negative association between the level of education and savings. Pailwar *et al*. (2010) found that the level of educational has an insignificant impact on savings and investment choices.

Sulaiman (2012) has established that highly educated individuals participate in investment products that possess greater risks because they have more knowledge about how to assess their risks on investment products. This study is necessary to investigate the role of education on saving and investment decisions in order to address the contradictory findings from previous studies.

Gender

Bucher-Koene and Lusardi (2011) argue that gender has an insignificant effect on financial planning, especially retirement planning and education planning. In contrast, Hibbert, Lawrence and Prakash (2013) argue that gender is a significant factor which influences the way individuals choose savings products. This is supported by the previous studies that have established that gender has an impact on making savings choices (Bucher-Koene and Lusardi, 2011; Dvorak and Hanley, 2010; Lusardi and Mitchell, 2011). Furthermore, Whitaker *et al.* (2013) established that gender has a significant influence on saving plans; however, the impact of gender on savings is complex. Their study states that females are more likely to save during uncertain economic conditions while males save when they are optimistic about future economic conditions, but both females and males have participated equally in saving plans when their income is controlled.

Wang (2009) argues that females make poor investment decisions that yield lower return rates due to limited financial knowledge and have less confidence about taking higher risks and therefore accumulate less wealth. Males possess more knowledge about making well-equipped financial choices, including investment choices than females (De Bassa Scheresberg, 2013). This is consistent with previous studies that have found that males are more financially knowledgeable compared with females (Fonseca *et al*., 2012; Lusardi and Mitchell, 2014). However, Grohmann (2018) argues that females are more financially knowledgeable compared with males and thus, females have the capability to hold better financial products for investment purposes. However, Lusardi and Mitchell (2014) have determined that females are more financially illiterate than males. This study seeks to understand and address inconsistency of findings across the other studies.

Interest rates

Botha *et al*. (2011) have determined that interest rates are major barriers that have an impact on financial decisions and are positively correlated with savings and investment. Increased interest rates and economic upswings lead to lower individuals' savings and investment (Botha *et al*., 2011). Dang and Rogers (2015), Kapounek *et al*. (2016), Precious and Asrat (2014) and Yao and Lei (2018) point out that savings and investments can be influenced by interest rates. Ehrbeck and Tarazi (2011) conclude that interest rates earned on savings and investment tend to motivate participation in saving and investment options.

Individuals fail to understand the complexity of formal financial products because of either limited or non-transparent information about interest rates are calculated on savings and investment (Nga *et al.,* 2010). Dupas and Robinson (2013) argue that traditional individual savings have a detrimental impact on savings as they yield no interest on their capital which is subject to economic conditions such as the inflation rate. Rono (2009) established that financial choices are strongly and positively associated with interest rates.

2.6 SUMMARY

This section discussed the significance of saving and investment by individuals in general. Theories of saving and investment were also discussed. Furthermore, the role and usage of suitable financial products for saving and investment purposes were outlined. Finally, barriers that have a detrimental impact on saving and investment, including accessible appropriate financial products, financial knowledge, demographic and economic factors were pointed out. There is no extensive research on the usage of accessible appropriate financial products for saving and investment in the South African context and thus, this study intends to investigate and address this research gap. In the next chapter, the overview of the research methodology of the current study is outlined which includes the research paradigm, description of the inquiry strategy and broad research design, sampling, data collection method and data analysis methods. Furthermore, the research quality and rigour were assessed and research ethics of this study.

CHAPTER 3 – RESEARCH DESIGN AND METHODS

3.1 INTRODUCTION

The preceding chapter reviewed saving and investment behaviours of individuals based on income, education, gender and interest rates. Furthermore, some factors that have a huge impact on savings and investment behaviours such as accessible financial products and financial knowledge were also reviewed. It was found in the literature review that there is a limited research in the South African context that have investigated both savings and investment by individuals. This study focused exclusively on all individuals aged 16 years and above in SA.

In this study, the main research objective is to establish and explore the savings and investment choices made by individuals in SA. Hence, the study explored the following hypotheses:

- $H0_1$: Low-income individuals predominantly use informal savings products compared with high-income individuals to attain their savings needs.
- HA_1: Low-income individuals predominantly use formal savings products compared with high-income individuals to attain their savings needs.
- $H0_2$: Highly educated individuals tend to use formal savings products on a greater scale compared with less-educated individuals.
- HA_2: Less-educated individuals tend to use more formal savings products than highly educated individuals.
- $H0_3$: Males tend to make better investment decisions compared with females.
- HA_3: Females tend to make better investment decisions compared with males.

This chapter describes how this study is conducted and the research methodology employed. The subsequent sections discuss the research paradigm, suitable inquiry strategy, sampling, data collection, data analysis methods, assessment of research quality and rigour, and research ethics.

3.2 RESEARCH PARADIGM

The study is guided by an epistemology research paradigm which is a philosophical belief regarding the nature, scope and enhancement of knowledge, and the relationship with truths, belief and justification (Saunders, Lewis and Thornhill, 2016). Epistemology is appropriate when the researcher intends to address what people know, the way of acquiring knowledge and the relationship between participants and the researcher (Feilzer, 2010; Zikmund, Babin, Carr and Griffin, 2013). This research paradigm is categorised as positivism because the researcher and participants are independent (Creswell and Creswell, 2017). Furthermore, the researcher is being objective when conducting the research by adhering to rigorous and standardised procedures that restrict the values and biases of the researcher to have an impact on the study (Yilmaz, 2013; Zikmund *et al.*, 2013). The study intends to enhance the knowledge of individuals about the usage of the appropriate financial products for savings and investment purposes and thus, this research paradigm is relevant for this study.

3.3 THE INQUIRY STRATEGY AND RESEARCH DESIGN

The study focuses on determining and exploring the saving and investment behaviours of South Africans at large. Furthermore, the role of income, education and gender on making optimal savings and investment decisions by individuals is also examined. Lastly, other factors that have an impact on saving and investment behaviours of individuals which include accessible financial products and financial knowledge are also examined in this study.

This study is characterised by a large sample size of 2,972 participants, numerical data which was originally collected from participants using a survey-based research design strategy in the form of a questionnaire. The quantitative research includes variables that are measured numerically and uses statistical techniques to analyse and interpret data (Bekhet and Zauszniewski, 2012; McCusker and Gunaydin, 2015; Yilmaz, 2013). Therefore, a quantitative method of research is suitable for this study due to the large sample size needed to gain a deeper understanding regarding saving and investment behaviours of South

Africans (Yilmaz, 2013; Zikmund *et al.*, 2013). The large sample size of 2,972 participants across all provinces in SA is a representative of the entire population.

This study uses secondary data sourced from the HSRC database, which is in numeric form for analysis. According to McCusket and Gunaydin (2015) and Yilmaz (2013), it is possible to analyse and interpret numerical data using appropriate statistical techniques, and also the numerical differentiation between variables is possible. Hence, a quantitative research study is appropriate for this study because it uses numerical data. Furthermore, quantitative research tends to focus on testing a theory of examining the saving behaviour of South Africans and the significant effect of the different factors on saving (Leedy and Ormrod, 2015).

The appropriate descriptors for the research design include empirical research, basic research, descriptive research, cross-sectional research, secondary data, quantitative data and experimental study.

Empirical research

Empirical research involves a study whereby the researcher either gathers new data from a targeted population irrespective of data collection methods applied or sources existing data not collected by the researcher (Saunders *et al.,* 2016; Zikmund *et al.*, 2013). Thus, this study is an empirical study since the researcher analyses the secondary data collected by the HSRC from individuals in the South African environment regarding social issues on an annual basis. This is the South African Social Attitudes Survey (SASAS) which includes financial literacy surveys across all provinces in the RSA.

Basic research

Since basic research tends to focus on knowledge enhancement of individuals regarding a specific phenomenon, this study aims to expand the knowledge of individuals regarding making optimal saving decisions to meet their savings needs (Leedy and Ormrod, 2015).

Descriptive research

Descriptive research determines the attributes of a phenomenon that is observed or examines probable relationships amongst two or more phenomena (Leedy and Ormrod, 2015; Zikmund *et al.*, 2013). In this study, the main focus is on describing the attributes of individuals which include demographic and economic factors and also the usage of accessible financial products and financial knowledge on saving and investment behaviours of individuals (Saunders *et al.*, 2016). Thus, the intention of the study is to provide individuals with a deeper understanding of making better savings and investment decisions to smooth consumption and also for financial security and wealth accumulation.

An analysis of variance (ANOVA) has to be conducted to explore the nature of the association between at least two variables to determine the association between each variable and also to explore differences between groups (Leedy and Ormrod, 2015). A descriptive study involves questionnaires that gather data and this study uses a questionnaire that was designed to determine the number of participants who participate in making optimal financial decisions based on demographic factors (Saunders *et al*., 2016). Lastly, the quantitative descriptive study focused on statistically testing hypotheses about either the difference or correlation between groups (Leedy and Ormrod, 2015). The aforementioned characteristics of descriptive research indicate that this is a descriptive study.

Cross-sectional research

Cross-sectional data occurs when data is collected from participants only once-off, but not repeatedly (Saunders *et al*., 2016). Zikmund *et al.* (2013) emphasised that cross-sectional research includes the study of a specific phenomenon at a specific point in time. The original data sourced from the HSRC database was gathered from different participants not repeatedly and the researchers distributed questionnaires to the participants for completion by physically visiting their homes (HSRC, 2011). This data was gathered from all nine provinces across SA in 2011 using structured questionnaires (HSRC, 2011). Therefore, this study is a cross-sectional research, since each participant has completed a questionnaire only once at a specific date and that data is representative of the whole population.

Secondary data

Secondary data is an existing data which is not collected by the researcher and this data is either raw or it has been analysed by other researchers in their studies, but that data is relevant for the present study (Hofstee, 2015). As explained earlier in this section, this study uses the secondary data obtained from the HSRC database. The raw data was provided on an Excel spreadsheet and the data is significant to address the research objectives of this study.

Quantitative data

Prior studies indicated that quantitative research is characterised by numerical data (McCusker and Gunaydin, 2015; Wisdom, Cavaleri, Onwuegbuzie and Green, 2012; Yilmaz, 2013). As discussed earlier in this chapter, this study uses secondary data collected by the HSRC presented in numeric form since all questions in the questionnaire are coded numerically and responses are assigned to numbers. Thus, this study is comprises quantitative data.

Experimental study

Leedy and Ormrod (2015) and Zikmund *et al.* (2013) highlighted that an experimental study occurs when the researcher intends to address questions that are related to causality, whereby dependent variables are influenced by independent variables.

This is an experimental research, since it focuses on determining and investigating whether demographic factors as independent variables influence the saving and investment behaviours of individuals which are regarded as the dependent variables. The saving and investment behaviours are categorised into groups which are the dependent variables in this study.

According to Hofstee (2015), it is important to use **survey-based research design** to determine the opinions, desires and attitudes of individuals. The main objective of this study

is to determine the characteristics, opinions, attitudes and past experiences of the entire population by surveying a sample of that population (Leedy and Ormrod, 2015). As mentioned above, the main focus of this study is to establish and investigate the role of the demographic factors on saving and investment behaviours of the participants, hence, a survey-based research design in the form of a structured questionnaire is appropriate for this study.

Hofstee (2015) outlines several advantages of using questionnaires to collect data which include the following:

- More volume is possible, as they can be distributed to more participants to increase the confidence level in the sample.
- Participants are allowed to respond with anonymity for confidentiality reasons.
- In general, questionnaire data is easier to analyse and the results are quantitative.
- In a case where the questionnaire is more structured, more results can be easily compared during statistical analysis.

Another advantage of using a questionnaire to collect data is that some individuals are more truthful when responding to questions, specifically for sensitive issues than in a personal interview (Zikmund *et al.*, 2013).

Leedy and Ormrod (2015) outline the advantages of structured questionnaires with closed-ended questions as related to this study as follows:

- All participants are asked similar questions with similar response options.
- It is easier to code and compare responses during statistical analysis since the response options are provided.

Zikmund *et al.* (2013) point out that there are drawbacks to using questionnaires to collect data, specifically a structured questionnaire with closed-ended questions in relation to this study. These drawbacks include the following:

- Poor reading and writing skills of the participants may have an influence on gathering data using a questionnaire.

- Misinterpretation of questions on the questionnaire may influence the participants to respond incorrectly.
- A structured questionnaire with closed-ended questions restricts participants from expressing their own opinions and giving in-depth information, as the responses are only limited to the provided response options.

Although there are limitations, a survey-based research design in the form of a questionnaire is regarded to be suitable for this study, since it explores the saving and investment behaviours of South Africans. Garcia, Barros and Silvestre (2011) used a survey-based research design in the form of a questionnaire to gather data in order to investigate the saving behaviour in Portugal. Crossley, De Bresser, Delaney and Winter (2017) also used surveys in their study.

3.4 SAMPLING

In the previous section, the inquiry strategy and broad research design of the study were described. This section outlines the target population, context and units of analysis and also sampling method and sample size of the study.

3.4.1 Target population, context and units of analysis

The target population for this study includes every individual residing in SA. Furthermore, the participants were aged 16 years and above in 2011. Finally, the participants were either employed or self-employed with regular income. All individuals aged below 16 years were excluded in this study and also all individuals aged between 16 years and above without regular income.

The units of analysis for this study include all employed and self-employed individuals that were residing in SA when this survey was conducted in 2011. As mentioned above, those individuals were 16 years and above in 2011. As discussed earlier in this section, the secondary data employed from the HSRC database was used in this study and that data was presented in numeric form on Excel spreadsheet.

3.4.2 The method of sampling

The HSRC has gathered the primary data using stratified sampling methods that are appropriate to determine the targeted population for the study. This is the case, as they grant every individual in South Africa an equal opportunity to be included in the sample (HSRC, 2011).

According to Hofstee (2015), the researcher needs to check whether there is no primary data collected by other researchers which is relevant for this study prior to researching a specific phenomenon. This study used the existing primary data obtained from the HSRC database since that data was relevant for this study in order to establish the saving and investment behaviours of South Africans. According to Zikmund *et al.* (2013), there are advantages to using secondary data, which include:

- Less time is required to collect data since that data is readily available.
- It assists in identifying if the current research problem was previously solved or not.
- It provides more knowledge about the current research topic and identified problem that can be used to fine-tune the current study.

There are also disadvantages of using secondary data. According to Pallant (2013), it is impossible to correct the identified error in the data file if one does not have access to the original questionnaire; instead, the identified error needs to be deleted from the data file. Another disadvantage is that secondary data is weaker as compared with primary data, since it is based on data collected by other researchers to meet their research objective, even though it is relevant in the current study (Hofstee, 2015).

Leedy and Ormrod (2015) pointed out sources of bias in descriptive studies that have an influence on the quality of data. Since this study uses questionnaires to collect data, the quality of data may be compromised based on the following biases:

- Sampling bias: The selection of the sample is biased if not all individuals have equal opportunities to be selected; thus, the sample of the population is not a true representation of the entire population.

- Instrumentation bias: Structured questionnaires may include some variables and overlook other important variables because the researcher has an opportunity to select certain questions and omit other questions in the study.
- Response bias: Data collected through questionnaires is self-report data because people choose to tell the researchers what they believe to be true or what they think the researchers want to hear. Thus, responses are inaccurate
- Researcher bias: The researchers' expectations, values and general beliefs may influence the selection of certain variables to be investigated while ignoring other variables and drawing certain conclusions while disregarding other conclusions.

3.4.3 The sample size of the study

The original sample size was 3,500 participants. However, the response rate was 84.91%, meaning that only 2,972 participants completed and returned their questionnaires. This is considered a large sample size and is appropriate for quantitative research (Bekhet and Zauszniewski, 2012; McCusker and Gunaydin, 2015; Yilmaz, 2013).

In the aforementioned section, it was discussed that the responses were in numeric form and presented on an Excel spreadsheet to indicate that this study is a quantitative research study. The sample size of 2,972 was distributed across various gender categories, educational qualification, income levels and age groups. Since this is a secondary data, there was no an opportunity to select the participants. The sample consists of 249 (8.4%) low-income, 1,318 (44.3%) medium-income and 1,141 (38.4%) high-income participants. Furthermore, the sample consists of 1,606 (54%) without matric, 924 (31.1%) with matric and 367 (12.3%) with tertiary education participants. Finally, there are 1,731 (58.2%) males and 1,226 (41.3%) females. Although the total sample size was 2,972 participants, there were missing data in all the categories. Hence, the frequency counts and percentages were below 100%.

3.5 DATA COLLECTION METHOD

In the aforementioned section, sampling of this study was discussed. This section outlines the data collection method, which includes the nature of data to be gathered, measurement of scales, survey methods and data collection instrument.

3.5.1 Nature of collected data

As discussed earlier in this chapter, secondary data is existing data which is not collected by the researcher (Saunders *et al.*, 2016). It was also discussed in the aforementioned section that this study uses secondary data sourced from the HSRC database and that data was raw and not quantitatively analysed, but was considered relevant to address the research objectives of this study.

A variable is any attribute that has at least two possible values in a study which can be categorised as either dependent or independent (Leedy and Ormrod, 2015). The authors further point out that the dependent variable is influenced by the independent variables. The saving and investment behaviours scales are considered as dependent variables, while demographic factors such as income, education and gender are regarded as independent variables in this study.

Since the collected data is in numeric format, the statistical techniques are suitable for statistical analysis (McCusker and Gunaydin, 2015; Wisdom *et al*., 2012; Yilmaz, 2013). Statistical techniques that are suitable to test empirically the research objectives of this study include descriptive statistics which are relevant to test continuous variables and frequencies statistics which are relevant to test categorical variables (Pallant, 2016).

3.5.2 Measurement of scales

Measurement of scales includes nominal, ordinal and scale such as interval and ratio (Zikmund *et al.*, 2013). This study uses nominal, ordinal and scale to measure both dependent and independent variables.

Nominal

Nominal variables are categorical variables whereby specific names are assigned to those variables (Pallant, 2016). Leedy and Ormrod (2015) regard nominal variables as variables which are assigned specific names to them. According to Pallant (2016), categorical variables use nominal or ordinal level of measurement to determine the number of individuals who responded to each question. Both independent and dependent variables can be categorical variables which represent categories without ranking, specifically gender.

According to Zikmund *et al.* (2013), statistical techniques are used to analyse nominal data which is presented in numeric form. Statistical techniques such as descriptive statistics are the summarised data in numeric form and intended to describe what have taken place in the sample (Leedy and Ormrod, 2015). The appropriate statistical techniques to analyse nominal data include descriptive statistics such as minimum, maximum, mean, standard deviation and percentage of the responses based on different categories (Zikmund *et al.*, 2013).

Ordinal

Variables can be treated as ordinal when their values represent categories with some intrinsic ranking (Zikmund *et al.*, 2013). Furthermore, ordinal data uses numeric codes to represent data (Pallant, 2013). In this study, there are independent ordinal variables such as income and educational levels.

Scale

Pallant (2016) explained that variables can be treated as scales when their values represent ordered categories with meaningful metrics and the distance between values are compared appropriately. Leedy and Ormrod (2015) described two categories of scales which differ based on the presence of zero such as ratio scales have a true zero while interval scales have no true zero. Both ratio and interval scales can be either dependent or independent continuous variables (Zikmund *et al.*, 2013).

In this study, all questionnaire statements about the usage of different financial products for savings and investment purposes are regarded as dependent continuous variables whereas age is an independent continuous variable. These statements were originally categorical dependent variables, but they were recoded in this study and therefore, they are continuous dependent variables.

Statistical techniques such as descriptive statistics and inferential statistics are appropriate for interval scales whereby descriptive statistics determine the mean, standard deviation and correlation between variables (Pallant, 2016). Inferential statistics allow the researcher to test the research objectives empirically and to determine the correlations among variables and differences among variables (Leedy and Ormrod, 2015).

Zikmund *et al.* (2013) indicated that inferential statistics are suitable to test continuous variables using various statistical techniques which include factor analysis (FA) and ANOVA.

3.5.3 Survey methods

The study uses secondary data employed from the HSRC database which was provided in numeric form on Excel spreadsheet. According to Wisdom *et al*. (2012), numerical data is relevant for statistical analysis. The data collected on Excel spreadsheet indicates that the primary data was collected using structured questionnaires which are suitable for a large sample of 2,972 participants (McCusker and Gunaydin, 2015; Yilmaz, 2013).

3.5.4 Data collection instrument

As mentioned earlier, the study uses the existing data obtained from the HSRC database which was collected in SA using structured questionnaires. The existing raw data was presented on Excel spreadsheet with all relevant information needed for data analysis and interpretations (HSRC, 2011). Furthermore, the data is sourced from the HSRC database because the HSRC has been conducting several surveys every year related to social issues, specifically SASAS.

The HSRC database was used because every data collected by HSRC is checked for quality using several statistical programs, including the Statistical Package for the Social Sciences (SPSS) (HSRC, 2011). It is further emphasised that this SPSS software was used to identify all errors regarding inconsistencies, duplicate record numbers and missing data, and identified errors are corrected (HSRC, 2011). The data obtained from HSRC has been checked for errors using SPSS to determine whether the data set has no errors which might have occurred during data capturing before data analysis and those errors have been corrected or deleted in the data file (Pallant, 2016). Both categorical and continuous variables have been checked for errors using the SPSS software to determine values that are not within the possible range. The existing data has been checked for missing data using the SPSS software by running descriptive statistics to determine the percentage of missing values for all variables (Pallant, 2013).

3.5.4.1 The development of the questionnaire

As explained previously, the original questionnaire was obtained from the HSRC database (HSRC, 2011). The demographic information such as income, education, gender and age are included in the constructed questionnaire. The original questionnaire statements have all multiple responses where all participants are given equal chances of selecting all questions that are applicable to them. However, this study has recoded all questionnaire statements into two options only such as yes and no, whereby the participant is either agreeing to have that underlying product or not have it. All selected products were recoded 01 to indicate yes, while all missing values in the form of empty responses were recoded 02 to indicate no.

The questionnaire has two parts, whereby the first part consists of demographic information of the participants and the second part consists of all personal savings and investment behaviour statements. The second part of the questionnaire is categorised into two sections which consist of different financial products and also ways of saving and investing used by individuals.

The questionnaire codebook (see Appendix B) was developed to ensure that the responses of participants obtained from the survey can be processed and analysed successfully to accomplish the research objectives of this study.

3.5.4.2 Contents of the questionnaire

The first part of the questionnaire requires participants to provide their demographic details which include age, gender, education and income as they are necessary during data analysis of this study. The questions are both closed-ended where participants are allowed to select from a few options that are provided and open-ended where participants are allowed to provide their own answers. Thus, closed-ended questions include questions related to gender, education and income and open-ended questions include exclusively questions related to age because participants were asked to write their ages in numeric form. Although age groups were not analysed in the subsequent chapter, it is important to be included in the questionnaire as mentioned earlier that this study is limited to individuals aged 16 years and above. This information is necessary for this study in order to examine the role of the demographic factors on the saving and investment behaviours of South Africans.

The second part of the questionnaire consists of various financial products that are used by individuals for savings and investment purposes in SA and these financial products are either formal or informal. Lastly, the second part of the questionnaire consists of both formal and informal ways of saving and investing used by individuals. As discussed in the previous section, all questionnaire statements were constructed to determine whether individuals use these financial products or not as well as whether individuals use these ways of saving and investing or not. Thus, the responses were recoded to yes or no.

Leedy and Ormrod (2015) highlighted the importance of measuring the internal reliability of the questionnaire using Cronbach's alpha after the development of the questionnaire to determine its internal consistency and validity. The overall Cronbach's alpha value of the questionnaire is 0.639. According to Pallant (2013), acceptable values of Cronbach's alpha range between 0.7 and 0.8, but these values depend on the number of items included in the scale. However, Tavakol and Dennick (2011) indicated that the value of Cronbach's alpha

of 0.6 is considered to be acceptable and satisfactory as it shows good reliability between items and possible statistical interpretations.

3.6 DATA ANALYSIS METHODS

In the aforementioned section, the nature of the study was discussed including its purpose, inquiry strategy and broad research design, data, research instruments and methods. With reference to the nature of data collected in this study, it is possible and appropriate to conduct statistical analysis and interpretations using different statistical techniques. The sample of 2,972 is normally distributed, and the parametric statistical techniques can be conducted such as descriptive, including means, standard deviations and frequencies, inferential, including ANOVA and multivariate statistics, including FA.

A non-parametric statistical technique, named Cronbach's alpha was also used in this study. This was used to measure the internal reliability and statistical significance of the variables and also factors that were established when conducting the exploratory factor analysis (EFA).

In the subsequent section, statistical analyses conducted in this study are discussed in detail. These statistical analyses are conducted using SPSS software which is available at UP in order to generate the relevant results for this study. Statistical techniques used to analyse data consist of descriptive statistics that analyse categorical variables and inferential statistics that analyse continuous variables (Zikmund *et al.*, 2013).

3.6.1 Descriptive statistics

According to Zikmund *et al.* (2013), descriptive statistics provide a summary of the general nature of the collected data in the form of frequencies, percentages, means and standard deviations. Descriptive statistics further refer to statistics that are easier to undertake and interpret and these statistics are able to summarise data and describe the sample in detail (Marshall and Jonker, 2010). According to Hannigan and Lynch (2013), that summary and description are possible through the use of either graphs or numbers.

Pérez-Vicente and Ruiz (2009) mentioned three categories of descriptive measures that are used, namely position, which shows where data is grouped; dispersion, which shows the variability of variables; and shape, which provides details about variables' disposition. The measures of descriptive statistics include:

- central tendency to measure the centre of the data, including mean, median and mode;
- dispersion to measure the variability or spread of the data, including standard deviation, minimum, maximum and variance; and
- graphical representation of data.

There are three common measures of central tendency that are used, namely the mode, median and mean (Leedy and Ormrod, 2015). The **mode** refers to a variable that occurs most often in the data set while the **median** refers to the number in the middle of the scores when scores are arranged in ascending order (Field, 2018). According to Marshall and Jonker (2010), the **mean** refers to the average of the scores within the data set, and it is calculated by adding all scores and then dividing those scores by the total number of scores. In this study, the mean scores of variables are used to analyse data. The mathematical formula used to calculate the mean can be expressed as follows:

$$\bar{X} = \frac{\sum X}{N} \qquad \text{(Equation 3.1)}$$

Where $\bar{X}$ = the mean of the sample

$\sum$ = the sum

X = each individual score

$\sum X$ = the sum of scores

N = the number of scores in the sample

Despite of the $\bar{X}$ in the above formula denoting the mean of the sample, throughout the statistical analysis, *M* was used to denote the mean of the sample in this study.

Descriptive statistics can also be used to measure the dispersion of scores in the form of range, variance and standard deviation in order to determine the spread of scores (Marshall and Jonker, 2010). The range of scores refer to the difference between the highest and

smallest scores whereas the variance is the average error between the mean and the observations made, but the variance gives measures in units squared (Pérez-Vicente and Ruiz, 2009). Since the variance is measured in units squared, the standard of deviation is used instead which is the square root of the variance.

In the subsequent statistical analysis, the standard deviation is used to analyse the five hypotheses of this study (Field, 2018). The formula for the standard deviation can be expressed as follows:

$$s = \sqrt{\frac{\sum_{i=1}^{n}(x_i - \bar{x})^2}{N-1}} \qquad \text{(Equation 3.2)}$$

Where s = standard deviation of the sample

$\sum_{i=1}^{n} =$ the sum of i^{th} number in the sample

x_i = each value in the data set

$\bar{x}$ = the mean of the sample

$\sum_{i=1}^{n}(x_i - \bar{x})^2$ = the sum of squares

N = the number of values in the sample

Despite of the *s* in the above formula denoting standard deviation, *SD* was used to denote the standard deviation in the subsequent statistical analysis of this study.

Furthermore, descriptive statistics can be used to analyse data in the form of frequencies and percentages, specifically categorical data in order to determine the frequency count and percentage of each variable (Zikmund *et al.*, 2013). Frequencies are suitable for analysing categorical variables, as they yield frequency tables that illustrate frequency count, percentage, valid and cumulative percentages of each category (Pallant, 2013). This study used frequency tables to describe the demographic variables of the participants and all the responses of the participants regarding the saving behaviour scales.

Pallant (2013) further illustrated that the percentage of each variable is obtained by dividing the frequency of each category by the total number of the sample and then, multiplying by

100 in order to be in percentages. This study used percentages for each response in the questionnaire in order to analyse the three hypotheses of the study.

Prior studies used descriptive statistics not to provide information for causal analysis, but instead provide information to analyse data and describe the sample (Nye, Bryukhanov and Polyachenko, 2017; Zikmund *et al.*, 2013). Rono (2009) used the SPSS software to produce descriptive statistics such as mean, standard deviation, frequencies, graphs and percentages from the participants in order to determine the significance and the importance of every variable relatively.

3.6.2 Inferential statistics

Inferential statistics allow the researcher to make inferences about a large targeted population from relatively small samples by estimating population parameters from a sample randomly and testing research objectives statistically (Leedy and Ormrod, 2015). According to Zikmund *et al.* (2013), inferential statistics are appropriate to test continuous variables in order to establish whether a statistically significant difference exists or to test the strength and direction of the association between variables.

The one-way ANOVA is appropriate when the mean scores of **one** independent variable with two or more categories are compared with the mean scores of the dependent variable to establish whether a statistically significant effect exists (Pallant, 2013). When an independent variable has only two categories such as male and female, the **one-way independent** ANOVA can be conducted to analyse the significant effect of gender on the saving behaviour scales which are dependent variables (Field, 2018).

According to Pallant (2013), when the independent variable has more than two categories such as age group, income and education levels, the **one-way between-groups** ANOVA can be appropriate to establish the statistically significant differences between the independent and dependent variables. This study used both the one-way independent and between-groups ANOVA statistical techniques since all the independent variables mentioned above have at least two categories. Therefore, the one-way ANOVA is appropriate in this study. Prior studies used the ANOVA to determine the statistical means

difference between variables (Aren and Zengin, 2016; Aspara and Hoffmann, 2015; Bucciol and Veronesi, 2014).

The results of the ANOVA are reported using F-statistic and the degrees of freedom related to it (Field, 2018). F-statistic formula can be expressed as follows:

$$F = \frac{MS_M}{MS_R} \quad \text{(Equation 3.3)}$$

Where F = the *F*-statistic

MS_M = a model mean squares

MS_R = a residual mean squares

The formula for the model mean squares can be expressed as follows:

$$MS_M = \frac{SS_M}{df_M} \quad \text{(Equation 3.4)}$$

Where SS_M = the model sum of squares

df_M = degree of freedom related to the model

The formula for the residual mean squares can be expressed as follows:

$$MS_R = \frac{SS_R}{df_R} \quad \text{(Equation 3.5)}$$

Where SS_R = the residual sum of squares

df_R = the degree of freedom related to the residual

According to Field (2018), the MS_M represents the average amount of variation explained by the model while the MS_R represents a gauge of the average amount of variation explained by unmeasured variables. Furthermore, the SS_M represents the sum of the difference between the values predicted by the model and the grand mean whereas SS_R

represents the sum of the difference between what the model predicts and what was observed.

When independent variables consist of only two categories, then the t-test is the suitable statistical technique to compare the mean scores between the two categories (Pallant, 2013). Since this study uses the one-way ANOVA to determine the statistically significant differences of the stated hypotheses to meet the research objective, the t-test was not used.

Multivariate statistical technique

Multivariate statistical technique is used to examine a number of related variables, specifically units of analysis, including individuals of a sample selected randomly (Zikmund *et al.*, 2013). This study uses FA as a multivariate statistical technique to analyse data in the subsequent statistical analysis (Williams, Onsman and Brown, 2010). Zikmund *et al.* (2013) outline that multivariate data consists of at least two response variables that can be continuous, ordinal and binary variables. Zikmund *et al.* (2013) further explain that usually, multivariate data consists of continuous responses in the form of interval and ratio scales, binary observations and ordinal measurements that are relevant to perform statistical analysis.

Leedy and Ormrod (2015) indicate that the purpose of the FA is to explore the associations between a number of variables and establish groups of highly interrelated variables that show underlying factors within the data. In this study, the FA is used to identify if the groups of variables are interrelated and also to develop a questionnaire to measure the reliability of saving and investment behaviours of individuals in order to test the hypotheses of this study. According to Field (2018), the FA formula can be expressed as follows:

$$x = \mu + \wedge F + \delta \qquad \text{Equation 3.6}$$

Where x = observed variables

μ = variable means

$\wedge$ = factors loadings

F = common factors

δ = unique factor

A common factor describes the association between variables whereas a unique factor cannot describe the association between variables (Zikmund *et al.*, 2013). According to Field (2018), there are three main purposes of FA, such as:

- to reduce a large number of variables to a smaller and more manageable set of variables, named factors while most of the original data is retained;
- to identify the structure of the factors; and
- to construct a questionnaire in order to measure the validity and reliability of self-reporting data.

In accordance with Yong and Pearce (2013), the FA has two main techniques such as EFA and confirmatory factor analysis. The EFA is usually used to examine the interrelationships amongst a group of variables, whereas the confirmatory factor analysis is usually used to test hypotheses (Williams *et al.*, 2010). Pallant (2013) emphasises that EFA is not used to test hypotheses, however, it is usually used in other analyses, specifically the ANOVA and t-tests. This study used EFA.

Schmitt (2011) argues that there are several limitations to be considered when performing EFA such as the following:

- A large sample size is recommended to be adequate to accomplish reliable parameter estimates and adequate power.
- The selection of the relevant number of factors needs to be done using suitable methods.
- A decision on the type of model and procedure to estimate the model parameters and also the rotation method needs to be carefully considered.
- The reliability of a measurement tool needs to be high which depends on the number of factored items and thus, the more items, the more reliable the measurement tool.

According to Leedy and Ormrod (2015), the reliability and validity of measurement instruments influence the quality of data that is required during data analysis to determine the statistical significance and draw accurate conclusions from the data. It is important to test the reliability of measurement instrument using a non-parametric statistical technique

such as Cronbach's alpha coefficient to measure the internal consistency of the questionnaire scale that is used in this study (Pallant, 2013). The formula for Cronbach's alpha can be expressed as follows:

$$\alpha = \frac{N \bullet \overline{c}}{\overline{v}\ (N-1) \bullet \overline{c}} \qquad \text{Equation 3.7}$$

Where α = Cronbach's alpha value

N = the number of items

$\overline{c}$ = the average inter-item correlation

$\overline{v}$ = the average variance

Pallant (2013) indicates that Cronbach's coefficient alpha is the most frequently used statistic to measure the internal consistency of a specific scale to determine the association amongst all of the items that make up that scale. Field (2018) states that the values between 0.7 and 0.8 for Cronbach's alpha are regarded to be satisfactory while the lower values show an unreliable scale. According to Tavakol and Dennick (2011), the acceptable values of Cronbach's alpha that are considered to be close to 0.60 and the lower Cronbach's alpha value can be influenced by different factors, uncorrelated items and a few number of questions in the measurement technique.

In this study, the FA is an appropriate statistical technique to be used to identify the relationships amongst various variables that indicate the underlying factors within the data. Garcia *et al.* (2011) have used EFA to identify the interrelations amongst the underlying variables in their study of examining the saving behaviour of individuals in Portugal. Furthermore, other prior studies used the FA statistical technique to establish interrelated groups of variables in order to analyse data (Aren and Zengin, 2016).

3.7 THE RESEARCH QUALITY AND RIGOUR

In the foregoing chapter, the statistical techniques such as descriptive and inferential statistics that are used to analyse data in this study were discussed in detail. This section outlines several major limitations of the empirical analysis performed in this study.

The reliability of self-report data obtained using a questionnaire is the **primary** limitation in this study. This is influenced by response bias that affects the quality of the data as individuals tend to provide inaccurate information related to their attitudes, opinions and motives in a way they believe to be true (Leedy and Ormrod, 2015). Furthermore, some individuals tend to provide misrepresented information to impress the researcher with questions related to social desirability which include personal behaviours and perspectives.

Leedy and Ormrod (2015) point out sources of bias that can have an impact on the quality of data in this study. Thus, there is a possibility of instrumentation bias, as structured questionnaires tend to include some variables while ignoring other possible important variables; also participants have no opportunity to express their views instead, the responses are limited to the options provided. Another bias is researcher bias whereby the researcher's expectations, values and general beliefs can influence the selection of certain variables while disregarding other variables to be investigated.

These aforementioned limitations can be overcome through the development of a new questionnaire by selecting only relevant statements from the original questionnaire obtained from the HSRC database to address the research objectives of this study (HSRC, 2011). **Secondly**, the main purpose of this study which is to determine the opinions, behaviours and experiences of every participants was specific, as the questionnaire statements had no right or wrong answers. **Thirdly,** there was an introductory statement of the questionnaire that outlined the significance of individuals to participate and provide honest, and reliable responses to draw the attention of the participants. **Lastly**, participants were informed that participation is voluntary and confidential to ensure the anonymity of information provided by all the participants.

The **secondary** limitation in this study is linked to the statistical techniques used to analyse data. With reference to descriptive statistics, the **major** limitation is that the data can exclusively be summarised based on the characteristics of individuals studied and cannot be generalised to everyone in the population. While with inferential statistics, data is reported on the entire population that has not been fully studied and therefore, there is an extent of uncertainty, since the results obtained from the sample population are used to make a

generalisation about the whole population. **Another** limitation of inferential statistics is that it has several assumptions that need to be carefully considered when conducting different statistical techniques, including ANOVA and t-tests.

In case of multivariate analysis such as FA, the main limitation is that there is no agreement yet regarding the best technique amongst various techniques that are available for conducting EFA (Hair, Black, Babin and Anderson, 2010). Yong and Pearce (2013) outlined the following limitations related to FA:

- To give the identified factors names can be a problem, as factor names may fail to reflect the variables within the factor accurately.
- It is difficult to interpret other variables that load onto two or more factors due to correlations between variables.

According to Field (2018), the FA has the following limitations:

- It consists of subjective aspects such as a decision regarding the number of factors to be extracted, the rotation method to be used, and the number of factors to be retained which depend on different views of researchers.
- It depends on a number of tests to be conducted before factor extraction in order to evaluate the reliability and validity of data for factor analytical technique.

Although there are limitations in all statistical techniques performed in this study, these techniques were regarded suitable for data analysis.

The **last** limitation of this empirical analysis indicates that the findings of this study cannot be generalised to:

- every individual in SA; and
- all age, groups since the targeted population was individuals aged 16 years and above.

According to Field (2018), Cronbach's alpha has three main limitations to be considered such as:

- The value of Cronbach's alpha is subject to the number of items on the scale and thus, the more items on the scale, the higher the Cronbach's alpha. It is probable to obtain a high Cronbach's alpha due to more items on the scale, not because that specific scale is reliable.
- The Cronbach's alpha does not measure unidimensionality which is the degree to which the specific scale measures one underlying factor and therefore, the Cronbach's alpha should be performed separately if the questionnaire has several subscales.
- It is important to identify the reverse-phrased items and then, reverse how they are scored prior to performing reliability analysis. Thus, the reverse-scored items have an impact on the value of the Cronbach's alpha.

The findings of this study are still regarded valuable irrespective of the above-mentioned limitations, as they play a part in making a contribution to the existing knowledge, since there is no extensive knowledge about the saving and investment behaviours of South Africans.

3.8 RESEARCH ETHICS

According to Saunders *et al.* (2016), it is important to consider research ethics and possible ethical challenges that are applicable to the study. There are several categories of ethical issues that need to be considered such as the right to privacy, honesty, voluntary and informed participation, and protection from harm when studies involve human beings (Leedy and Ormrod, 2015). This study has two types of informed consents that are designed for adult participants aged 18 years and above, and also for minor participants aged below 18 years to be completed by their legal guardians to grant written approval. Leedy and Ormrod (2015) highlight the significance of the informed consent as, amongst others, it provides a summary of the nature and the purpose of the research, a guarantee of confidentiality and anonymity of responses and an indication of voluntary participation.

The University of Pretoria requires that every empirical research project conducted in the Faculty of Economic and Management adheres to the ethical principles that guide the Research Ethics Committee of the faculty. Ethical clearance was obtained from the Research Ethics Committee of the faculty.

The University of Pretoria has been granted a permission to access and use the secondary data obtained from the HSRC database for data analysis and interpretation in this study (HSRC, 2011). The confidentiality, privacy and anonymity of participants in the original study by HSRC were maintained (Saunders *et al.,* 2016). Researchers need to have integrity, be honest and objective to ensure that the participants understand the importance of the study and HSRC researchers considered these ethical values during the collection of data (Leedy and Ormrod, 2015; Saunders *et al.,* 2016). Every work either published or unpublished based on the data collected by HSRC, needs to acknowledge HSRC in respect of copyrights and patents (HSRC, 2011).

3.9 SUMMARY

This chapter discussed the research design and methods, the limitations regarding the research design and analysis, and ethical considerations of the study. The statistical techniques such as descriptive statistics and inferential statistics were discussed in order to examine the statistical significance of the data obtained through a questionnaire and the contents of the questionnaire were also elaborated in this chapter. It is evident that the research instruments discussed in this chapter are suitable for addressing the research problem, and generating accurate and reliable research results and thus, valid conclusions and recommendations are drawn. In the subsequent chapter, the research results are presented based on the descriptive and inferential statistical techniques.

CHAPTER 4 – STATISTICAL ANALYSIS

4.1 INTRODUCTION

The previous chapter discussed the research designs and methods used in detail, whereby the collected data required for data analysis in this chapter was explained. In this chapter, the collected secondary data is analysed using statistical techniques such as descriptive and inferential statistics and the results of the data analysis are presented as well. The results are presented in tabular form to be make them more readable and understandable.

As discussed in the preceding chapter, a questionnaire (see Appendix A) was developed, which comprises questions intended to identify the characteristics of participants in respect of age, gender, education and income. Furthermore, the questionnaire has a personal saving and investment behaviours scales with 16 items that were divided into two sections related to the usage of financial products and methods of saving and investing in order to meet the financial needs of individuals.

4.2 DESCRIPTIVE STATISTICS FOR DEMOGRAPHIC VARIABLES

Out of 3,500 targeted participants, only 2,972 individuals completed the questionnaires. The participants are individuals residing in SA and they are 16 years and above. On the Excel spreadsheet, all blank responses were recognised and coded 02, while all responded questionnaire statements were recoded 01 so that all 2,972 completed questionnaires can be analysed statistically.

The participants are 16 years and older with an average of 49.99 and standard deviation of 15.34 (see Table 3). There are 1,731 males and 1,226 females (see Table 4). The number of participants with no matric qualification, including no schooling, primary and some secondary without matric is 1,606 whereas the number of participants with matric and tertiary qualifications are 924 and 367, respectively (see Table 6). The majority of the participants are medium-income group with a number of 1,318 and followed by a high-income group with 1,141 participants. Only 249 participants are low-income group (see Table 7).

Table 3: The participants in relation to age

AGE		
Count	N	2952
	Missing	20
Mean		49.99
Std. Deviation		15.335
Minimum		16
Maximum		98

Table 4 illustrates that the majority of the participants in this study is males compared with females. Only 58.2% of males completed questionnaires while 41.2% of females completed questionnaires.

Table 4: The participants in relation to gender

Gender		Frequency	Percent
	Male	1731	58.2
	Female	1226	41.3
	Total	2957	99.5
Missing	System	15	.5
Total		**2972**	**100.0**

The education levels were originally categorised into five groups as shown in Table 5. The results show 34.3% of the participants have any secondary qualification except matric qualification while only 12.3% of the participants have tertiary education. Only 31.1% of the participants have matric education.

Table 5: The participants in relation to education level before rearrangement

Education		Frequency	Percent
	No schooling	135	4.5
	Primary	451	15.2
	Some secondary, excluding matric	1020	34.3
	Matric or equivalent	924	31.1
	Tertiary education	367	12.3
	Other/Don't know	14	.5
	Total	2911	97.9
Missing	System	61	2.1
Total		**2972**	**100.0**

The original categories of the education levels were rearranged into three categories, whereby no schooling, primary and some secondary education without matric were grouped together and renamed without matric as shown in Table 6. This rearrangement of the categories of education levels was conducted to increase the number of participants in each group in order to improve the reliability and the possibility of conducting statistical analysis. The comparison between categories of education with each other is easier and manageable through the rearrangement. Table 6 illustrates that only 54% of the participants have no matric, 31.1% of the participants have matric and 12.3% of the participants have tertiary education.

Table 6: The participants in relation to education level after rearrangement

Education		Frequency	Percent
	No matric	1606	54.0
	Matric	924	31.1
	Tertiary education	367	12.3
	Total	2897	97.5
Missing	System	75	2.5
Total		**2972**	**100.0**

Table 7 illustrates the number of participants who completed the questionnaire based on the level of income. The results indicate that a high-income group, medium-income group and low-income group p have 38.4%, 44.3% and 8.4% of the participants, respectively. This shows that most participants are medium-income group while fewer participants are in low-income group.

Table 7: The participants in relation to income level

Income		Frequency	Percent
	Low-income	249	8.4
	Medium-income	1318	44.3
	High-income	1141	38.4
	Total	2708	91.1
Missing	System	264	8.9
Total		**2972**	**100.0**

4.3 INFERENTIAL STATISTICS

This section analyses the collected data set using a multivariate statistical technique, specifically EFA. The EFA analysis was conducted through an extraction method named principal component analysis and varimax rotation with Kaiser Normalisation using SPSS to extract the underlying factors for the 16 items of the personal saving and investment behaviours scales. Pallant (2013) outlines that there are two main requirements to be met in order to determine whether the data set is suitable for EFA:

- A large sample size with at least five cases for every item is required to generate more reliable results.
- A strong relationship amongst the variables is needed.

In this study, the aforementioned conditions have been met and therefore, the EFA can be conducted. The value of the Kaiser-Meyer-Olkin (KMO) was 0.76 which exceeds the recommended value of 0.6 and the Bartlett's Test of Sphericity was statistically significant at $p < 0.05$ ($p = 0.000$). This support the factorability of the correlation matrix and thus, the FA is appropriate in this study.

The results of EFA revealed five factors to be extracted based on the Kaiser's criterion as it illustrates the total variance explained by all factors with eigenvalues exceeding 1.00 (Field, 2018). These factors explained a total of 53.43% of the variance which comprised of 20.97%, 10.22%, 8.39, 7.33% and 6.53%, respectively. Table 8 illustrates the factor loadings after Varimax rotation, which is a matrix of the factor loadings for each variable on each factor. The identified five factors are named investment products, savings products, informal savings products, special investment products and other informal savings.

Table 8: Rotated factor matrix[a] for financial behaviours' statements

	Factors				
	Formal investment	**Formal savings**	**Informal savings**	**Special investment**	**Other informal savings**
"Investment or savings policy"	.684				
"Buying financial investment products, other than pension funds"	.656				
"Retirement annuity"	.635				
"Education policy or plan"	.583				
"Personal retirement savings plan"	.467	.378			
"Savings account"		.799			
"Paying money into a savings account"		.632			
"Building up a balance of money in your bank account"		.511			
"Pension fund"		.442			
"Provident fund"		.416			
"Stokvel or umgalelo or savings club"			.897		
"Saving in a stokvel or any other informal savings club"			.896		
"Shares on the stock exchange"				.793	
"Unit trusts"				.752	
"Keep cash or savings at home"					.832
"Saving cash at home or in your wallet"					.810

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a. Rotation converged in 5 iterations.

The formal investment, formal savings and informal savings products are retained to be used to perform statistical analysis in the next section of testing hypotheses. The last two factors named the special investment and other informal savings are neither retained nor used in the subsequent statistical analysis, as they have fewer item loadings as compared with the first factors. Most statements that loaded highly in the first factor are related to the formal investment products, with the statements that loaded highly in the second factor are related to formal savings products that influence individuals to make optimal savings and investment decisions. The third factor loaded highly in statements that related to informal savings

products, in particular stokvel. Lastly, it was found that the statements that loaded highly in fourth and fifth factors are related to special financial investment and other savings products, respectively.

4.4 THE RELIABILITY AND VALIDITY OF THE QUETIONNAIRE'S VARIABLES

As discussed earlier in this study, the internal reliability of the questionnaire can be measured through Cronbach's alpha (Leedy and Ormrod, 2015). As discussed in the previous section, the FA revealed three factors that were retained to be used for conducting the statistical analysis:

- The **first** factor includes formal investment products such as investment policies and financial investment products, excluding pension funds, retirement annuity, education plan and personal retirement savings plan.
- The **second** factor comprises formal savings products which include savings account, pay money into a savings account, building up a balance of money in the bank account, pension fund, provident fund and personal retirement savings plan.
- The **third** factor consists of informal savings products which include stokvel and saving in any other informal savings clubs.

The internal consistency for the three factors was performed using Cronbach's alpha. The results are presented in Table 9, 10 and 11 revealing that the values of formal investment, formal savings and informal savings products are 0.65, 0.63 and 0.77, respectively. The internal consistency for the overall financial products was found to be 0.64 using Cronbach's alpha (see Table 12). According to Pallant (2013), the Cronbach's Alpha values of 0.70 are regarded to be acceptable and satisfactory. However, the values of Cronbach's alpha that are close to 0.60 are considered to be acceptable (Tavakol and Dennick, 2011). The values of alphas indicate that there is good reliability within the items of a particular group and thus, the statistical interpretation is valid for these items (Field, 2018).

Table 9: Reliability table for formal investment products

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.654	.667	5

Table 10: Reliability table for formal savings products

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.632	.632	6

Table 11: Reliability table for informal savings products

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.765	.766	2

Table 12: Reliability table for total financial products

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.639	.659	16

4.5 HYPOTHESIS TESTING

In this section, the statistically significant differences between different categories of participants related to saving and investment behaviours are tested using the one-way between-groups ANOVA and the one-way independent ANOVA tests. If the differences are statistically significant, the post-hoc comparisons using the Turkey Honestly Significant Difference (HSD) tests are conducted to determine amongst different categories as to where the differences specifically occur. Lastly, the effect size is calculated using **eta squared** formula to establish whether the effect sizes are small, medium or large with 0.01, 0.06 and 0.14 values, respectively. The null hypothesis which demonstrated that there is no significant

difference was tested against the alternative hypothesis which demonstrated that there is the significant difference. Throughout the statistical analysis, a 5% level of significance is used.

As discussed earlier, the EFA was conducted to establish three main factors, namely formal investment, formal savings and informal savings products used by individuals to meet their financial needs. These factors were tested using ANOVA tests.

With reference to scales, the usage of financial products and methods of saving and investment used by individuals for attaining financial needs were either yes (coded 01) or no (coded 02). The participants were supposed to select whether they use that specific financial product or not and also whether they save or invest informally or formally. Therefore, these are regarded as continuous scales.

Generally, the personal saving and investment behaviours scales range from a scale of 1 to 2. Therefore, the minimum and maximum scores for formal investment products are 5 and 10 respectively, for formal savings products are 6 and 12 respectively and also for informal savings products are 2 and 4 respectively. These scores were obtained based on the number of items in each factor and the range of response scale for those items. Therefore, the minimum and maximum scores were obtained by multiplying the number of items in each factor with the response scales ranging from 1 to 2.

In order to establish whether there are statistically significant differences between the saving and investment behaviours in relation to income, education and gender, the ANOVA tests were performed to test the hypotheses that guided this study. The results are presented in the subsequent section as follows:

The following hypotheses were defined to determine whether there is a statistically significant difference between low- and high-income individuals on the usage of savings products.

- $H0_1$: Low-income individuals predominantly use informal savings products compared with high-income individuals.

- HA_1: Low-income individuals predominantly use formal savings products compared with high-income individuals.

A one-way between-groups ANOVA was performed to test a statistically significant difference between low-income and high-income individuals on the usage of savings products at a 5% level of significance. The results are presented in Table 13 to Table 18 below.

Table 13: Descriptive statistics for income

		N	Mean	Std. Deviation	Minimum	Maximum
Total investment products	Low	249	9.9197	.27234	9.00	10.00
	Medium	1318	9.7572	.58603	5.00	10.00
	High	1141	9.0280	1.24925	5.00	10.00
	Total	2708	9.4649	.98599	5.00	10.00
Total savings products	Low	249	11.7028	.62220	9.00	12.00
	Medium	1318	11.0918	1.13141	6.00	12.00
	High	1141	9.8571	1.47247	6.00	12.00
	Total	2708	10.6278	1.42576	6.00	12.00
Total savings club	Low	249	3.7791	.57098	2.00	4.00
	Medium	1318	3.7382	.60790	2.00	4.00
	High	1141	3.8668	.44500	2.00	4.00
	Total	2708	3.7962	.54481	2.00	4.00
Total financial products	Low	249	30.9679	1.06207	26.00	32.00
	Medium	1318	30.2906	1.64451	22.00	32.00
	High	1141	28.7082	2.33918	20.00	32.00
	Total	2708	29.6861	2.11082	20.00	32.00

Table 14: Test of homogeneity of variances for income

	Levene Statistic	df1	df2	Sig.
Total investment products	375.988	2	2705	.000
Total savings products	123.041	2	2705	.000
Total savings club	68.442	2	2705	.000
Total financial products	138.204	2	2705	.000

Table 15: ANOVA tests for income

		Sum of Squares	df	Mean Square	F	Sig.
Total investment products	Between Groups	381.865	2	190.932	229.563	.000
	Within Groups	2249.803	2705	.832		
	Total	2631.667	2707			
Total savings products	Between Groups	1249.178	2	624.589	397.195	.000
	Within Groups	4253.614	2705	1.573		
	Total	5502.792	2707			
Total savings club	Between Groups	10.185	2	5.092	17.364	.000
	Within Groups	793.295	2705	.293		
	Total	803.480	2707			
Total financial products	Between Groups	1981.937	2	990.969	265.949	.000
	Within Groups	10079.261	2705	3.726		
	Total	12061.198	2707			

Table 16: Robust tests of equality of means for income

		Statistic[a]	df1	df2	Sig.
Total investment products	Welch	238.526	2	1177.521	.000
	Brown-Forsythe	333.014	2	1736.415	.000
Total savings products	Welch	505.833	2	972.963	.000
	Brown-Forsythe	551.946	2	2321.007	.000
Total savings club	Welch	18.706	2	679.581	.000
	Brown-Forsythe	16.966	2	918.816	.000
Total financial products	Welch	293.727	2	884.762	.000
	Brown-Forsythe	355.269	2	2148.167	.000

a. Asymptotically F distributed.

Table 17: Post hoc comparisons using Turkey HSD tests for income

Dependent Variable	(I) Income	(J) Income	Mean Difference (I-J)	Sig.
Total investment products	Low	Medium	.16247*	.027
		High	.89163*	.000
	Medium	Low	-.16247*	.027
		High	.72916*	.000
	High	Low	-.89163*	.000
		Medium	-.72916*	.000
Total savings products	Low	Medium	.61101*	.000
		High	1.84567*	.000
	Medium	Low	-.61101*	.000
		High	1.23466*	.000
	High	Low	-1.84567*	.000
		Medium	-1.23466*	.000
Total savings club	Low	Medium	.04088	.519
		High	-.08767	.054
	Medium	Low	-.04088	.519
		High	-.12854*	.000
	High	Low	.08767	.054
		Medium	.12854*	.000
Total financial products	Low	Medium	.67728*	.000
		High	2.25972*	.000
	Medium	Low	-.67728*	.000
		High	1.58244*	.000
	High	Low	-2.25972*	.000
		Medium	-1.58244*	.000

*. The mean difference is significant at the 0.05 level.

Calculating the effect size

$$\text{Eta squared} = \frac{\text{Sum of squares between groups}}{\text{Total sum of squares}}$$

Table 18: Effect sizes for income

	Sum of squares between groups	Total sum of squares	Eta squared
Investment products	381.865	2631.667	0.15
Savings products	1249.178	5502.792	0.23
Savings clubs	10.185	803.480	0.00
Total financial products	1981.937	12061.198	0.16

- **Savings products**

The one-way between-groups ANOVA was conducted to explore a statistically significant difference between the average scores for low-income and high-income participants on the

usage of informal savings products. The average scores for low-income participants (N = 249) and high-income participants (N = 1,141) were 3.78 and 3.87, respectively. The statistical significance level of the Levene's test of 0.00 indicates that the assumption of homogeneity of variance is violated because the $p < 0.05$. A robust test of equality of means, specifically Welch test is used to determine the statistical significance difference and the results indicate the significance level of 0.00. This indicates that there is a statistically significant difference at the $p < 0.05$: $F(2,679.58) = 18.71$, $p = 0.00$. That is, the level of income has a significant effect on the usage of informal savings products by individuals. Although the difference was statistically significant, the effect size of 0.00 between the groups was considered to be very small.

Post-hoc comparisons using the Turkey HSD test indicated that the average scores between medium (M = 3.74, SD = 0.61) and high (M =3.87, SD = 0.45) income groups were significantly different. A low-income group (M = 3.78, SD = 0.57) was insignificantly different from either medium or high income groups. Therefore, the null hypothesis is rejected and the alternative hypothesis is accepted.

Furthermore, the one-way between-groups ANOVA was conducted to explore a statistically significant difference among the average scores for income levels on the usage of formal savings products. The average scores for low (N = 249) and high (N = 1,141) income participants were 11.70 and 9.86, respectively. The statistical significance level of the Levene's test of 0.00 indicates that the assumption of homogeneity of variance is violated because the $p < 0.05$. The Welch test was used to determine a statistically significant difference and the results indicate a significance level of 0.00. This indicates that there is a statistically significant difference at the $p < 0.05$: $F(2,972.96) = 505.83$, $p = 0.00$. That is, the level of income has a statistically significant difference on the usage of formal savings products. The effect size of 0.23 revealed that the significant difference between income groups was considered to be large. Post-hoc comparisons using the Turkey HSD test indicated that the average scores for low (M = 11.70, SD = 0.62), medium (M = 11.09, SD = 1.13) and high (M =9.86, SD = 1.47) income groups were significantly different amongst each other. Therefore, the null hypothesis is rejected and the alternative hypothesis is accepted.

- **Total financial products**

The one-way between-groups ANOVA was conducted to explore the average scores among income levels on the usage of total financial products by South Africans. The average scores for low (N = 249), medium (N = 1,318) and high (N = 1,141) income participants were 30.97, 30.29 and 28.71, respectively. The statistical significance level of the Levene's test of 0.00 indicates that the assumption of homogeneity of variance is violated because the $p < 0.05$. The Welch test was used to determine a statistically significant difference and the results indicate that a significance level is 0.00. These results reveals that there is a statistically significant difference at the $p < 0.05$: F(2,884.76) = 293.73, p = 0.000. That is, the level of income has a significant difference on the usage of total financial products for saving and investment purposes by individuals. The effect size of 0.16 reveals that the significant difference amongst the income groups was considered to be large.

Post-hoc comparisons using the Turkey HSD test indicated that the average scores for low (M = 30.97, SD = 1.06), medium (M = 30.29, SD = 1.64) and high (M = 28.71, SD = 2.34) income groups did differ significantly amongst each other. Therefore, the null hypothesis is rejected and the alternative hypothesis is accepted.

The aforementioned results are consistent across informal savings products, formal savings products and total financial products, the null hypothesis was rejected and the alternative hypothesis was accepted. These results indicate that low-income individuals predominantly use formal savings products compared with high-income individuals. The results also indicate that significant difference between low-income and high-income groups was statistically significant in relation to both formal savings products and total financial products. There was insignificant statistical difference between low-income and high-income groups in relation to informal savings products.

With respect to education, to test whether there is a statistically significant difference between the saving behaviour and education level of individuals, the following hypotheses were defined:

- $H0_2$: Highly educated individuals tend to use formal savings products on a greater scale compared with less-educated individuals.
- HA_2: Less-educated individuals tend to use more formal savings products compared with highly educated individuals.

The one-way between-groups ANOVA was performed to test the statistical significance difference of saving behaviour of highly educated and less-educated individuals at the 5% level of significance. The results are presented in Table 19 to Table 23 below.

Table 19: Descriptive statistics for education

		N	Mean	Std. Deviation	Minimum	Maximum
Total investment products	No matric	1606	9.7908	.54327	5.00	10.00
	Matric	924	9.3214	.97617	5.00	10.00
	Tertiary education	367	8.3515	1.47997	5.00	10.00
	Other/Don't know	14	10.0000	.00000	10.00	10.00
	Total	2911	9.4614	.98151	5.00	10.00
Total savings products	No matric	1606	11.1644	1.10693	6.00	12.00
	Matric	924	10.2424	1.37447	6.00	12.00
	Tertiary education	367	9.1662	1.44561	6.00	12.00
	Other/Don't know	14	11.6429	.49725	11.00	12.00
	Total	2911	10.6221	1.42104	6.00	12.00
Total savings club	No matric	1606	3.8020	.54174	2.00	4.00
	Matric	924	3.7933	.54635	2.00	4.00
	Tertiary education	367	3.8174	.50345	2.00	4.00
	Other/Don't know	14	3.7857	.57893	2.00	4.00
	Total	2911	3.8011	.53850	2.00	4.00
Total financial products	No matric	1606	30.4303	1.56195	22.00	32.00
	Matric	924	29.2727	2.00413	22.00	32.00
	Tertiary education	367	27.4087	2.50502	20.00	32.00
	Other/Don't know	14	31.1429	.86444	29.00	32.00
	Total	2911	29.6853	2.10626	20.00	32.00

Table 20: Test of homogeneity of variances for education

	Levene Statistic	df1	df2	Sig.
Total investment products	364.606	3	2907	.000
Total savings products	35.897	3	2907	.000
Total savings club	.766	3	2907	.513
Total financial products	66.311	3	2907	.000

Table 21: ANOVA tests for education

		Sum of Squares	Df	Mean Square	F	Sig.
Total investment products	Between Groups	648.506	3	216.169	291.616	.000
	Within Groups	2154.896	2907	.741		
	Total	2803.402	2910			
Total savings products	Between Groups	1397.960	3	465.987	302.481	.000
	Within Groups	4478.375	2907	1.541		
	Total	5876.335	2910			
Total savings club	Between Groups	.159	3	.053	.183	.908
	Within Groups	843.678	2907	.290		
	Total	843.836	2910			
Total financial products	Between Groups	2980.395	3	993.465	290.855	.000
	Within Groups	9929.368	2907	3.416		
	Total	12909.764	2910			

Table 22: Robust tests of equality of means for education

		Statistic[a]	df1	df2	Sig.
Total investment products	Welch	.	.	.	.
	Brown-Forsythe	.	.	.	.
Total savings products	Welch	272.663	3	66.068	.000
	Brown-Forsythe	357.426	3	970.633	.000
Total savings club	Welch	.192	3	63.342	.901
	Brown-Forsythe	.178	3	90.623	.911
Total financial products	Welch	215.738	3	64.876	.000
	Brown-Forsythe	296.174	3	757.965	.000

a. Asymptotically F distributed.

b. Robust tests of equality of means cannot be performed for Total investment products because at least one group has 0 variance.

Table 23: Post hoc comparisons using Turkey HSD tests for education

Dependent Variable	(I) Consolidated Education	(J) Consolidated Education	Mean Difference (I-J)	Sig.
Total investment products	No matric	Matric	.46936*	.000
		Tertiary education	1.43929*	.000
		Other/Don't know	-.20922	.802
	Matric	No matric	-.46936*	.000
		Tertiary education	.96993*	.000
		Other/Don't know	-.67857*	.018
	Tertiary education	No matric	-1.43929*	.000
		Matric	-.96993*	.000
		Other/Don't know	-1.64850*	.000
	Other/Don't know	No matric	.20922	.802
		Matric	.67857*	.018
		Tertiary education	1.64850*	.000
Total savings products	No matric	Matric	.92196*	.000
		Tertiary education	1.99817*	.000
		Other/Don't know	-.47847	.477
	Matric	No matric	-.92196*	.000
		Tertiary education	1.07621*	.000
		Other/Don't know	-1.40043*	.000
	Tertiary education	No matric	-1.99817*	.000
		Matric	-1.07621*	.000
		Other/Don't know	-2.47664*	.000
	Other/Don't know	No matric	.47847	.477
		Matric	1.40043*	.000
		Tertiary education	2.47664*	.000
Total savings club	No matric	Matric	.00870	.980
		Tertiary education	-.01545	.960
		Other/Don't know	.01628	.999
	Matric	No matric	-.00870	.980
		Tertiary education	-.02415	.887
		Other/Don't know	.00758	1.000
	Tertiary education	No matric	.01545*	.960
		Matric	.02415*	.887
		Other/Don't know	.03172	.996
	Other/Don't know	No matric	-.01628*	.999
		Matric	-.00758*	1.000
		Tertiary education	-.03172*	.996

Dependent Variable	(I) Consolidated Education	(J) Consolidated Education	Mean Difference (I-J)	Sig.
Total financial products	No matric	Matric	1.15753*	.000
		Tertiary education	3.02154*	.000
		Other/Don't know	-.71260*	.477
	Matric	No matric	-1.15753	.000
		Tertiary education	1.86401*	.000
		Other/Don't know	-1.87013*	.001
	Tertiary education	No matric	-3.02154*	.000
		Matric	-1.86401*	.000
		Other/Don't know	-3.73414	.000
	Other/Don't know	No matric	.71260*	.477
		Matric	1.87013*	.001
		Tertiary education	3.73414*	.000

*. The mean difference is significant at the 0.05 level.

Table 24: Effect sizes for education

	Sum of squares between groups	Total sum of squares	Eta squared
Investment products	648.506	2803.402	0.23
Savings products	1397.960	5876.335	0.24
Savings clubs	0.159	843.678	0.00
Total financial products	2980.395	12909.764	0.23

- **Savings products**

The one-way between-groups ANOVA was conducted to explore the average scores among the levels of education on the usage of formal savings products by South Africans. The average scores for participants with no matric (*N* = 1,606), matric (*N* = 924) and tertiary education (*N* = 367) were 11.16, 10.24 and 9.17, respectively. The statistical significance level of the Levene's test of 0.00 indicates that the assumption of homogeneity of variance is violated because the $p < 0.05$. The Welch test was used to determine the significant difference and the results reveal that there is a statistically significant difference at the $p < 0.05$: $F(3, 66.07) = 272.66$, $p = 0.000$. That is, the level of education has a significant difference on the usage of formal savings products. The effect size of 0.24 indicates that the significant difference among the education groups was considered to be large. That is, education had a huge impact on saving behaviour of individuals. Post-hoc comparisons using the Turkey HSD test indicated that the average scores for participants with no matric (M = 11.16, SD = 1.11), matric (M = 10.24, SD = 1.37) and tertiary education (M =9.17, SD = 1.45) were significantly different amongst each other. Therefore, the null hypothesis is

rejected and the alternative hypothesis is accepted.

- **Total financial products**

The one-way between-groups ANOVA was conducted to explore the average scores among the levels of education on the usage of total financial products for saving and investment purposes. The average scores for participants with no matric (*N* = 1,606), matric (*N* = 924) and tertiary education (*N* = 367) were 30.43, 29.27 and 27.41, respectively. The statistical significance level of the Levene's test of 0.00 indicates that the assumption of homogeneity of variance is violated because the $p < 0.05$. The Welch test was used to test the statistical significance different and the results reveal that there is a statistically significant difference at the $p < 0.05$: $F(3, 64.88) = 215.74$, $p = 0.00$. That is, the level of education has a significant difference on the usage of total financial products for saving and investment purposes. The effect size of 0.23 indicates that the significant difference among the education groups was considered to be large. Thus, the level of education had a huge impact on the usage of different financial products for saving and investment purposes. Post-hoc comparisons using the Turkey HSD test indicated that the average scores amongst the participants with no matric (M =30.43, SD = 1.56), matric (M =29.27, SD = 2.00) and tertiary education (M = 27.41, SD = 2.51) were significantly different. Therefore, the null hypothesis is rejected and the alternative hypothesis is accepted.

The aforementioned results are consistent between formal savings products and total financial products, the null hypothesis was rejected and the alternative hypothesis was accepted. These results reveal that less-educated individuals tend to use more formal savings products compared highly educated individuals. The results also indicate that significant difference between less-educated and highly educated individuals was statistically significant in relation to both formal savings products and total financial products.

To test whether there is a statistically significant difference between the investment behaviour of males and females, the following hypotheses were defined:

- $H0_3$: Males tend to make better investment decisions compared with females.
- HA_3: Females tend to make better investment decisions compared with males.

The one-way independent ANOVA was conducted to determine the investment behaviour scores for males and females. The results are presented in Table 24 to Table 28 below.

Table 25: Descriptive statistics for gender

		N	Mean	Std. Deviation	Minimum	Maximum
Total financial products	Male	1731	27.7649	1.97869	19.00	30.00
	Female	1226	28.1639	1.76590	19.00	30.00
	Total	2957	27.9303	1.90325	19.00	30.00
Total savings products	Male	1731	10.6135	1.41675	6.00	12.00
	Female	1226	10.9657	1.24362	6.00	12.00
	Total	2957	10.7596	1.35858	6.00	12.00
Total investment products	Male	1731	7.6285	.80466	4.00	8.00
	Female	1226	7.7896	.58534	4.00	8.00
	Total	2957	7.6953	.72610	4.00	8.00
Total savings club	Male	1731	3.8359	.49471	2.00	4.00
	Female	1226	3.7561	.58699	2.00	4.00
	Total	2957	3.8028	.53626	2.00	4.00

Table 26: Test of homogeneity of variances for gender

	Levene Statistic	df1	df2	Sig.
Total investment products	92.059	1	2955	.000
Total savings products	55.468	1	2955	.000
Total savings club	57.628	1	2955	.000
Total financial products	31.112	1	2955	.000

Table 27: ANOVA tests for gender

		Sum of Squares	df	Mean Square	F	Sig.
Total investment products	Between Groups	40.423	1	40.423	42.827	.000
	Within Groups	2789.134	2955	.944		
	Total	2829.557	2956			
Total savings products	Between Groups	100.695	1	100.695	50.662	.000
	Within Groups	5873.335	2955	1.988		
	Total	5974.030	2956			
Total savings club	Between Groups	4.572	1	4.572	15.979	.000
	Within Groups	845.484	2955	.286		
	Total	850.056	2956			
Total financial products	Between Groups	162.186	1	162.186	36.823	.000
	Within Groups	13015.144	2955	4.404		
	Total	13177.330	2956			

Table 28: Robust tests of equality of means for gender

		Statistic[a]	df1	df2	Sig.
Total investment products	Welch	46.833	1	2937.556	.000
	Brown-Forsythe	46.833	1	2937.556	.000
Total savings products	Welch	52.860	1	2816.637	.000
	Brown-Forsythe	52.860	1	2816.637	.000
Total savings club	Welch	15.081	1	2346.994	.000
	Brown-Forsythe	15.081	1	2346.994	.000
Total financial products	Welch	38.339	1	2808.897	.000
	Brown-Forsythe	38.339	1	2808.897	.000

a. Asymptotically F distributed.

Table 29: Effect sizes for gender

	Sum of squares between groups	Total sum of squares	Eta squared
Investment products	40.423	2829.134	0.01
Savings products	100.695	5974.030	0.02
Savings clubs	4.572	850.056	0.01
Total financial products	162.186	13177.330	0.01

- **Investment products**

The one-way independent ANOVA test was performed to determine a statistically significant difference between the average scores for males and females on the usage of financial products, in particular investment products. The average scores for male (N = 1731) and female (N = 1226) participants were 9.37 and 9.60, respectively. The statistical significance level of the Levene's test of 0.00 reveals that the assumption of homogeneity of variance is violated because the $p < 0.05$. The Welch test was used to determine a statistically significant difference and the results indicate a significance level of 0.00. This reveals that there is a statistically significant difference at the $p < 0.05$: $F(1, 2937.56) = 46.83$, $p = 0.000$. Although there is a statistically significant difference between males and females, the effect size of 0.01 was considered to be very small.

Post-hoc comparisons was not possible on gender because it has less than three categories. The existence of statistically significant difference means that the null hypothesis is rejected while the alternative hypothesis is accepted. That is, females tend to make better investment decisions compared with males.

- **Total financial products**

The one-way independent ANOVA was performed to determine a statistically significant difference between the average scores for males and females on the usage of total financial products for saving and investment purposes. The average scores for male (N = 1731) and female (N = 1226) participants were 27.76 and 28.16, respectively. The statistical significance level of the Levene's test of 0.00 reveals that the assumption of homogeneity of variance is violated because the $p < 0.05$. The Welch test was used to determine a statistically significant difference and the results indicate a significance level of 0.00. This reveals that there is a statistically significant difference at the $p < 0.05$: F(1, 2808.90) = 38.34, p = 0.000. Although there is a statistically significant difference between males and females, the effect size of 0.01 was considered to be very small. The null hypothesis is rejected and the alternative hypothesis is accepted.

The aforementioned results are consistent between investment savings products and total financial products, the null hypothesis was rejected and the alternative hypothesis was accepted. That is, females tend to make better investment decisions compared with males.

4.6 SUMMARY

In the foregoing section, the empirical analysis was discussed based on the large sample size of 2,972 participants and the collected data was in numeric form, which made the use of parametric statistical techniques possible. Descriptive statistics such as frequencies and percentages and inferential statistics such as the ANOVA test and multivariate data analysis, specifically the EFA were used to analyse the data empirically. The ANOVA test was used to determine the statistical significance of the demographic variables with two or more categories on saving and investment behaviours while the EFA was used to discover three sub-constructs, namely formal investment, formal savings and informal savings products.

A non-parametric statistical technique named Cronbach's alpha coefficient was used to test the internal consistency of variables for the personal saving and investment behaviours scale that was used in this study.

The **first** null hypothesis was linked to income level and the saving behaviour of South Africans. The results indicated that the null hypothesis was rejected while the alternative hypothesis was accepted in relation to the usage of informal savings products. The average score for low-income individuals is higher than the average score for high-income individuals related to the usage of informal savings schemes for saving purposes.

The **second** null hypothesis was related to the level of education and its association with saving behaviour. The results indicated that the null hypothesis was rejected while the alternative hypothesis was accepted in relation to the usage of formal savings products between highly educated and less-educated participants.

The **third** hypothesis was linked to gender and the existence of statistical differences with saving behaviour. The results revealed that the null hypothesis was rejected while the alternative hypothesis was accepted in association with the usage of formal investment products by individuals for the attainment of desired financial needs.

In this chapter, the results of this study were presented. Since the data was analysed empirically and presented, the following chapter is the last chapter of this study and details a summary of the research study and conclusions based on the statistical analysis that was conducted. Furthermore, the next chapter outlines the recommendations for future research based on the findings of this study.

CHAPTER 5 – SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 INTRODUCTION

The penultimate chapter discussed the empirical results and statistical techniques used in this study. In this chapter, a summary of the main points identified in the study which includes the main objective of the study, the research designs and methods, statistical analysis and the main findings of the study were outlined. Lastly, this chapter outlines the implications of the research results broadly, the limitations of the research and recommendations for further research to address the identified limitations of this study.

5.2 SUMMARY

The main purpose of this study was to explore and establish the saving and investment behaviours of individuals in SA. There are three hypotheses that were defined to attain the main objective of this study and there are outline as follows:

- $H0_1$: Low-income individuals predominantly use informal savings products compared with high-income individuals to attain their savings needs.
- HA_1: Low-income individuals predominantly use formal savings products compared with high-income individuals to attain their savings needs.
- $H0_2$: Highly educated individuals tend to use formal savings products on a greater scale compared with less-educated individuals.
- HA_2: Less-educated individuals tend to use more formal savings products compared with highly educated individuals.
- $H0_3$: Males tend to make better investment decisions compared with females.
- HA_3: Females tend to make better investment decisions compared with males.

In **Chapter 2**, a literature review was discussed to evaluate and integrate the existing literature associated with the saving decisions made by individuals. A literature review was linked to the main research objective of this study which is to examine the usage of accessible financial products in relation to income, education and gender. The existing knowledge gap of this study was identified in the literature review based on the previous

literature reviewed. The reviewed literature indicated that there is no extensive research focusing on examining the use of different financial products which are offered by financial institutions in the South African context. Furthermore, the role of suitable financial products for saving and investment purposes was not given more attention in S.A. Different financial products used for saving and investment purposes such as TFSAs, flexible savings accounts, fixed savings accounts, informal savings products, TFIs, flexible and fixed investments were discussed in detail. Furthermore, theories of saving, including LCH, PIH and BLCH and also theories of investment such as prospect and mental accounting theories were discussed in detail to build the theoretical foundation for this study. Various factors that have an effect on saving and investment behaviours of individuals such as accessible financial products, financial knowledge and demographics, as well as economic factors, were discussed. This study discussed demographic factors such as gender, income and education only because they were necessary for statistical analysis.

The **third chapter** detailed the research methods of the study. A suitable inquiry strategy was discussed and this study was considered to be a quantitative study. Methods of sampling and data collection were also outlined which include how the data was collected by the HSRC using a structured questionnaire. The type of data used for data analysis in this study was discussed, thus, this study used secondary data obtained from HSRC database in a numeric form and that data was appropriate for ANOVA test that was used to test the statistical significant difference among categories. Different statistical techniques such as descriptive and inferential statistics which were considered appropriate for this study were discussed in detail. The sample size of 2,972 participants and units of analysis were also outlined in this chapter.

Furthermore, the questionnaire and codebook developments were also outlined in this chapter. The questionnaire was developed by rearranging the original questionnaire obtained from HSRC database in order to meet the objectives for this study. All variables used in this study was discussed in detail. The independent variables include income, education and gender while the dependent variables include all questionnaire statements because the study focused on examining the usage of accessible financial products by South Africans in relation to income, education and gender. The saving and investment behaviours are categorised into groups which are the dependent variables in this study. The

measurement of scales such as ratio, interval, ordinal and nominal were also discussed. Income and education levels were considered ordinal, gender was considered nominal and all questionnaire statements were considered scale, specifically ratio as they have a true zero value.

In **Chapter 4**, the descriptive and inferential statistical techniques that were conducted in this study were explained in detail and the empirical results were presented appropriately in tabular form. Furthermore, the main findings that were identified during statistical analysis and also relevant in attaining the main research objective of the study were outlined in relation to the three hypotheses that guided this study.

The **first** main finding was that low-income participants were found to save informally less than high-income participants and thus, low-income participants use more formal savings products than high-income participants. This means high-income participants tend to make sub-optimal savings decisions than low-income participants as they tend to save informally instead of formally in order to generate more interest returns on their savings. It was found that income has a significant effect on saving behaviour and that effect was large.

The first finding is inconsistent with Grohmann (2018), who discovered that high levels of income led to more savings. Furthermore, this finding is inconsistent with the study conducted by Whitaker *et al*. (2013), as they discovered that high-income individuals usually make better saving decisions than low-income individuals because income was linked to the ability to make optimal saving decisions. Other prior studies found a positive correlation between income and savings and thus, high-income individuals tend to save more than low-income individuals (Brounen *et al.,* 2016; Chowa *et al.*, 2012; Lewis and Messy, 2012; Nicules-Aron and Mihaescu, 2014).

The **second** finding was that less-educated participants tend to use more formal savings products to enhance their financial well-being than highly educated participants. Thus, highly educated participants tend to make sub-optimal savings decisions as compared wiith less-educated participants. The significant effect of the usage of financial products for saving purposes between highly educated and less-educated participants was found to be large. This is inconsistent with studies conducted by Kapounek *et al.* (2016) and Pailwar *et al.*

(2010), which found that education was positively associated with saving and thus, highly educated participants make optimal savings choices than less-educated participants. Furthermore, this finding contradicts the study conducted by Whitaker *et al.* (2013), who found that highly educated individuals usually save more than less-educated individuals in their study of interactional associations of gender on saving behaviour.

The **third** finding of this study was that male participants tend to make sub-optimal investment decisions as compared with female participants. This was indicated by the fact that female participants tend to use more formal investment products for creating personal wealth than male participants. Although there is a significant impact, the impact between gender and investment behaviour is small.

The foregoing finding is consistent with the previously conducted studies, as it was found that gender had a significant effect on making financial choices (Bucher-Koene and Lusardi, 2011; Dvorak and Hanley, 2010; Lusardi and Mitchell, 2011). Furthermore, this finding is inconsistent with the study conducted by Gao (2015), which revealed that males tend to make better financial choices. This contradicts the study conducted by Wang (2009), who discovered that females tend to make sub-optimal investment decisions that generate lower returns because of lack of financial knowledge about investment choices. However, this finding is supported by the study conducted by Grohmann (2018), who argued that females possess more knowledge about financial decisions and thus, they have the capability to choose to invest formally more than males in order to accumulate more wealth.

5.3 MAJOR FINDINGS

This study focused on examining the impact of income, education and gender on saving and investment behaviours in South Africa. As the aforementioned section has discussed the conclusions of this study, there are three major findings that address the research problem.

The **first** main finding was that low-income participants save less through informal savings schemes than high-income participants. However, the significant effect of saving informally between low-income and high-income participants is very small. Furthermore, the findings revealed that low-income participants use formal savings products to attain their savings

needs than high-income participants. The analysis revealed that low-income participants tend to make optimal savings options than high-income participants and the significant effect in relation to the usage of formal savings products is large. Thus, the level of income has a significant impact on the usage of appropriate savings products for attaining savings needs of all individuals.

The **second** major finding was that less-educated participants use mainly formal savings products than highly educated participants for saving purposes. This means less-educated participants make optimal savings choices to enhance their financial well-being than highly educated participants. The analysis revealed that the significant effect of the level of education and the usage of savings products is large. The average score for highly educated participants is less than the average score for less-educated participants and thus, the difference between the usage of savings products for highly-educated and less-educated participants is great.

The **third** major finding was that female participants tend to make better investment decisions than male participants. The analysis revealed that female participants use formal investment products more than male participants for investment purposes. However, the significant effect is found to be too small.

The aforementioned findings have addressed the research problem and identified the areas that need extensive research for future purposes in this field.

5.4 LIMITATIONS

This study had the following limitations that need to be considered:

- The research is limited to the South African environment.
- The study focused on participants aged 16 years and older.
- The study relies on self-report data obtained using a questionnaire which can be influenced by response and social desirability biases.
- The questionnaire statements were limited only to statements selected from different sections of the original questionnaire that was obtained from the HSRC database and thus, from SASAS.

- The reliability of the questionnaire statements was performed using a Cronbach's alpha to identify if the questionnaire instrument is valid and reliable.
- The targeted population was 3,500 individuals, but only 2,972 individuals completed the questionnaire, which represents a response rate of 84.91%. Thus, participation was voluntary.
- The study focuses exclusively on demographic variables such as income, education and gender.

5.5 RECOMMENDATIONS

This section outlines four recommendations that were made based on the findings of the study as follows:

- Policymakers need to implement policies and techniques that motivate every individual, regardless of age, gender, income level and education level to save more through financial education, information and awareness campaigns.
- Both policymakers and financial institutions need to consider the significance and relevance of the accessible and available financial products offered by formal financial institutions to cater to the savings and investment needs of every individual.
- Financial professionals need to offer financial education at a minimal fee to every individual in respect of financial facilities, products and the benefits of personal savings and investment at a reasonable price.
- Educational institutions should provide financial education programmes that focus on extending financial knowledge, and developing favourable financial attitudes and behaviour in order to improve the level of financial literacy amongst all individuals.

There are four recommendations that were made in relation to future studies such as:

- **First**, there is a need for future studies to conduct similar research using qualitative data in order to gain deeper knowledge regarding the saving and investment behaviours of South Africans.
- **Secondly**, the future study needs to conduct a similar research using primary data in order to allow the researcher to develop a structured questionnaire which includes only

the relevant questions, particularly usage of appropriate savings and investment products' questions to examine if the results differ with this study's results.

- **Thirdly**, further study needs to focus on investigating the behaviours or attitudes of individuals using a questionnaire with no neutral or opinion responses such as neutral, refused to answer and do not know the answer. The questionnaire responses should be specific in order to make it easier to quantify the results of the participants' behaviours or attitudes.
- **Lastly**, future researchers should focus on examining the impact of accessible financial institutions that provide a number of different financial products to meet the savings and investment needs of all individuals in SA.

The main purpose of this study was to extend the knowledge of individuals in SA regarding optimal savings and investment choices. This study contributed to the existing literature by increasing the knowledge of individuals about the usage of appropriate financial products for saving and investment purposes and also to make a valuable contribution in practice for policymakers, individuals, investors, economists, financial and educational institutions.

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APPENDICES

APPENDIX A: THE QUESTIONNAIRE

Please tick the relevant box below.

1. A permission to participate in the survey.

1.1 I hereby agree to permit my child to participate in the survey *(exclusively for minor participants aged below 18 years).*

Yes	
No	

1.2 I hereby agree to participate in this survey *(participants aged 18 years and older).*

Yes	
No	

PART 1: DEMOGRAPHIC DETAILS OF THE PARTICIPANTS

2. How old are you? _____ years.

3. What is your gender?

Male	
Female	

4. What is your highest education level?

No matric	
Matric or equivalent	
Tertiary education	

5. What is your income level?

Low	
Medium	
High	

PART 2: FINANCIAL BEHAVIOUR SCALE

This part of the questionnaire is divided into two sections. Please tick the most relevant answer in all statements.

Section 1

“I would now like to ask about the financial products that you personally have. These include both formal products with banks and other institutions, as well as more informal products. Please can you tell me whether you currently hold any of these types of products or not”.

Description	Yes	No
“Personal retirement savings plan”		
“Savings account”		
“Unit trusts”		
“Education policy or plan”		
“Investment or savings policy”		
“Shares on the stock exchange”		
“Retirement annuity”		
“Provident fund”		
“Pension fund”		
“Stokvel / umgalelo / savings club”		
“Keep cash or savings at home”		

Section 2

“In the past 12 months, have you been saving money in any of the following ways”?

Statement	Yes	No
“Building up a balance of money in your bank account”		
“Paying money into a savings account”		
“Saving cash at home or in your wallet”		
“Saving in a stokvel or any other informal savings club”		
“Buying financial investment products, other than pension funds [e.g. investment trusts, stocks and shares]”		

APPENDIX B: THE QUESTIONNAIRE CODEBOOK

Label	Name	Valid values
2. How old are you? _____years.	Age	Numeric value
3. What is your gender?	Gender	1 = Male 2 = Female
4. What is your highest education level? (consolidated)	Education	1 = No matric 2 = Matric 3 = Tertiary education
5. What is your Income level?	Income	1 = Low 2 = Medium 3 = High

Label Label	Name	Valid values
6 Personal savings and investment behaviours scale	• Personal retirement savings plan • Savings account • Unit trusts • Education policy or plan • Investment or savings policy • Shares on the stock exchange • Retirement annuity • Provident fund • Pension fund • Stokvel / umgalelo / savings club • Keep cash or savings at home • Building up a balance of money in your bank account • Paying money into a savings account • Saving cash at home or in your wallet • Saving in a stokvel or any other informal savings club • Buying financial investment products, other than pension funds [e.g. investment trusts, stocks and shares]	1 = Yes 2 = No

APPENDIX C: THE QUESTIONNAIRE VARIABLES' FREQUENCIES

Frequency Tables

Income			
		Frequency	Percent
	Low	249	8.4
	Medium	1318	44.3
	High	1141	38.4
	Total	2708	91.1
Missing	System	264	8.9
Total		2972	100.0

Education			
		Frequency	Percent
	No matric	1606	54.0
	Matric	924	31.1
	Tertiary education	367	12.3
	Total	2897	97.5
Missing	System	75	2.5
Total		2972	100.0

Gender			
		Frequency	Percent
	Male	1731	58.2
	Female	1225	41.2
	Total	2956	99.5
Missing	System	16	.5
Total		2972	100.0

Personal retirement savings plan			
		Frequency	Percent
	Yes	684	23.0
	No	2288	77.0
	Total	2972	100.0

Savings account			
		Frequency	Percent
	Yes	1410	47.4

	No	1562	52.6
	Total	2972	100.0

Unit trusts			
		Frequency	Percent
	Yes	82	2.8
	No	2890	97.2
	Total	2972	100.0

Education policy or plan			
		Frequency	Percent
	Yes	176	5.9
	No	2796	94.1
	Total	2972	100.0

Investment or savings policy			
		Frequency	Percent
	Yes	296	10.0
	No	2676	90.0
	Total	2972	100.0

Shares on the stock exchange			
		Frequency	Percent
	Yes	68	2.3
	No	2904	97.7
	Total	2972	100.0

Retirement annuity			
		Frequency	Percent
	Yes	290	9.8
	No	2682	90.2
	Total	2972	100.0

Provident fund			
		Frequency	Percent
	Yes	186	6.3
	No	2786	93.7

	Total	2972	100.0

Pension fund			
		Frequency	Percent
	Yes	381	12.8
	No	2591	87.2
	Total	2972	100.0

Stokvel or umgalelo or savings club			
		Frequency	Percent
	Yes	313	10.5
	No	2659	89.5
	Total	2972	100.0

Keep cash or savings at home			
		Frequency	Percent
	Yes	294	9.9
	No	2678	90.1
	Total	2972	100.0

Building up a balance of money in your bank account			
		Frequency	Percent
	Yes	613	20.6
	No	2359	79.4
	Total	2972	100.0

Paying money into a savings account			
		Frequency	Percent
	Yes	794	26.7
	No	2178	73.3
	Total	2972	100.0

Saving cash at home or in your wallet			
		Frequency	Percent
	Yes	821	27.6
	No	2151	72.4
	Total	2972	100.0

Saving in a stokvel or any other informal savings club			
		Frequency	Percent
	Yes	272	9.2
	No	2700	90.8
	Total	2972	100.0

Buying financial investment products, other than pension funds			
		Frequency	Percent
	Yes	141	4.7
	No	2831	95.3
	Total	2972	100.0

APPENDIX D: THE RESULTS OF THE FACTOR ANALYSIS

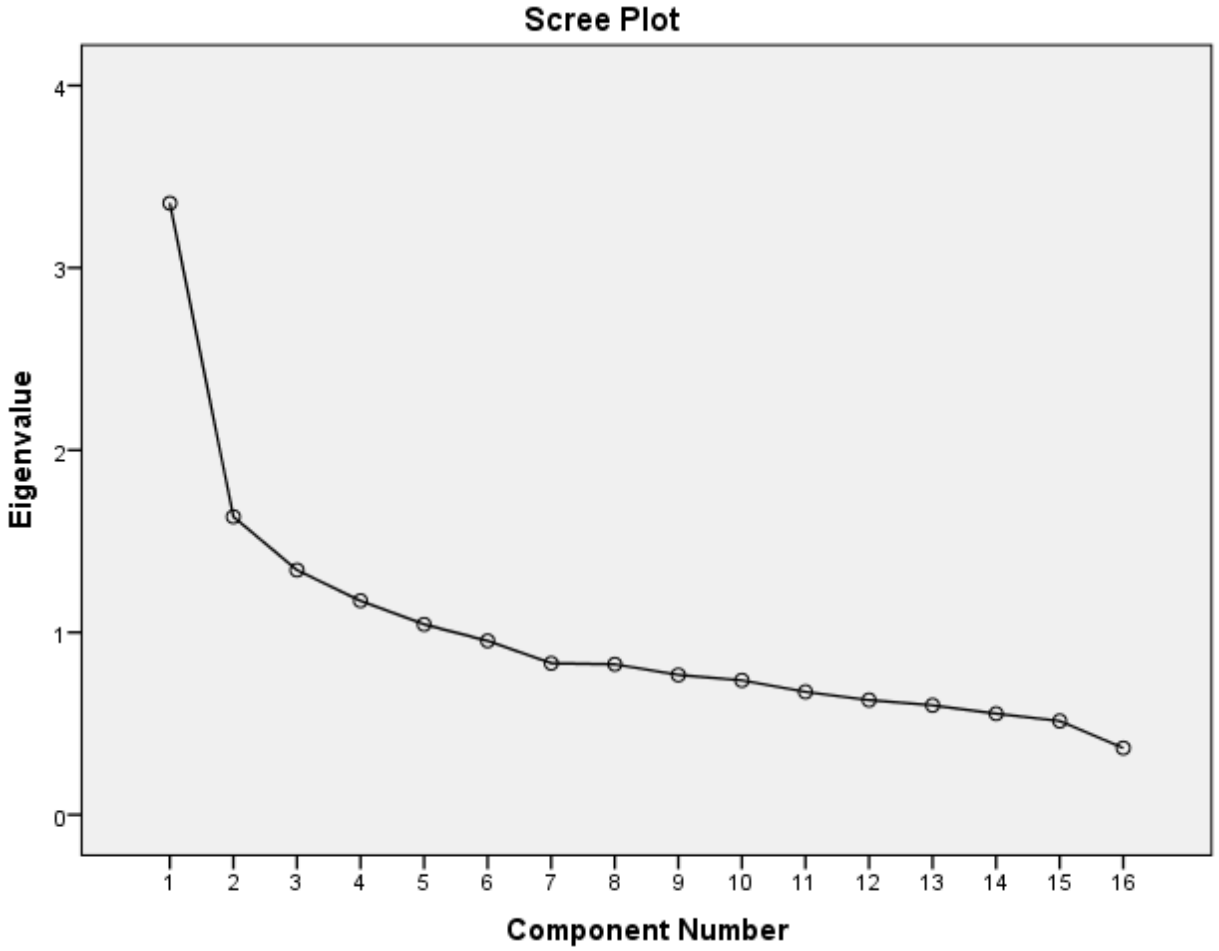
KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.760
Bartlett's Test of Sphericity	Approx. Chi-Square	7193.752
	Df	120
	Sig.	.000

Communalities		
	Initial	**Extraction**
Savings account	1.000	.653
Unit trusts	1.000	.608
Education policy or plan	1.000	.400
Shares on the stock exchange	1.000	.650
Retirement annuity	1.000	.517
Provident fund	1.000	.200
Stokvel or umgalelo or savings club	1.000	.805
Keep cash or savings at home	1.000	.693
Building up a balance of money in your bank account	1.000	.360
Paying money into a savings account	1.000	.468
Saving in a stokvel or any other informal savings club	1.000	.803
Buying financial investment products, other than pension funds	1.000	.492
Saving cash at home or in your wallet	1.000	.671
Pension fund	1.000	.310
Investment or savings policy	1.000	.546
Personal retirement savings plan	1.000	.373

Extraction Method: Principal Component Analysis.

Total Variance Explained									
Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumu-lative %	Total	% of Variance	Cumu-lative %	Total	% of Variance	Cumu-lative %
1	3.355	20.969	20.969	3.355	20.969	20.969	2.117	13.231	13.231
2	1.634	10.215	31.184	1.634	10.215	31.184	2.056	12.848	26.079
3	1.342	8.388	39.572	1.342	8.388	39.572	1.636	10.227	36.306
4	1.174	7.334	46.906	1.174	7.334	46.906	1.375	8.592	44.898
5	1.044	6.526	53.433	1.044	6.526	53.433	1.366	8.534	53.433
6	.954	5.962	59.394						
7	.831	5.194	64.588						
8	.825	5.157	69.746						
9	.767	4.792	74.538						
10	.737	4.606	79.144						
11	.674	4.212	83.356						
12	.629	3.931	87.286						
13	.600	3.750	91.036						
14	.554	3.464	94.501						
15	.514	3.213	97.713						
16	.366	2.287	100.000						

Extraction Method: Principal Component Analysis.


Scree Plot
Eigenvalue
0
1
2
3
4
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
Component Number

Component Matrix[a]					
	Component				
	1	2	3	4	5
Retirement annuity	.671				
Investment or savings policy	.658				-.328
Personal retirement savings plan	.586				
Paying money into a savings account	.573			-.355	
Building up a balance of money in your bank account	.544				
Pension fund	.535				
Education policy or plan	.502				-.359
Buying financial investment products, other than pension funds	.452			.335	-.416
Provident fund	.394				
Saving in a stokvel or any other informal savings club		.892			
Stokvel or umgalelo or savings club		.890			
Keep cash or savings at home			.820		
Saving cash at home or in your wallet			.784		
Shares on the stock exchange	.383			.612	.348
Unit trusts	.422			.509	.392
Savings account	.467			-.446	.478

Extraction Method: Principal Component Analysis.[a]
a. 5 components extracted.

Rotated Component Matrix[a]					
	Financial products				
	Formal investment	Formal savings	Informal savings (stokvel)	Financial investment only	Other savings club
Investment or savings policy	.684				
Buying financial investment products, other than pension funds	.656				
Retirement annuity	.635				
Education policy or plan	.583				
Personal retirement savings plan	.467	.378			
Savings account		.799			
Paying money into a savings account		.632			
Building up a balance of money in your bank account		.511			
Pension fund		.442			
Provident fund		.416			
Stokvel or umgalelo or savings club			.897		
Saving in a stokvel or any other informal savings club			.896		
Shares on the stock exchange				.793	
Unit trusts				.752	
Keep cash or savings at home					.832
Saving cash at home or in your wallet					.810

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.[a]
a. Rotation converged in 5 iterations.

Component Transformation Matrix					
Component	1	2	3	4	5
1	.678	.647	.051	.325	-.112
2	-.062	-.003	.995	-.042	-.065
3	.119	-.020	.077	.118	.983
4	.147	-.576	.033	.793	-.127
5	-.707	.498	-.020	.500	.037

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.