THE DEVELOPMENT AND EMPIRICAL EVALUATION OF A SAVING BEHAVIOUR STRUCTURAL MODEL

by

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DECLARATION

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ABSTRACT

Employee well-being is directly linked to productivity and efficiency. Overall well-being encapsulates a variety of dimensions, amongst other, financial well-being. Saving behaviour is an inherent component of financial well-being. The extent to which South African employees engage in saving behaviour is declining at a rapid rate. This research study aimed to investigate the dynamics of a selected set of variables that could possibly account for variance in saving behaviour, as a means to better understand and conceptualise the psychological processes underlying saving behaviour amongst employees in South Africa.

The selected variables include gender, financial delay of gratification, self-control, financial literacy and financial self-efficacy. An *ex post facto* correlational design with a non-probability convenience sample of 199 South African employees was utilised.

The results of the analysis (conducted with PLS) provided sufficient evidence that four of the nine hypothesised paths contained in the model were significant. More specifically, the direct relationship between gender and saving behaviour, as well as the relationship between self-control and delay of gratification were found to be significant, although the relationship from delay of gratification to saving behaviour was not significant. Moreover, although no evidence was found for financial literacy as a direct predictor of saving behaviour, it was found to be a significant predictor of financial self-efficacy, whilst financial self-efficacy emerged as a significant predictor of saving behaviour. Thereby implying that the effect of financial literacy on saving behaviour was not a direct effect, but rather mediated by financial self-efficacy. Therefore, it is suggested that if organisations design and implement interventions aimed to increase the financial literacy of employees, financial self-efficacy should likely increase. Furthermore, an increase in financial self-efficacy will possibly have a positive influence on saving behaviour.

OPSOMMING

Die welstand van werknemers word direk gekoppel aan hulle produktiwiteit en doeltreffendheid. Algehele welstand omvat 'n verskeidenheid dimensies, onder andere finansiële welstand. Spaargedrag is 'n inherente komponent van finansiële welstand. Die mate waartoe Suid-Afrikaanse werknemers spaargedrag beoefen, neem toenemend af. Die navorsingstudie het beoog om die dinamika van 'n spesifieke stel veranderlikes te ondersoek wat moontlik verskille in spaargedrag kan verduidelik. Die doel was om die sielkundige prosesse, onderliggend aan die spaargedrag van werknemers in Suid-Afrika, beter te verstaan en te konseptualiseer.

Die geselekteerde veranderlikes het ingesluit: geslag, finansiële vertraging van bevrediging, self-beheersing, finansiële geletterdheid, en finansiële self-doeltreffendheid. ‘n *Ex post facto* korrelasie ontwerp met ‘n nie-waarskynlikheidsteekproef van 199 Suid-Afrikaanse werknemers is gebruik.

Die resultate van die ontledings (uitgevoer met PLS) het voldoende bewys gelewer dat vier van die nege veronderstelde bane in die model beduidend was. Meer spesifiek, die direkte verhouding tussen geslag en spaargedrag, sowel as die verhouding tussen self-beheersing en vertraging van bevrediging, was beduidend, alhoewel die verhouding tussen finansiële vertraging van bevrediging en spaargedrag nie beduidend was nie. Alhoewel daar geen bewyse gevind was dat finansiële geletterdheid 'n beduidende voorspeller van spargedrag was nie, was daar bewyse dat finansiële geletterdheid 'n belangrike voorspeller van finansiële self-doeltreffendheid was en dat finansiële self-doeltreffendheid 'n beduidende voorspeller van spaargedrag was. Dit impliseer dus dat die effek van finansiële geletterdheid op spaargedrag nie direk was nie, maar eerder medieer word deur finansiële self-doeltreffendheid. Dit word voorgestel dat intervensies, wat poog om die finansiële geletterdheid van werknemers te verhoog, waarskynlik die vlakke van finansiële self-doeltreffendheid sal verhoog. Hierdie toename in finansiële self-doeltreffendheid sal moontlik 'n positiewe invloed op spaargedrag hê.

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CHAPTER 1: INTRODUCTION

1.1 INTRODUCTION

Organisations are man-made phenomena that primarily exist to produce goods and deliver services in a productive manner with the aim of adding maximum economic value to shareholders, the government and the broader community (De Goede & Theron, 2010). Hitt, Miller and Collela (2009) remark that organisations are social arrangements of individuals working together in a division of labour to achieve a common goal. According to Theron (2009), an organisation will only be successful if it meets the aim of satisfying the triple bottom line and simultaneously deliver products and services that the market values. Hence, organisations have a major responsibility towards society and its stakeholders, to efficiently and effectively combine and convert the lowest possible inputs into the highest possible outputs, which has economic utility (Theron, 2017).

Organisations consist of different inter-related functions all working together to achieve the primary aim of the organisation – contributing to profit whilst enabling the organisation to maintain a sustainable competitive advantage. One of these primary functions is the Human Resource (HR) Function. As an organisation's employees enable it to be successful by being the carrier of the labour production factor, their input and output determine the extent to which the organisation achieves success in producing and delivering goods and services with economic utility. The HR function of an organisation therefore plays a critical part in the continued success and existence of the organisation. Theron (2017) corroborates this idea by stating that the HR function utilizes human capital as a key success factor for sustained organisational performance. Moreover, Nel et al. (2001) are of the opinion that the HR function focusses on the effective and proficient utilisation of a motivated workforce through the execution of an HR strategy that is aligned and contributes to the achievement of the overall business strategy.

Luthans, Luthans and Luthans (2004) state that the HR function can be viewed as a significant source of sustainable competitive advantage. This key function is responsible for the development and implementation of a variety of integrated interventions that could enhance employee performance. Industrial/Organisational

(I/O) Psychologists and/or HR Managers implement interventions to strive towards improved practices in people and organisation development for the benefit of individuals, businesses, economies and society. It is crucial however, that these interventions are implemented in a manner in which the monetary value of the improvement in performance exceeds the expenses associated with the improvement (De Goede & Theron, 2010). Thus, based on this reasoning, it is evident that the organisation's HR function is of critical importance to not only achieve organisational efficiency, but also effectiveness and optimal organisational productivity.

For sustained optimal organisational performance to occur, organisations should be held accountable and take ownership of their moral responsibility to contribute to, amongst other, the well-being of employees (Theron, 2017). According to Theron (2017, p.2), "the behaviour of man is not random, but rather a systematic expression of a complex nomological network of latent variables characterising the individual and its environment". Therefore, components such as employee-well-being should be identified and understood through empirical research (Theron, 2017; Von Bonsdorff, Vanhala, Seitsamo, Janhonen & Husman, 2010).

Well-being in the workplace can be viewed as a broad concept comprised of personal satisfaction, work-life satisfaction and a combination of psychological and physiological health (Pescud et al., 2015). Cotton and Hart (2003) argue that well-being includes both emotional and cognitive components. The emotional component encompasses two independent dimensions of positive and negative affect, termed morale and distress. In addition, the cognitive component, job satisfaction, reflects the judgement of employees regarding their levels of job satisfaction. Additionally, Keyes, Shmotkin, and Ryff (2002) are of the opinion that two conceptualisations of well-being exists: subjective and psychological well-being. Firstly, subjective well-being stresses affective components of well-being, such as the hedonic balance between the pleasant and unpleasant affect. Secondly, psychological well-being entails the perception of individuals regarding engagement with their existential challenges. Spretizer and Porath (2012) emphasised the importance of sustained employee well-being to the survival and development of successful organisations. Moreover, successful implementation of well-being interventions can successfully be translated into financial benefits to the organisation, either through cost savings or additional revenue

generation. Therefore, it is of utmost importance to consider the concept of overall well-being of employees in organisations.

In contrast, Cotton and Hart (2003) argue that organisations should not only be concerned with occupational well-being in itself, but also with the resultant organisational outcomes associated with occupational well-being. Thereby, recognising that the simultaneous focus on employee well-being and organisational performance emphasises the importance of not only happy and satisfied employees, but also employees performing effectively and productively. According to Vlaev and Elliott (2014), well-being should be viewed as a broader bio-psychosocial construct that includes several components, such as physical, mental, social and financial well-being.

Financial well-being has become a field of research that has attracted much social and political attention. The Easterlin paradox suggested that financial well-being was synonymous with one's income (Easterlin, 1974). However, the concept of financial well-being has evolved and recent research has suggested that the conception of financial well-being is not as simple as assuming that income is an adequate financial factor to increase the well-being of individuals. Joo (2008, p. 21) defines financial well-being as "a multidimensional concept involving financial satisfaction, objective status of financial situation, financial attitudes and behaviour". Sorgente and Lanz (2017), distinguish between two levels of financial well-being. Firstly, on the macro level financial well-being is described as "a function of individual characteristics, financial behaviours and financial stressor events" (Gutter & Copur, 2011, p. 699). This definition considers a number of elements such as satisfaction with one's financial situation, financial behaviour, control over one's finances, financial knowledge and financial perception. Secondly, financial well-being on a micro level is defined as feelings of current and future personal financial security (Chan, Ofstedal & Hermalin, 2002). Thus, the micro level refers to the outcomes of a healthy, positive financial condition, whereas the macro level includes the antecedents of these outcomes.

In addition, Brüggen, Hogreve, Holmlund, Kabadayi and Löfgren (2017, p. 229) define financial well-being as "the perception of being able to sustain current and anticipated desired living standards and financial freedom". This definition is different from the other as it has a two-way time dimension which includes both the current and future

states. The first-time aspect discussed by Brüggen et al., (2017) is the future-based assessment of financial well-being and the possibility that it may form an integral part of an individuals' present assessment and behaviour. Secondly, the focus is placed on the perception that financial well-being is dynamic, as an individual's evaluation of his or her subjective financial well-being can change over time. This is due to the fact that the subjective assessment of financial well-being is determined by a variety of non-static personal and contextual factors.

Financial well-being is considered a key predictor of overall employee well-being (Netemeyer, Warmath, Fernandes & Lynch, 2018). According to Kim and Garman (2004), the financial concerns of employees spill over into their responsibilities at the workplace, negatively affecting their attitudes and behaviours. It is argued in this study that the experience of financial stress has the potential to directly impact on employee productivity, health and absenteeism. For example, Clark (2014) argues that financial stress significantly increases presenteeism and therefore directly impacts on productivity. In addition, employees that experience financial stress, will openly exhibit signs of anger, irritability and sleeping on the job (Clark, 2014) which could negatively influence interpersonal relationships at work. According to Kim and Garman (2004), employees that are financially stressed are more likely to have lower levels of pay satisfaction, spend work time handling financial matters, and be absent from work. Clark (2014) agrees and states that warning signs of financial stress include requests of pay advances, an increase in employees taking sick days, and using the time at work to run personal errands. Thus, financial stress could be an important variable in understanding lack of employee organisational commitment and absenteeism.

In order to gain a better understanding of the behaviour driving financial decision-making, and per implication financial well-being, the domain of behavioural finance is of particular interest. Behavioural finance seeks to provide explanations for the economic decisions made by individuals by combining conventional economics and finance with behavioural and cognitive psychological theories (Baker & Nofsinger, 2010). The growth of the behavioural finance field was fuelled by the inability of the traditional expected utility maximisation of rational investors to explain empirical patterns in the expenditure of money. Thus, behavioural finance aims to resolve these inconsistencies by providing explanations based on individual and collective human

behaviour. According to Lawson and Klontz (2017), behavioural finance is based on scientific attempts to comprehend human cognition, perception, and memory, and the manner in which they influence financial behaviours.

Several desirable financial practices, such as saving, budgeting, tracking expenses, maintaining an emergency fund and diversifying investments can be distinguished, when referring to financial well-being (O'Neill, Xiao, Sorhaindo & Garman, 2005; Vlaev & Elliott, 2014). For the purposes of this study, the discussion of one of these practices, i.e. saving behaviour, will be broadly defined as saving and investing money. Saving and investing can be distinguished based on the amount of risk involved, the possible returns, and the relevant time period. When saving money, i.e. putting money away in a safe place (such as a bank account), the risk is minimal, one earns interest on the money saved and the initial capital is guaranteed. In contrast, investments involve greater risk, but the potential for higher returns. When investing money, it is used to buy assets with a good probability of generating an acceptable rate of return. Investment examples include bonds, stocks, unit trusts and direct investment in property or other assets (The difference between saving and investments, [s.a.]).

In broad terms, saving behaviour can be defined as income minus consumption in a specific time period (Lee & Hanna, 2015). However, the purpose and meaning of saving behaviour could differ amongst individuals, as their need to accumulate consumable goods influences their behaviour. For example, Lee and Hanna (2015) argue that the accumulation of money for a particular reason reflects certain personal values and therefore, the decision to save may not necessarily be related to family prosperity or financial security. Thus, it is argued for the purposes of this study that it is critical to identify the antecedents of saving behaviour, in order to gain a better understanding of the complex nomological net of person-centred variables that could account for saving behaviour. Empirical insights into factors that account for saving behaviour could inform financial awareness training initiatives in organisations, and in the long-term increase financial well-being of employees, and thereby also overall employee well-being.

1.2 RESEARCH INITIATING QUESTION

The research initiating question guiding this study is: *"Why is there variance in the saving behaviour of employees working in organisations in South Africa?"* Therefore, the purpose of this study is to put forward a possible nomological network[1] of factors influencing saving behaviour as a means to better understand and conceptualise the psychological processes underlying saving behaviour amongst employees in South Africa.

1.3 RESEARCH OBJECTIVES

The research objectives include:

a) developing a structural model that depicts the dynamics of the variables that could possibly account for the psychological dynamics accounting for variance in saving behaviour, and
b) testing the fit the outer and inner model via Partial Least Squares modelling (PLS).

[1] The proposed saving behaviour structural model that contains the nomological network was developed through theorising and considering current empirical evidence of factors related to saving behaviour. It is acknowledged here that this is but one, and rather limited in scope, attempt to capture relevant factors in an explanatory model of this nature. It is further acknowledged that there is possibly multiple significant factors not included in this model, that could further increase our understanding of the saving behaviour construct.

CHAPTER 2: LITERATURE REVIEW

2.1 INTRODUCTION

The purpose of this study was to investigate the research question *"Why is there variance in the saving behaviour of employees in South Africa?* In the literature review the construct of saving behaviour will be conceptualised. Thereafter, the focus turns to variables that could possibly predict[2] saving behaviour. The literature review culminates in the development of a structural model[3] of possible predictors for saving behaviour amongst South African employees.

2.2 DEVELOPING A STRUCTURAL MODEL OF SAVING BEHAVIOUR

2.2.1 Defining saving behaviour

The definition of saving behaviour was originally clarified by Keynes (1936) as the excess of income after the consumption of consumer goods. Wärneryd (1999) considered saving as the result of a decision-making process to regularly set aside resources for a specific goal. Van Veldhoven and Groenland (1993) stated that defining saving behaviour is challenging and complex as the act of saving is embedded in a larger behavioural layer of individual financial management.

To consistently ensure that one's expenses do not exceed one's income lies at the heart of building personal wealth and achieving life goals such as a stress-free existence and a comfortable retirement (Dholakia, Tam, Yoon & Wong, 2016). Despite this seemingly straightforward prescription, relatively few employees in South Africa are regarded as being financially healthy[4] as their savings rate remains alarmingly low. Omarjee (2017) reported on the low savings levels of working South Africans and indicated that only 15% of these individuals allocate a portion of their income towards savings. Moreover, it is stated that the gross rate of savings for all South Africans is

[2] Although the word "predict" implies causality, it is acknowledged that the research design (i.e. cross-sectional design) and the accompanying data analysis technique (i.e. PLS) employed in this study cannot provide evidence of causality. True evidence of causality can only be established with a longitudinal design and data.

[3] The decisions as to which variables to include in the structural model was influenced by a literature review process. This process identified many possible variables. However, given the scope of this project, only a few of the most prominent variables identified through the literature review were included in the structural model tested in this study.

[4] It is acknowledged that overall financial health or well-being is most probably not only affected by saving behaviour. However, this study chose to focus on saving behaviour as it is a rather central component to financial well-being.

currently 3% (Omarjee, 2017). Additionally, the *South African Savings Institute* has reported that households are saving only 0.2% of their income (Mwandiambira, 2018). It could be argued South Africa's poor economic environment possibly plays a significant role in these statistics as inflation, interest rates and taxes have been rising sharply the last few years. Correspondingly, it has been argued that South Africans are struggling to maintain a culture of saving due to, amongst other, economic difficulties, bad financial decisions and a lack of discipline (Why South Africans struggle to save, [s.a.]).

The Financial Management Behaviour Scale (FMBS), developed by Dew and Xiao (2011), aims to determine the extent to which individuals engage in sound financial management behaviours. Dew and Xiao (2011) found empirical evidence suggesting that the FMBS is predictive of participants' actual levels of savings and debt. Moreover, their findings suggest that the FMBS is a reliable and valid measure of financial management behaviours (Dew & Xiao, 2011). This scale consists of four subscales (cash flow, credit, savings and investment, and insurance). The savings and investment subscale was utilised for the purposes of this study as it captures the essence of saving behaviour as conceptualised in this study, in terms of two key elements. That is, that saving can be defined as the excess of income after the consumption of consumer goods (Keynes, 1936), and that saving is the result of a decision-making process to regularly set aside resources for a specific goal (Wärneryd, 1999).

In addition, given the unfavourable economic climate most South Africans find themselves facing on a daily basis (Mwandiambira, 2018; Power, 2018), it would be rather naïve to disregard the possibility that some individuals may want to engage in saving behaviour, but simply do not have the capacity to do so, whilst others may have the capacity, but choose to not engage in these behaviours, for a myriad of reasons. Therefore, this research study takes the stance that when reference is made to whether, and to what extent individuals engage in saving behaviour, emphasis should be placed on the saving behaviour related to netto[5] income. In other words, when

[5] Some, but not all of the items in the saving behaviour scale utilized in the study, made direct reference to netto income. However, the other items indirectly tapped into saving behaviours that could only be engaged in with residual earnings.

engagement in saving behaviour is considered, the residual amount of earnings after deductions is taken into account.

In essence it is argued in this study that some individuals are more or less inclined to make sound and effective financial decisions. Moreover, some individuals are more or less susceptible to feelings of anxiety or frustration as a consequence of their financial behaviour. This behavioural heterogeneity poses a challenge to one-model-fits-all theories of economic behaviour and consequently the understanding of the role of individual differences in financial behaviour becomes increasingly important. Such differences cannot be explained solely by differences in income (Tam, Lee & Dholakia, 2011), and therefore it could be useful to gain insight into individual differences factors / predictors affecting saving behaviour.

2.2.2 Self-control

Strömbäck, Lind, Skagerlund, Västfjäll and Tinghög (2017) define self-control as the ability of the individual's future-self to control its current-self. According to Achtziger, Hubert, Kenning, Raab and Reisch (2015), self-control encompasses attempts to interrupt undesired behaviours and to alter or override one's dominant response tendencies. Baumeister (2002) agrees and argues that self-control is manifested in one's ability to resist temptations, overcome first impulses, maintaining self-discipline and break bad habits. Achtziger et al., (2015) have argued that the majority of social and personal problems related to financial behaviour (such as excessive personal debt, not achieving goals, inability to solve problems, not being able to value long-term rewards above short-term rewards etc.) can be attributed to the lack of individuals' self-control.

Strömbäck et al. (2017) explain that the lack of self-control is in line with the behavioural life-cycle (BLC) originally formulated by Shefrin and Thaler (1988). The BLC proposes that an individual's behaviour is influenced by a dual preference framework that exist within themselves. The first preference, the "planner", is defined as an individual whose thoughts are directed toward long-term planning, whereas the thoughts of the "doer" are concerned with the current situation (Shefrin & Thaler, 1988). The BLC further hypothesises that an individual's financial behaviour is determined by both the ability to control impulses and the extent to which one values money.

Gathergood (2012) found that individuals struggling with self-control in the financial domain are more likely to be faced with situations such as unforeseen expenses and credit withdrawals. Strömbäck et al. (2017) argue that individuals with good self-control are more likely to regularly save money, which means that they are better prepared to manage unforeseen expenses and more likely to have enough money for their retirement. Additionally, Choi, Laibson and Madrian (2011) found that individuals with low self-control are less likely to save enough money for retirement. Furthermore, individuals with self-control problems due to lack of planning, monitoring or commitment, have lower wealth accumulation. Thus, the ability to control impulses have been shown to be a key factor for long-term financial success, as it is evident that self-control plays a significant role in the saving behaviour of people (Strömbäck et al., 2017).

Achtziger et al. (2015) conceptualized self-control as a dispositional, trait-like construct that differs across individuals and that can be measured by a self-report questionnaire. The Brief Self-Control Scale (SCS), developed by Tangney, Baumeister and Boone (2004), measures an overall index of self-control. Studies investigating individual differences in self-control revealed that higher levels of self-control are linked to a broad range of positive outcomes. Amongst others, Tangney et al., (2004) found that goal achievement, emotion regulation, and interpersonal skills are strongly and positively influenced by one's self-control capacity. Moreover, Hofmann, Friese and Strack (2009) reported that impulse control is also supported by self-control capacity. In addition, a study by Strömbäck et al., (2017, p. 37) provided empirical evidence that individuals with good self-control are more likely to "save money from every pay-check, feel less anxious about financial matters, and feel more secure in their current and future financial situation."

Therefore, for the purposes of this study the following hypothesis regarding the effect of self-control on saving behaviour is proposed:

Hypothesis 1: Self-control has a positive linear relationship with saving behaviour.

2.2.3 Financial delay of gratification

Delay of gratification encompasses the ability to forgo an immediate pleasurable reward for a postponed benefit (Bruce et al., 2011). Hughes (2013, p.74) defines delay

of gratification as “a sensitivity to reward that is manifested in the willingness or ability to pass up enjoyment or something of value now with the aim of achieving something of greater enjoyment or value in the future”. Joshi and Fast (2013) argue that the willingness to delay gratification enables one to obtain greater long-term personal rewards. Therefore, the ability to delay gratification has been associated with the tendency of individuals to sacrifice short-term financial gains (Tice & Bratslavsky, 2000) in favour of long-term financial wealth, allowing them to experience a long-term, more rewarding, gratification. Correspondingly, Hoerger, Quirk and Weed (2011) identified delay of gratification as having a significant impact upon, amongst other public well-being factors, consumer debt.

Carlson et al. (2018, p. 1) consider delay of gratification as “relevant for many domains of functioning, including health (e.g., addiction, nutrition, exercise), finances (e.g., spending, saving, investing), relationships (e.g., marriage, parenting) and educational and career achievement (e.g., studying, working).” Carlson et al. (2018) argue that the underlying self-control processes that influences one’s ability to delay gratification have roots in early childhood. In Mischel and colleagues’ (1989) classic laboratory paradigm, the underlying self-control process that have roots in early childhood was corroborated with the “marshmallow test,” measuring the ability of preschool children to wait, when given the choice of having one small treat now or waiting for a larger treat later (Mischel et al., 1989). It is important to note that individual differences and delay behaviour significantly predicted a variety of developmental outcomes during adolescence and adulthood. These outcomes included individuals’ academic competence and levels of aptitude, self-regulation, social responsibility, effective coping with frustration and stress, and positive interpersonal relationships, especially with peers (Carlson et al., 2018). Moreover, Casey et al. (2011) reported remarkably consistent results regarding the cognitive control of individuals in their 40’s. They reported that high delayers had greater cognitive control, which suggests long-term stable individual differences in delay of gratification.

Hoerger et al. (2011, p.11) developed the Delaying Gratification Inventory (DGI), known as “the first theoretically-driven five-factor measure of individual differences in the tendency to delay gratification”. This survey consists of 5 domains and 35 items. The domains are categorised and involves the following: food, physical pleasures,

social interactions, money, and achievement. For the purposes of this study, emphasis was placed upon the money domain. According to Hoerger et al. (2011, p.12), the money domain relates to the following: “splurging, paying bills on time, and financial distress”. The ability to delay gratification has been associated with the tendency of individuals to sacrifice short-term financial gains in favour of long-term financial wealth (Tice & Bratslavsky, 2000).

Individuals who have the ability to delay gratification are regarded as frugal and likely to exhibit financial prudence (Hughes, 2013). On the contrary, individuals who are less able to delay gratification are likely to act imprudently and fail to consider the future consequences of their immediate financial actions or decisions. Therefore, it is argued that the lack of willingness or ability to forego an immediately rewarding outcome for an outcome at some future point in time, will directly influence the extent to which individuals are likely to engage in saving behaviour.

Therefore, for the purposes of this study the following hypothesis regarding the effect of financial delay of gratification on saving behaviour is proposed:

Hypothesis 2: Financial delay of gratification has a positive linear relationship with saving behaviour.

2.2.4 Self-control and financial delay of gratification

Baumeister (2002) argues that self-control is manifested in one’s ability to resist temptations, overcome first impulses and maintain self-discipline. As individuals with higher self-control are more able to control their thoughts and emotions, hold their temper and resist temptations, it could be argued that they should also have a better ability to delay gratification. That is, an individual who has the ability to control themselves will be more able to resist an impulse to take an immediately available reward, and instead wait to obtain a more-valued reward in the future. Duckworth, Tsukayama, and Kirby (2013) agree and found that self-control is the main psychological mechanism underlying delay of gratification. Mittal, Russell, Britner and Peake (2013) have argued that self-control involves sustaining behaviour towards long-term goals in the face of obstacles, expressed in behaviourally waiting for desired outcomes and resisting temptation. Additionally, the study by Hoerger et al. (2011)

provided empirical evidence that individuals who generally delay gratification to a great extent, also scored highly on other measures of, amongst others, self-control.

Therefore, for the purposes of this study the following hypothesis regarding the effect of self-control on financial delay of gratification is proposed:

Hypothesis 3: Self-control has a positive linear relationship with financial delay of gratification.

2.2.5 Financial literacy

Lusardi and Mitchell (2014) define financial literacy as the skills and knowledge to process economic information and make sound, informed financial decisions that is based on the basic knowledge of financial concepts. Additionally, Gale and Levine (2010) argue that financial literacy encompasses one's ability to make effective decisions regarding the management and use of money and wealth. These decisions include financial planning and wealth accumulation. Being financially literate is equally important for one's own sake as well as for the society in which one is embedded (Skagerlund, Lind, Strömbäck, Tinghög & Västfjäll, 2018). Danes and Haberman (2007) state that the process of literacy, in itself, is socially constructed as it focuses on learning interactions between two parties, where one party teaches and the other learns.

Financial knowledge (a concept closely related to financial literacy, and used interchangeably with financial literacy in this thesis) is defined as sufficient information regarding, amongst other, compound interest, inflation and time discounting (Hastings, Madrian & Skimmyhorn, 2012). Financial knowledge is regarded as a key contributor to personal financial management behaviours (Garman & Forgue, 2006; Lusardi & Mitchell, 2007). For example, Strömbäck et al., (2017) empirically showed that financial literacy do affect financial well-being. Moreover, according to Mien and Thao (2015), a strong relationship exists between financial knowledge and the likelihood of engaging in desirable financial practices such as saving, budgeting, tracking expenses, maintaining an emergency fund and diversifying investments. Mien and Thao (2015), investigated factors affecting personal financial management behaviours amongst 307 youth in Vietnam. This was done by examining the relationships amongst financial attitude, financial knowledge, locus of control and financial management

behaviours. Structural equation modelling was used to test the relationships amongst these variables contained in the structural model. The results of this study found empirical support that financial knowledge plays a role in explaining financial management behaviours (Mien & Thao, 2015).

Van Rooij, Lusardi and Alessie (2012) developed a financial knowledge instrument which determines the extent to which an individual has the basic knowledge of key financial concepts and the ability to successfully apply numeracy skills in different financial situations. The authors note that it is nearly impossible to capture every single aspect of an individual's financial literacy or knowledge, and therefore these items were designed to provide sufficient and meaningful information regarding an individual's basic financial knowledge, general willingness to absorb financial information, and the ability to apply knowledge to particular problems. A high score on financial literacy / knowledge therefore indicates that a person has a high level of financial knowledge, but does not necessarily suggest that they are financial experts.

Given the previous research evidence for the positive effect of financial literacy / knowledge on financial management behaviours, the following hypothesis regarding the effect of financial literacy on saving behaviour is proposed:

Hypothesis 4: Financial literacy has a positive linear relationship with saving behaviour.

Previously it was argued that the extent to which an individual has the ability to forgo an immediate pleasurable reward for a postponed benefit (i.e. delay of gratification) will influence their tendency to sacrifice short-term financial gains in favour of long-term financial wealth, and thereby making it more likely that they will engage in saving behaviour. In this study it is argued that this effect may be moderated by basic knowledge of key financial concepts and the ability to successfully apply numeracy skills in different financial situations (i.e. financial literacy). Evidence exist suggesting that the greater one's financial knowledge, the higher the probability of engaging in sound financial management practices (Mien & Thao, 2015), and thus engaging in saving behaviour (Parrotta & Johnson, 1998). However, the notion of financial literacy not only being a direct predictor of saving behaviour, but also a moderator in the context of explaining financial behaviour, has been previously suggested by some researchers (e.g. Adomako, Danso & Ofori, 2015; Farías, 2019).

Therefore, for the purposes of this study it was argued that financial literacy may affect the strength of the relationship between financial delay of gratification and saving behaviour. That is, it was argued that two individuals with similar levels of financial delay of gratification could possibly report different levels of saving behaviour, based on their financial literacy levels. It is proposed that this effect may be due to the fact that better financial literacy may influence the self-regulation mechanism inherent to financial delay of gratification, and therefore affecting the relationship of financial delay of gratification on saving behaviour.

Consequently, it is argued that financial literacy will moderate the relationship between financial delay of gratification and saving behaviour.

Hypothesis 5: Financial Literacy moderates[6] the relationship between financial delay of gratification and saving behaviour.

2.2.6 Gender

Extensive research that have empirically examined gender as a variable in explaining differences in financial behaviour of individuals, exists. For example, Van Rooij, Lusardi, Bucher-Koenen and Alessie (2017), reported that women generally have lower levels of financial literacy, compared to men. Correspondingly, Chen and Volpe (2002) also reported that women generally have less knowledge regarding financial management. Moreover, women seem to have limited knowledge regarding concepts relevant for day-to-day financial decisions (Chen & Volpe, 2002). Individuals with lower financial knowledge are found to be less likely to engage in financial behaviours that will benefit them in the long-term, such as to plan for retirement (Lusardi & Mitchell, 2007). Moreover, these individuals are less likely to invest in potentially high-yielding assets such as stocks or bonds (Van Rooij et al., 2017). Alcon (1999) found that the lack of financial knowledge is perceived by women as an obstacle to their ability to successfully engage in financial planning.

Researchers refer to this as the gender gap in financial literacy and attribute it to differences in risk attitudes, self-confidence, or division of labour. According to Van Rooij et al. (2017), such gender gaps are extraordinarily similar across countries.

[6] In the structural model both financial delay of gratification and financial literacy are both also predicted to have a main effect on saving behaviour, allowing the testing of this moderation effect within the boundaries of the structural model as currently conceptualized.

Furthermore, research evidence suggests that the gender gap in financial literacy continues to persist regardless of marital status, education, income, and other socio-economic characteristics (Van Rooij et., 2017). Given these research findings, the following hypothesis is proposed:

Hypothesis 6: Gender has a negative linear relationship with saving behaviour[7].

Additionally, based on the empirical evidence and line of reasoning posited above, it was argued that gender also moderates the relationship between financial literacy and saving behaviour. More specifically, given that financially literate individuals both know and understand financial related matters and concepts which should translate to better financial decision making and ultimately better saving behaviour, it is argued that this effect will be influenced by gender. That is, the relationship between men's financial knowledge / literacy and therefore increased likelihood of engaging in saving behaviour will be different as to their female counterparts, for which the relationship will be weaker (Mien & Thao, 2015; Van Rooij et., 2017). That is, it is argued here that similar levels of financial literacy will result in different levels of saving behaviour, based on gender.

Hypothesis 7: Gender moderates the relationship between financial literacy and saving behaviour.

2.2.7 Self-efficacy

The *Social Cognitive Theory* is rooted in the perspective that individuals function as purposive, anticipative, and self-evaluating beings that proactively regulate their own motivation and behaviours (Bandura, 2001). The factors that serve as motivators and guides to certain behaviours share a commonality: they are rooted in the core belief that one has the power to produce desired results - personal efficacy. Correspondingly, Bandura and Locke (2003) argue that no mechanism of human agency is as central or pervasive than the beliefs of personal efficacy. The presence of personal efficacy enables one to persevere or act in the face of difficulties or challenges.

[7] The coding of gender in this study was 1 = male and 2 = female. Therefore, it was argued that gender will affect saving behaviour, in that being female may be related to less saving behaviour.

Bandura (1977) is of the opinion that the confidence in one's abilities governs the amount of time and effort that is used to overcome challenges or difficulties, associated with the particular task (Bandura, 1977). Thus, Wood and Bandura (1989) defined self-efficacy as "beliefs in one's capabilities to mobilize the motivation, cognitive resources, and courses of action needed to meet given situational demands" (Wood & Bandura, 1989, p. 408). Additionally, self-efficacy can be defined as a measure of an individual's perception of his or her ability to perform a particular task or behaviour (Norman & Hoyle, 2004).

Furthermore, self-efficacy beliefs affect the extent to which individuals motivate themselves, the quality of their emotional well-being and their proneness to be vulnerable to stress and depression (Tahmassian & Moghadam, 2011). Moreover, self-efficacy influences whether individuals think in self-enhancing or self-debilitating ways. Thus, it is evident that the impact of self-efficacy on human functioning is significant. As Bandura and Locke (2003, p. 97) state: "one cannot execute well-established skills while beset with self-doubt. In applying what one knows, a strong belief in one's performance efficacy is essential to mobilize and sustain the effort necessary to succeed". Rickwood, Johnson, Worthington and White (2017) are of the opinion that when one applies knowledge to a certain situation, a strong belief in one's performance efficacy is critical to not only mobilize, but also sustain the effort necessary to be successful. Furthermore, self-efficacy is known to be domain specific. Perceptions of self-efficacy are not only reflective of a global personality trait. Self-efficacy can vary across different behavioural domains such as productivity, health, family relationships, relationships with friends, finances, safety, and living arrangements (McAvay, Seeman & Rodin, 1996). For the purposes of this study, financial self-efficacy will be investigated and discussed.

If the concept of self-efficacy is applied to the context of personal finance management, it could be argued that an individual with a greater sense of self-assuredness in his or her capacity to manage finances (i.e. higher level of financial self-efficacy), will be more likely to interpret financial difficulties or challenges as "challenges to be mastered, rather than as threats to be avoided" (Bandura, 1994, p. 71). Consequently, self-efficacy may increase the probability of achieving more favourable personal financial outcomes.

Financial self-efficacy has been defined as “the ability to instigate the actual confidence that individual financial consumers require to use the formal financial services available to them to make their lives better” (Mindra, Moya, Zuze & Kodongo, 2017, p.339). According to Mindra et al. (2017), one’s financial behaviours will be notably influenced by the belief in one’s abilities to decide whether or not to engage in a specific financial task or activity, such as saving or investing money. A number of researchers have explored the relationship between financial self-efficacy and higher levels of financial well-being. For example, Danes and Haberman (2007) measured two sub-dimensions of financial self-efficacy namely attitude (belief that managing money affects their future) and confidence (in making financial decisions). The results revealed empirical evidence in support of the notion that financial self-efficacy significantly influences financial behaviour (i.e. manner in which money was acquired, saved and spent).

A study by Farrell et al., (2016) found a statistically significant relationship between financial self-efficacy and the variety and number of financial products (investment mortgage, savings account, credit card, loan, private health insurance, life insurance) held by an individual. A savings account, private health insurance and life insurance are financial products described as being indicative of “forward thinking and likelihood of engaging in responsible financial behaviour” (Farrell et al., 2016, p.86). In contrast, individuals with lower levels of financial self-efficacy were identified as those who are more likely to have a credit card or a loan. These products relate to debt and is considered to indicate weak financial planning capacity and potentially poorer financial prospects. Therefore, it is argued that financial self-efficacy is considered as possibly having a critical bearing on financial outcomes for the individual.

Chen, Gully and Eden (2001) reported that the general self-efficacy (GSE) scale, developed by Schwarzer and Jerusalem (1995), can substantially contribute to organisational theory, research, and practice. However, research on this scale indicated several limitations regarding its content validity and multidimensionality. Due to these results, Chen et al. (2001) developed a new GSE (NGSE) scale that measures self-efficacy for a variety of tasks. Further to this, Lown (2011) developed an instrument based on the 10-Item General Self-Efficacy Scale (GSES) (Schwarzer & Jerusalem, 1995), namely the financial self-efficacy scale (FSES). The items of this

instrument differ from the GSES in the sense that it incorporates specific references to financial management. These items aim to address the extent to which respondents not only believe in their ability to manage certain financial difficulties, but also measure their resilience in terms of effectively dealing with financial setbacks, through their belief of being able to do so. This instrument was utilised in this study.

Based on the arguments presented in this section, the following hypothesis regarding the effect of financial self-efficacy on saving behaviour is proposed:

Hypothesis 8: Financial self-efficacy has a positive linear relationship with saving behaviour.

2.2.8 Financial literacy and financial self-efficacy

According to Farrell, Fry and Risse (2016, p.86), an individual need to possess three attributes to have a positive sense of control over his or her financial future. These include, (1) “the motivation to seek out financial information, (2) the ability to control one’s emotions that can affect decision-making, and (3) assurance in one’s decision-making and especially financial management capabilities”. Farrell et al., (2016) have argued that these attributes will lead to an individual’s impetus and capacity to engage in not only competent, but also rational action, thus increasing the probability of achieving more favourable financial outcomes (Farrell et al., 2016).

The *Social Learning Theory* aims to analyse behaviour in terms of reciprocal determinism (Bandura, 1978). The fact that events produce effects probabilistically can be attributed to the complexity of interacting factors. Bandura (1978) is of the opinion that the majority of external influences affect behaviour through, amongst other, cognitive processes. Cognitive factors play a critical role in determining the extent to, and manner in which, external events will be observed, perceived, what valence and efficacy they have, how information will be organised, and so forth. Additionally, behaviours are influenced by the environment. It should be noted that individuals play a role in creating the social milieu and other circumstances they face daily (i.e. their environment), by the manner in which they behave. Therefore, behaviours can be attributed to a continuous reciprocal interaction between personal factors (cognition), the environment (access to information) and emotions.

Subsequently, it is argued that when levels of financial literacy are increased (e.g. through training on financial concepts, being mentored on good financial practices), the possibility exists that an increase in confidence in the ability to make sound financial decisions (i.e. higher financial self-efficacy), will occur. Therefore, by applying the theoretical logical underpinning reciprocal determinism, it could be argued that the extent to which an individual consult more sources and gains more financially related knowledge (i.e. behaviour), will positively and directly influence the extent to which such an individual experiences positive emotions (cognitions and emotions) in terms of their ability to adequately deal with financial issues. Applying reciprocal determinism, this (i.e. the positive emotions related to financial related issues) should further increase the likelihood that they will continue pursuing more financial literacy (i.e. more positive behaviour), which could then further increase their financial self-efficacy, resulting in a positive gain spiral[8]. Hence, it is evident that it could be argued that financial literacy will influence financial self-efficacy in the sense that an increase in knowledge will positively influence an individual's confidence in their ability to make sound decisions based on the attained knowledge. Therefore, the following hypothesis was developed.

Hypothesis 9: Financial literacy has a positive linear relationship with financial self-efficacy.

2.3 SUMMARY

In conclusion, the hypotheses listed in this chapter is contained in the structural model that was developed for the purposes of this study (Figure 2.1). The *Saving Behaviour Structural Model*, depicted in Figure 2.1, therefore depicts the dynamics of the variables that could possibly account for the psychological dynamics accounting for variance in saving behaviour.

[8] This reciprocal relationship between financial literacy and financial self-efficacy could unfortunately not be tested in this model. Initially, a reciprocal relationship was proposed. However, the SEM analysis technique employed in this study (i.e. PLS) does not allow for reciprocal relationships to be modeled. Therefore, only one direction of this relationship could be tested, i.e. the effect of financial literacy on self-efficacy.

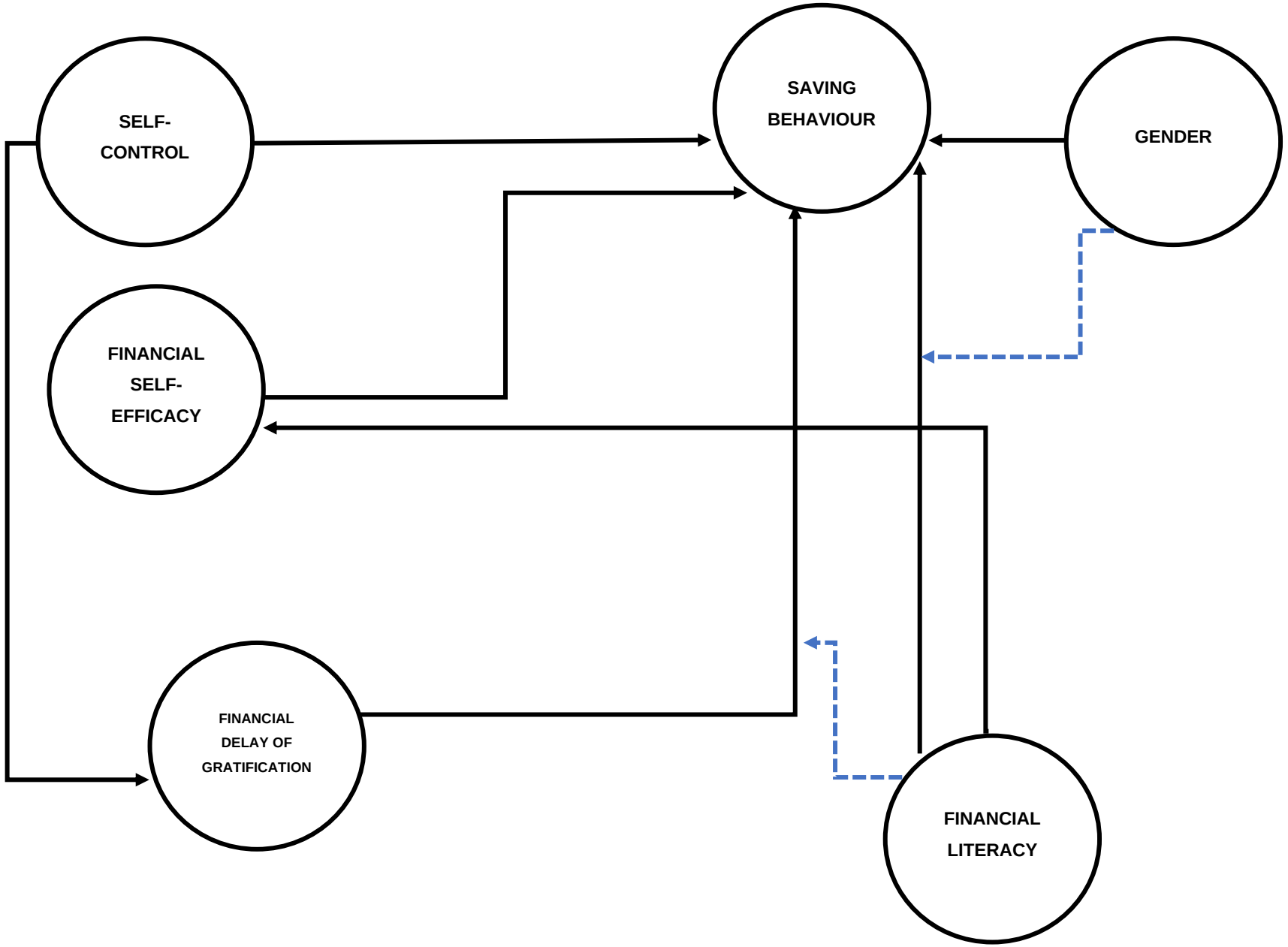

Figure 2.1. The proposed saving behaviour structural model.

CHAPTER 3: RESEARCH METHODOLOGY

3.1 INTRODUCTION

The purpose of this research study was to develop a structural model that depicts the dynamics of a selected set of variables that could possibly account for variance in saving behaviour. In an attempt to achieve the research objectives, formulated in chapter one, a systematic, reasoned argument was presented in the literature review which culminated in generation of theoretical research hypotheses. This argument explicated the saving behaviour structural model (presented in Figure 2.1).

To empirically test the saving behaviour structural model, a thorough, detailed and comprehensive description of the research methodology that was used to do so, is needed. Therefore, the purpose of this chapter is to provide an overview of the research hypotheses, research design, and sampling used, as well as to present an evaluation of the ethical risks involved in this study. Furthermore, the measurement instruments employed in this study, as well as their psychometric properties, will be presented.

3.2 RESEARCH AIM, QUESTION AND OBJECTIVES

The aim of this research study was to determine whether certain individual differences variables can be used to account for variance in saving behaviour amongst South African employees. Subsequently, the research initiating question for this study was: *"Why is there variance in the saving behaviour of employees working in organisations in South Africa?"* This question was addressed through the attempt to achieve the following research objectives:

a) developing a structural model that depicts the dynamics of the variables that can possibly account for the psychological dynamics accounting for variance in saving behaviour, and
b) test the fit the outer and inner model via Partial Least Squares modelling (PLS).

3.3 RESEARCH HYPOTHESES

The proposed saving behaviour structural model consists of several latent variables and causal paths are proposed between these variables. The following nine research hypotheses explicating the structural model (Figure 2.1) were proposed:

Hypothesis 1[9]: Self-control has a positive linear relationship with saving behaviour.

Hypothesis 2: Financial delay of gratification has a positive linear relationship with saving behaviour.

Hypothesis 3: Self-control has a positive linear relationship with financial delay of gratification.

Hypothesis 4: Financial literacy has a positive linear relationship with saving behaviour.

Hypothesis 5: Financial literacy moderates the relationship between financial delay of gratification and saving behaviour.

Hypothesis 6: Gender[10] has a negative linear relationship with saving behaviour.

Hypothesis 7: Gender moderates the relationship between financial literacy and saving behaviour.

Hypothesis 8: Financial self-efficacy has a positive linear relationship with saving behaviour.

Hypothesis 9: Financial literacy has a positive linear relationship with financial self-efficacy.

3.4 RESEARCH DESIGN

To empirically evaluate the proposed structural model, a request for a strategy that provides unambiguous empirical evidence, existed. This strategy can be defined as the plan on how one intends to empirically test the overarching substantive research hypothesis (Mouton & Babbie, 2013). Consequently, empirical support must be obtained through a research design that serves to explain the validity of the overarching and path-specific substantive hypotheses (Theron, 2017). Kerlinger (1973, p. 300) defined the research design as the "plan, structure, and strategy of

[9] Although not stated explicitly in the hypotheses, it should be noted that the hypotheses is presented as part of a bigger structural model. The hypotheses could also have reflected this by explicitly stating, "In the *proposed structural model saving behaviour* it is hypothesized that *self-control* has a positive linear relationship with *saving behaviour.*

[10] Gender was coded as 1 = Male, and 2 = Female.

investigation conceived so as to obtain answers to research questions and to control variance".

For purposes of this research, an *ex post facto* correlation design was used to test the overarching substantive research hypothesis. Kerlinger (1973) reported disadvantages of utilising an *ex post facto* correlation design. Amongst other disadvantages, due to the absence of random assignment, generalisation of findings is limited. Furthermore, this design does not allow for the controlling of peripheral variables that could possibly cause variance (Kerlinger, 1973). However, this design was regarded as appropriate for this study as the exogenous latent variables in the structural model could not be experimentally manipulated, hence the researcher does not have direct control over them (Theron, 2017). Kerlinger (1973, p. 379) defined *ex post facto* research as follows:

> *"ex post facto research is systematic empirical inquiry in which the scientist does not have direct control of independent variables because their manifestations have already occurred or because they are inherently not manipulable. Inferences about relations among variables are made, without direct intervention, from concomitant variation of independent and dependent variables."*

3.5 SAMPLE AND SAMPLE DESIGN

The aim of this research study is to determine whether certain individual differences variables can be used to account for variance in saving behaviour amongst South African employees. The research question of this study was formulated with reference to a specific population, namely South African employees. Due to the nature and magnitude of the target population, it was not practically feasible to obtain measurements from every South African employee (Mouton & Babbie, 2013). In this study, non-probability convenience sampling was utilised. This sampling procedure entails that the accessibility and selection of research participants is both convenient and easy (Mouton & Babbie, 2013).

Employees, from various organisations, who were willing to take part were invited to participate in the study. As the selection of the participants depended on their availability and willingness to participate, non-probability sampling was used (Gravetter & Forzano, 2009). According to Collins and Onwuegbuzie (2007), this technique offers a valuable sampling design for both qualitative and quantitative

studies. However, the researcher should take necessary caution before generalising the findings to the larger population of employees in South Africa as non-probability sampling does not allow the researcher any control over the representativeness of the sample (Babbie, 2013; Gravetter & Forzano, 2009).

Bagozzi and Yi (2012) are of the opinion that an appropriate sample size for SEM to be meaningful, should not be below n=100 and preferably above n=200. Correspondingly, Hair, Black, Babin, Anderson and Tatham (2006) argue that a sufficiently large sample is of critical importance to produce reliable estimates. However, they argue that a sample size exceeding 400, will pose a definite risk in terms of the sensitivity and susceptibility to differences in SEM, as this can result in poor goodness-of-fit measures (Hair et al., 2006). Consequently, for the purpose of this study, it was decided that a sample size of at least 200 participants should be utilised to test the proposed saving behaviour structural model.

3.5.1 Sample Characteristics

The sample consisted of employees, from various organisations, within South Africa. A total of n=199 employees completed the composite questionnaire. The demographic information of the sample is summarised in Table 3.1. In this sample, almost 50% of participants were between the age of 20 and 30 (Table 3.3). When considering marital status and number of dependents, 42.7% indicated that they are single and 58.8% indicated that they do not have any dependants. Almost 50% of the sample indicated approximate levels of income, ranging from R151 728 to R631 120[11] per annum (see Table 3.2). According to the Quarterly Labour Force Survey, conducted by StatsSA (Quarterly Labour Force Survey, [s.a.]), the average income of an employed South African equates to R172 620.00 per year. The average annual income reported in the current research study, therefore yet again proves that the data collected is not representative of the South African population. Moreover, 58.3% of the respondents indicated that they were in possession of a postgraduate degree (i.e. honours, masters or doctorate), whereas 15.5% of respondents did not have any formal tertiary

[11] The income data was gathered to provide more rounded description of the composition of the sample, based on the demographics thereof. It is acknowledged that income could potentially be a significant predictor in saving behaviour, which may have required that it be included as a control variable in the structural model analysis. However, PLS does not allow for the inclusion of control variables when a structural model is being tested. Therefore, income was not included in the analysis.

education. Slightly more than 50% of respondents (i.e. 50.7%) indicated that they work within the education or finance industry.

Table 3.1
Sample Demographics (Age, Gender, Number of Dependents, Marital Status, Approximate Level of Income)

Demographics	Frequency	Percentage
Gender		
Male	90	45.20
Female	109	54.80
Total	199	100.00
Age		
20-30	96	48.24
31-40	33	16.58
41-50	28	14.08
51-60	33	16.58
61-70	9	4.52
Total	199	100.00
Marital status		
Single	85	42.72
Married	89	44.73
Divorced	5	2.51
Separated	1	0.50
Widowed	2	1.00
Living together	17	8.54
Total	199	100.00
Number of dependants		
0	117	58.80
1	38	19.10
2	27	13.60
3	11	5.50
4	5	2.50
More than 4	1	0.50
Total	199	100.00
Approximate annual gross income before taxes		
R0-R54 344	15	7.50
R54 345-R151 727	28	14.10
R151 728-R363 930	55	27.60
R363 931-R631 120	42	21.10
R631 121-R863 906	23	11.60
R863 907-R1 329 844	28	14.10
R1 329 845+	8	4.00
Total	199	100.00
Highest level of education		
Doctorate	47	23.61
Masters degree	28	14.10
Honours degree/post graduate	41	20.60
Bachelors degree/advanced diploma	52	26.10
Diploma/advanced certificate	14	7.00
Grade 12	17	8.50
Total	199	100.00

Industry		
Agriculture, forestry and fishing	17	8.54
Education	58	29.15
Construction	5	2.51
Wholesale & retail	7	3.52
Tourism	2	1.00
Finance, real estate, business services	43	21.60
Administration	7	3.52
Medical	11	5.53
Engineering	16	8.03
Other	33	16.60
Total	199	100.00

3.6 DATA COLLECTION

An application for ethical clearance for the research study was submitted to the Industrial Psychology Department Ethics Screening Committee (DESC). Given that this was a low risk study (e.g. anonymity), the DESC reviewed the application and provided initial clearance, where after it was sent through to the Research Ethics Committee Human Research (Humanities) of Stellenbosch University. The REC audited the DESC report and provided formal clearance (ethics letter attached in Appendix A).

Once ethical clearance was received, research participants were approached through a variety of communication channels. Firstly, the researcher approached and invited individuals within her personal network through online platforms such as *Facebook* and *LinkedIn* to participate in the study by posting a link to complete the survey on these platforms. The researcher sent 451 e-mail invitations to respondents within her personal network (this included *Facebook* and *LinkedIn*). A total of 131 responses were obtained (which reflects a response rate of 29.04%). Secondly, after Institutional permission was granted by the Division of Institutional Research and Planning at the participating university, an organisationally mandated individual at the university uploaded the e-mail addresses of all the potential participants onto the online survey platform utilised for this project. The researcher distributed the invitation to complete the questionnaires electronically (see Appendix B) through this online platform. This process encompassed an e-mail invitation to 1335 academic staff members of the participating university. From these 1335 invitations, 68 respondents participated (which reflects a response rate of 5.09%). Each participant was required to

electronically sign an informed consent form which included a range of considerations as indicated below.

3.7 ETHICAL CONSIDERATIONS DURING DATA COLLECTION

Each research participant of this study had the right to voluntarily decide whether or not to participate in the study. According to Horn, Graham, Prozesky and Theron (2015, p. 12) all potential research participants need to be informed of the following in order to make a decision regarding his or her participation:

- The objective and purpose of the research;
- What participation in the research involves;
- How research results will be disseminated and used;
- Who the researchers are;
- Where they can make further enquiries about the research;
- What their rights as participants are;
- Participants must be competent to give consent, and
- Consent must be given voluntarily.

This was a relatively risk-free study. The only potential discomforts the research participants may have been exposed to were, (1) the possible discomfort when reporting on their financial behaviour and (2) the participants' time to complete the questionnaire. The data collected was anonymous and treated as confidential. Research participants did not disclose their names and/or surnames on the questionnaire. Furthermore, confidentiality was maintained by restricting access to the data to the researchers by storing the data on a password-protected computer.

3.8 DATA ANALYSIS

The research design and hypotheses had to be considered when the appropriate data analysis technique was selected (Blaikie, 2003). The following sections will explicate the data analysis techniques that were utilised in this research study. Item analysis and confirmatory factor analysis (CFA) were utilised to analyse the data obtained on the selected measurement instruments with the aim of validating their psychometric properties on the sample utilised in this study. Thereafter, the saving behaviour inner and outer model were tested using the Partial Least Square (PLS) approach.

3.8.1 Missing values

Missing values often arise due to a variety of causes which may include non-responsiveness, monitoring errors, communication failures or inappropriate use of measurement instruments (Zahin, Ahmed & Alam, 2018). It is of utmost importance that effective techniques to impute these missing values are employed before data is analysed (Zahin et al., 2018). The consideration of techniques to be used is dependent on a few factors, such as the number of missing values and the nature of the data.

According to Allison (2002), a variety of techniques exist to treat missing values. These include: listwise deletion, pair-wise deletion, imputation by matching, multiple imputations and full information maximum likelihood imputation. A conclusion regarding the most suitable method to apply in a study is usually made based on the nature and extent of the missing values. However, in this research study, there were no missing values. The online questionnaire was designed in such a manner that it required the research participants to answer all questions[12]. Therefore, all questions in each section were answered which resulted in zero missing values.

3.8.2 Validation of measurement instruments

3.8.2.1 Item analysis

Item analysis was used in the attempt to achieve the ideal that all variance in the X/Y indicator variables are only due to variance in the latent variables ξ /η (Theron, 2017). This was done by detecting unreliable and invalid items and subsequently removing these poor items. Each latent variable, and therefore the individual's standing on each respective variable, in the proposed structural model was measured by a specific measurement instrument containing various items. The purpose of the measurement instruments was to infer the individual's level of the psychological trait, mostly through the creation of a composite score, which reflects their behaviour regarding the underlying construct being measured. The item responses therefore transform the behaviour that underlies the construct and makes it observable.

According to Penfield (2013), the quality of the measurement scores is dictated by the psychometric properties of the measurement instruments, such as the validity and

[12] Participants were still allowed to exit the survey at any point by simply closing the browser window. This was communicated in the online informed consent form. Such incomplete responses were excluded from the dataset when the analyses were conducted.

reliability. Good items will elicit good-quality responses whereas bad items will elicit bad-quality responses (Penfield, 2013). Item analysis was used to identify and eliminate items that are not making an acceptable contribution to the quality of the generated scores, and therefore not contributing to an internally consistent description of the latent dimensions comprising the relevant construct. Moreover, item analysis was also utilised to determine which items should be flagged as problematic (i.e. poor items not contributing to internal consistency of the respective scale or sub-scale) and consequently considered for either revision (in future use of the instrument) or deletion (from the dataset, for the purposes of this study), based on the psychometric evidence obtained. Typical measurement theory item statistics that were used to judge the quality of items included the item-total correlation, squared multiple correlation, the change in subscale reliability if the item were to be deleted, and inter-item correlations.

3.8.2.2 Factor analysis

According to Williams, Brown and Onsman (2010) two classes of factor analysis exists, namely Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA). EFA is exploratory in nature as it “allows the researcher to explore the main dimensions to generate a theory, or model from a relatively large set of latent constructs often represented by a set of items” (Williams et al., 2010, p.3). On the contrary, CFA, a form of structural equation modelling is utilised to test a proposed theory. The main difference lies within the fact that CFA tests assumptions and expectations based on *a priori* theory regarding the number of factors, and which factor theories or models best fit the data.

3.8.2.2.1 Exploratory factor analysis

According to Osborne (2015), EFA is a statistical tool used to explore the psychometric properties of an instrument (Osborne, 2015). EFA examines the pairwise relationships between individual variables and then condense them into highly correlated groups that measure a single underlying construct (Osborne, 2015). To allow the unique variance and error variance to remain in the model, this examination will only include the shared variance from the model each time a factor is created. In this study, EFA would only be utilised to evaluate the factor structures of the specific measurement

instruments when the results of the Confirmatory Factor Analysis (CFA) indicated possible areas of concern.[13]

3.8.2.2.2 Confirmatory factor analysis

According to Williams, Brown and Onsman (2010), CFA is a form of structural equation modelling that "allows the researcher to test a proposed theory, which has certain assumptions and expectations based on *a priori* theory regarding the number of factors, and which factor theories or models fits the best" (Williams et al., 2010, p.3). CFA is used to evaluate the quality of measurement instruments, in terms of the obtained data, to test how well the measured variables, represent a smaller number of constructs (Hair et al., 2006). Prior to evaluating the fit of the comprehensive structural model in this study (i.e. the inner model, conducted with a Partial Least Squares analysis), the measurement model fit of each measurement instrument, as well as the full measurement model representing the structural model (i.e. the outer model in the PLS results; PLS), were evaluated. The series of CFA's on the measurement instruments were conducted with the aim of assessing the success with which the latent variables, of the saving behaviour structural model, have been operationalised (De Goede & Theron, 2010). LISREL 8.8 was utilised to fit the series of CFA's to the data.

If the measurement model (i.e. of each individual measurement instrument) reflects the design intention, and the constitutive definition of the latent variable(s) at least shows close fit (i.e. if the close fit null hypothesis was not rejected), operationalisation would have been regarded as successful. Moreover, operationalisation will also be regarded as successful if the (completely standardised) factor loadings (lambda estimates) were statistically significant ($p<.05$) and large (Theron, 2017). The critical cut-off value for factor loadings will be considered satisfactory when $\lambda ij > .71$ in the completely standardised solution. Moreover, this critical cut-off value was also used to interpret the factor loadings of individual items in the measurement model (i.e. the outer model results in PLS).

[13] In this research study, the results of the CFA analyses of all the measurement instruments were good and therefore did not indicate any possible areas of concern pertaining to the validity of any of the instruments. No EFA was conducted.

3.8.2.2.2.1 Goodness-of-fit indices

The aim of utilising Goodness-of-fit indices is to provide a numerical summary of the variances and covariances accounted for by the respective model (Diamantopoulos & Siguaw, 2000; Tabachnick & Fidell, 2007). The fit of a model can be evaluated by a variety of goodness-of-fit indices. Therefore, to determine the validity of the measurement models in this research study, a variety of goodness-of-fit statistics were utilised. These include the Satorra- Bentler chi-square (S-Bχ2), standardised root mean square residual (SRMR), root mean square error of approximation (RMSEA), non-normed fit index (NNFI), comparative fit index (CFI) and the P-Value for Test of Close Fit.

Hair et al., (2006) suggests appropriate cut-off values for the above-mentioned goodness-of-fit indices. These cut-off values are influenced by certain model characteristics (examples include the number of observed variables and sample size). The following cut-off values pertaining to the different fit indices were used to evaluate model fit (as indicated in Table 3.3 below) were applicable, as the sample size was smaller than 250 (n = 199). These cut-off values will be referred to throughout this chapter.

Table 3.2
Suggested cut-off values of fit indices demonstrating Goodness-of-Fit given differential model complexity

	N < 250		
Goodness-of-fit indices	m ≤ 12	12 < m < 30	m ≥ 30
CFI/NNFI	> 0.97	> 0.95	> 0.92
SRMR	Could be bias, use other indices	≤ 0.08	< 0.09
RMSEA	< 0.08	< 0.08	< 0.08
Models	SBS FSES FDOGS	SCS	

Note. m = number of observed variables; N = number of observations per group when applying CFA to multiple groups at the same time; CFI = comparative fit index (CFI); NNFI = non-normed fit index; SBS = Saving Behaviour Scale; FSES = Financial self-efficacy scale; FDOGS = Financial delay of gratification scale; SCS = Self-control scale; Models = models in this study that comply with the different criterion. Adapted from *Multivariate data analysis* (p. 650), by J. F. Hair, W. C. Black, B. J. Babin, R. E. Anderson and R. L. Tatham, 2006, New Jersey: Prentice Hall. Copyright 2006 by Pearson Education Limited.

a) Satorra – Bentler scaled chi square

Satorra and Bentler developed the Satorra-Bentler scaled chi-square (S-$B_{\chi 2}$) with the aim of refining the chi-square approximation of goodness-of-fit test statistics in "small samples, large models and data which is not normally distributed" (Satorra & Bentler, 2001, p.507). This statistic (S-$B_{\chi 2}$) is used to provide an improved estimate of the fit of a model when:

1. robust estimation techniques are utilised; or
2. data have departed significantly from multivariate normality.

b) Standardised root mean residual

The Standardised root mean residual (SRMR) is defined as the "square root of the difference between the residuals of the sample covariance matrix and the hypothesised covariance model" (Hooper, Coughlan & Mullen, 2008, p.54). Values for the SRMR range from zero to one. Obtaining values less than 0.05 will be indicative of good model fit whereas values as high as 0.08 are deemed as acceptable (Diamantopoulos & Siguaw, 2000). The SRMR is regarded as an absolute measure of fit (Hooper et al., 2008) and therefore SRMR = 0 will indicate a perfect model fit. The higher the SRMS value, the poorer the fit. As discussed above, the sample size and the number of observed variables will influence the relevant cut-off values. As indicated in Table 3.2, for a scale with more than 12 and less than 30 latent variables, a SRMR value of less than 0.08, represents good fit. Additionally, for a scale with more than 30 latent variables, a SRMR value of less than 0.09 represents good fit (Hair et al., 2006).

c) The root mean square error of approximation

The RMSEA measures the extent to which the model fits the sample of the study as well as the wider population (Byrne, 1998). Diamantopoulos and Siguaw (2000, p.85) regard the RMSEA as, "one of the most informative fit indices due to its sensitivity to the number of estimated parameters in the model". As discussed above, this study utilised the cut-off values suggested by Hair et al. (2006) and therefore RMSEA values falling below the value of 0.08 was indicative of acceptable fit, whereas a value of 0.05 or less reflected very good fit.

d) Comparative fit index

The Comparative Fit Index (CFI) assumes that “all latent variables are uncorrelated and compares the sample covariance matrix with this null model” (Hooper et al., 2008, p.55). The values for this index range between zero and one, the closer to one, the better the fit. As presented in Table 3.2, CFI cut-off values which indicates good model fit varies according to sample size and number of indicator variables (Hair et al., 2006).

e) Non-normed fit index

The Non-normed Fit Index (NNFI) assess “the extent to which the χ2 value model compares to the χ2 of the null model” (Hooper et al., 2008, p.55). The values for this index range between zero and one. As presented in Table 3.2, NNFI cut-off values (which indicates good model fit) ranges between 0.92 and 0.97. These cut-off values are determined by considering both the sample size and number of indicator variables (Hair et al., 2006).

3.8.3 Testing the structural model

3.8.3.1 Structural Equation Modelling (SEM)

According to Hair, Black, Babin and Anderson (2014), structural equation modelling (SEM) “provides the appropriate and efficient estimation technique for a series of separate multiple regression equations estimated simultaneously” (p.19). SEM can be utilised to:

1. determine which independent variables predict respective dependent variables, and to
2. analyse the relationships between multiple items in the empirical testing of theoretical models.

Therefore, SEM can be used to assess the fit of the measurement model, but also analyse the relationships between the constructs presented in a structural model. Two approaches within SEM can be utilised - the covariance-based approach and the variance-based approach. Firstly, covariance-based SEM usually utilises a maximum likelihood function with the aim of minimizing the difference between the covariance matrix of the model and the sample covariance model (Urbach & Ahlemann, 2010). Secondly, the variance-based approach, also referred to as Partial Least Squares (PLS)-SEM, focus on the minimization of the variance of dependent variables, therefore not explaining the covariation.

Subsequently, Urbach and Ahlemann (2010) are of the opinion that PLS places less emphasis on measurement scales, sample size, and residual distributions. Moreover, Hair, Ringle and Sarstedt (2011) argue that this approach is advantageous as it is more robust with less identification issues, can be successfully used on small and large samples, and include formative and reflective constructs. Table 3.10 explicates the characteristics of these two approaches (Urbach & Ahlemann, 2010). Given the relatively small sample size of this research study (n = 199), the variance-based (PLS-SEM) approach, was utilised.

Table 3.3

Comparison between PLS and CBSEM Approaches (Urbach & Ahlemann, 2010)

Criteria	PLS	SEM
Objective	Prediction-oriented	Parameter-oriented
Approach	Variance-based	Covariance-based
Assumption	Predictor specification (non-parametric)	Typically, multivariate normal distribution and independent observation (parametric)
Parameter estimates	Consistent as indicators and sample size increase	Consistent
Latent variable scores	Explicitly estimated	Indeterminate
Epistemic relationship between and LVs and its measures	Can be modelled in either formative and reflective mode	Typically, only with reflective indicators. However, the formative mode is also supported.
Implications	Optimal for prediction accuracy	Optimal for parameter accuracy
Model complexity	Large complexity	Small to moderate complexity
Sample size	Power analysis based on the portion of the model with the largest number of predictors. Minimal recommendation ranges from 30 - 100 cases.	Ideally based on power analysis of specific model – minimal recommendation ranges from 200 to 800
Type of Optimization	Locally iterative	Globally iterative
Significance tests	Only by means of simulations: restricted validity	Available
Availability of global Goodness of Fit (GOF)	Are currently being developed and discussed	Established GOF metric available

Note. Adapted from "Structural Equation Modeling in Information Systems Research Using Partial Least Squares," by N. Urbach and F. Ahlemann, 2010, *Journal of Information Technology Theory and Application, 11,* p. 13. Copyright 2010 by the Association for Information Systems.

3.8.4 Partial Least Square (PLS)

Sarstedt, Ringle, Risher and Hair (2014) argue that the PLS-SEM offers a broad range of advantages to researchers such as:

1. enabling researchers to estimate complex models with various constructs, indicator variables and structural paths, without forcing distributional assumptions on data;
2. predicting estimations for models of which structures are designed to provide causal explanations; and
3. enabling researchers to develop plausible managerial implications as the contradiction between explanation and prediction is mastered.

The PLS-SEM approach provides information on the inner and outer model. The inner model indicates the relationships between the latent variables (unobserved), while, the outer model demonstrates the relationships between the proposed latent variables and its manifest variables (Henseler, Ringle & Sinkovics, 2009).

According to Henseler et al. (2009), the PLS-SEM approach includes the completion of the three stages namely (1) the estimation of latent variance scores, (2) the estimation of outer weights/loading and path coefficients and (3) the estimation of location parameters. Correspondingly, Chin (1998) is of the opinion that the evaluation of the inner (structural model) and outer model (measurement model) is required to assess the overall model fit. Therefore, in this study the reliability and validity of the measurement model (i.e. the outer model) was firstly evaluated through the assessment of individual item reliability, convergent validity and discriminant validity (Urbach & Ahlemann, 2010).

Firstly, the reliability of individual items was evaluated to determine the “extent to which item responses correlate with each other” (Vaske, Beaman & Sponarski, 2017). The most common criterion to measure internal consistency is Cronbach’s Alpha. In PLS, however, internal consistency is evaluated with both Cronbach’s Alpha and a composite reliability calculation. This score indicates the quality of each individual test item. In other words, the amount of variance that is attributable to the construct it intended to measure. For the purposes of this study a composite reliability score with a value exceeding 0.70 was considered to be satisfactory (Nunnally & Bernstein, 1994).

Secondly, the PLS approach utilise the Average Variance Extracted (AVE) criterion (proposed by Fornell and Larcker, 1981) to evaluate the convergent validity of constructs. Shi, Olson and Stam (2007, p.310) define AVE as “the amount of variance

that a latent variable component captures from its indicators relative to the amount of variance due to measurement error". According to Urbach and Ahlemann (2010), an AVE value of at least 0.50 is indicative of good convergent validity.

Thirdly, discriminant validity is also used to assess construct validity. Discriminant validity indicates that items of an instrument which should not be related (theoretically), are in reality not related (DePoy & Gitlin, 2011). Furthermore, discriminant validity is used to address multicollinearity in causal models within SEM (Shiu, Pervan, Bove & Beatty, 2009). If high correlations exist between independent latent variables, multicollinearity poses a problem as inaccurate estimates of the regression coefficients and standard errors are produced. Discriminant validity can be determined through analysing the value of the square root of each construct's AVE and the cross-loadings of specific items of the measurement instrument.

The proposed relationships in the structural model (i.e. inner model) was evaluated through the assessment of coefficient of determination and path coefficients (Urbach & Ahlemann, 2010). According to Mann (2004), the Coefficient of Determination *(R^2)* indicates the amount of variance in each dependent variable that is accounted for by the structural model. A R^2 value close to one poses the indication that the majority of the variation is explained by the different input values. On the contrary, a R^2 value close to zero indicates that a small amount of the variation is explained by the different input values (Mann, 2004). Moreover, according to Chin (1998), a R^2 value of 0.67may be considered as significant, 0.33 as moderate, and 0.19 as weak (Chin, 1998). For every direct effect of one variable on another variable in the structural model, estimation values – namely path coefficients, are derived. As path coefficients are estimated from correlations, they are standardised. These values were analysed through the inspection of the derived sign, magnitude and significance of the indicated path in the structural model.

3.9 MEASUREMENT INSTRUMENTS

Measuring the identified latent variables of the saving behaviour structural model required the use of standardised measuring instruments to operationalise each latent variable. Through the literature review, five questionnaires were identified as reliable and valid measures of the latent variables in question, and applicable to this study.

3.9.1 Data preparation

The questionnaire data (i.e. raw data) was captured in a comprehensive excel spreadsheet before being imported into *Statistica*. Thereafter, the negatively coded items were recoded and the subscales totals were calculated[14].

3.9.2 Saving behaviour

A subscale (i.e. the saving and investment subscale) of the Financial Management Behaviour Scale (FMBS) as developed by Dew and Xiao (2011), was utilised to measure saving behaviour. The overall FMBS measures the extent to which individuals manage their finances. This scale consists of four subscales (cash flow, credit, savings and investment, and insurance) and 17 items. Through the use of factor analysis, Dew and Xiao (2011) stated that the FMBS had adequate reliability (α=0.81). Furthermore, Dew and Xiao (2011) also reported the Cronbach alpha scores for the four subscales. The savings and investments subscale and the insurance subscale had satisfactory Cronbach alpha scores (α=0.78 and α=0.73, respectively). However, the Cronbach's alpha for the cash management subscale and the credit management subscale were lower (α=0.63 and α=0.57, respectively) (Dew & Xiao, 2011). Furthermore, evidence of construct validity was also provided in this study (Dew & Xiao, 2011). Moreover, according to Dew and Xiao (2011), the FMBS demonstrated concurrent criterion validity regarding actual levels of savings and consumer debt.

This research study only utilised the five items relating to the saving and investment subscale[15]. The items included "Began or maintained an emergency savings fund", "Saved money from every pay cheque", "Saved for a long-term goal such as a car, education, house etc.", "Contributed money to a retirement account" and "Bought bonds, stocks, or mutual funds". Participants indicated how often they engaged in these saving and investment activities in the past six months, with responses being captured on a 5-point Likert scale (1= very unlikely, 2= unlikely, 3= neither, 4= likely, 5 =very likely). For the purpose of ensuring that the questions were appropriate within a South African context, items 2, 3 and 5 were adapted as follows: item 2: "Saved money from your netto salary", item 3: "Saved money from your netto salary for a long-

[14] This was done in order to compute the correlations between the variables, report in Table 4.7 in section 4.2.4.
[15] For the purpose of this study, this measurement instrument was referred to as the Saving Behaviour scale.

term goal such as a car, education, house etc". and item 5: "Bought shares or unit trusts." An additional item was also included: "Saved money in a money market account".

3.9.2.1 Descriptive statistics and item analysis

The saving behaviour scale (Table 3.4) revealed an acceptable alpha of 0.77, demonstrating a high internal consistency by exceeding the suggested cut-off value of 0.70 for good internal consistency (Nunnally & Bernstein, 1994). The inter-item correlations, as presented in Table 3.5, ranged from 0.43 (item 4) to 0.63 (item 1) with squared multiple correlations ranging from 0.22 (item 5) to 0.44 (item 1). It should be noted that none of the items on this subscale, if deleted, would have resulted in a significant increase in the subscale's reliability. In conclusion, all items were retained for further analysis, as no excessively poor items were identified in the results obtained for the saving behaviour scale.

Table 3.4

The means, standard deviation and reliability statistics for the Saving Behaviour scale.

	Number of Items	M	SD	A
Saving Behaviour	6	18.70	6.52	0.77

Table 3.5

Item statistics for the Saving Behaviour scale.

Variable	Mean if Deleted	Variance if deleted	Standard Deviation if deleted	Item-Total correlation	Squared Multiple R	Alpha if deleted
SB1	14.82	29.22	5.41	0.63	0.44	0.70
SB2	14.62	31.78	5.64	0.53	0.41	0.73
SB3	14.90	30.12	5.49	0.59	0.39	0.71
SB4	14.62	30.38	5.51	0.43	0.23	0.76
SB5	15.92	31.60	5.62	0.46	0.22	0.75
SB6	15.97	31.67	5.63	0.46	0.23	0.75

3.9.2.2 Confirmatory factor analysis

The items of the saving behaviour scale were subjected to confirmatory factor analysis (CFA) through using structural equation modelling (SEM) with LISREL 8.8[16] (Jöreskog

[16] The CFA's for all the measurement instruments used in this study were performed with LISREL 8.8.

& Sörbom, 1998). The fit of the saving behaviour measurement model was specified by six observed variables that were regressed onto one latent factor.

PRELIS[17] was used to analyse the univariate and multivariate normality of indicator variables. The results are depicted in Table 3.6. As indicated, the multivariate normality assumption was rejected (skewness and kurtosis: $\chi 2 = 28.13$, $p = 0.0$). Therefore, Robust Maximum Likelihood (RML) estimation was employed to derive the model parameter estimates. RML enables an asymptotic covariance matrix to be calculated via PRELIS, which ultimately produces more appropriate fit indices in LISREL.

Table 3.6

Test of multivariate normality for continuous variable – Saving Behaviour scale

Skewness			Kurtosis			Skewness and Kurtosis	
Value	Z-Score	P-Value	Value	Z-Score	P-Value	Chi-square	P-Value
3.97	5.30	0.00	47.36	-0.04	0.96	28.13	0.00

3.9.2.3 Evaluation of the measurement model

The measurement model signifies the relationship between the saving behaviour latent variable and its manifest variables. Results of the range of fit indices obtained for the CFA of the single factor measurement model are presented in Table 3.7.

To evaluate whether the saving behaviour measurement model achieved exact fit the Satorra-Bentler scaled chi-square (S-Bχ_2) statistic was evaluated. This statistic achieved a value of 19.79 ($p = 0.01$) and 9 degrees of freedom. Therefore, the exact fit null hypothesis of the measurement model had to be rejected ($p < 0.05$), leading to the conclusion that the measurement model did not display exact fit in the parameter. To assess whether the model displayed an approximate fit of the processes that operate in reality, the P_{Value} for Test of Close Fit (RMSEA < 0.05) = 0.14 was considered. The close fit null hypotheses for the measurement model could not be rejected ($p > 0.05$), indicating that the measurement model obtained close fit. To conclude good model fit, the CFI and NNFI should be greater than 0.95 and the RMSEA should be less than 0.08 (Hair et al., 2006). As indicated in Table 3.7, a CFI of 0.97 and an NNFI of 0.95 was obtained, which indicated that the suggested cut-off

[17] The normality of all subsequent instruments, utilised in this research study, was assessed through the use of PRELIS.

value (> 0.95) were met. The SRMR (0.05) and the RMSEA (0.07) were below the suggested cut-off values. That is, both the RMSEA and the SRMR fell below the 0.08 cut-off level and therefore further suggested good model fit. All items obtained significant completely standardised factor loadings that ranged from 0.46 to 0.76. Based on this basket of evidence, good model fit was concluded.

Table 3.7

Goodness of fit statistics for the Saving Behaviour measurement model

Goodness of Fit Statistics	
Normal Theory Weighted Least Squares Chi-Square	23.99 (P = 0.00)
Satorra-Bentler Scaled Chi-Square	19.79 (P = 0.01)
Degrees of Freedom	9
Chi-Square Corrected for Non-Normality	24.68 (P = 0.00)
Non-Normed Fit Index (NNFI)	0.95
Comparative Fit Index (CFI)	0.97
Root Mean Square Residual (RMR)	0.13
Standardized RMR	0.05
Root Mean Square Error of Approximation (RMSEA)	0.07
90 Percent Confidence Interval for RMSEA	(0.02; 0.12)
P-Value for Test of Close Fit (RMSEA < 0.05)	0.14

3.9.3 Self-control

The Brief Self-Control Scale (SCS), developed by Tangney et al. (2004), constitute an overall index of self-control, consisting of 13 items. Example items include: “I am good at resisting temptation”, “I am lazy”, “I do certain things that are bad for me, if they are fun” and “I am able to work effectively toward long-term goals.” Participants’ ratings were captured on a 5-point Likert scale (1= very unlikely, 2= unlikely, 3= neither, 4= likely, 5 =very likely).

The Brief SCS, as a whole, has obtained high internal consistency estimates in two studies conducted by Tangney et al., (2004), (alpha coefficients of 0.83 and 0.85 in Studies 1 and 2, respectively). Thus, the scale appears to have adequate internal reliability. In addition, to establish test-retest reliability of the new Self-Control Scale, 233 participants in Study 2 completed the scale a second time, roughly three weeks after the initial Study 2 measurement. Test-retest reliability was found to be 0.87 for the Brief SCS (Tangney et al., 2004).

3.9.3.1 Descriptive statistics and item analysis

The Self-control scale achieved a Cronbach alpha score of 0.86, which was above the suggested cut-off value and therefore signalling high internal consistency for this

scale. Furthermore, the inter-item correlations ranged from 0.43 to 0.66. The squared multiple correlations ranged from 0.25 to 0.53. No items, if deleted, would have resulted in an increase in the Cronbach Alpha and therefore all items were retained for further analysis.

Table 3.8

The means, standard deviation and reliability statistics for the Self-control scale.

	Number of Items	M	SD	A
Self-control	13	46.12	7.48	0.86

Table 3.9

Item statistics for the Self-control scale.

Variable	Mean if deleted	Variance if Deleted	Standard Deviation if Deleted	Item-Total correlation	Squared Multiple R	Alpha if deleted
SC1	42.41	48.53	6.97	0.53	0.34	0.85
SC2	42.89	47.04	6.86	0.56	0.41	0.85
SC3	42.45	47.06	6.86	0.62	0.47	0.85
SC4	42.52	48.64	6.97	0.49	0.37	0.86
SC5	42.80	46.93	6.85	0.60	0.41	0.85
SC6	42.59	49.51	7.04	0.44	0.25	0.86
SC7	43.02	44.64	6.68	0.66	0.53	0.85
SC8	42.95	48.02	6.93	0.47	0.30	0.86
SC9	42.48	48.39	6.96	0.53	0.38	0.85
SC10	42.57	49.67	7.05	0.43	0.27	0.86
SC11	42.24	49.79	7.06	0.48	0.27	0.86
SC12	42.30	47.70	6.91	0.60	0.44	0.85
SC13	42.29	49.24	7.02	0.49	0.31	0.86

3.9.3.2 Confirmatory factor analysis

For the Self-control measurement model there were 13 observed variables and one unmeasured latent factor. Moreover, the results indicated that the multivariate normality assumption was rejected (skewness and kurtosis: $\chi 2 = 149.92$, $p = 0.00$) and therefore RML estimation was used (Table 3.10) to derive the model parameters.

Table 3.10

Test of multivariate normality for continuous variable – Self-control

Skewness			Kurtosis			Skewness and Kurtosis	
Value	Z-Score	P-Value	Value	Z-Score	P-Value	Chi-square	P-Value
24.90	9.97	0.00	222.35	7.10	0.00	149.92	0.00

3.9.3.3 Evaluation of the measurement model

The S-Bχ2 statistic achieved a value of 124.84 (p = 0.00) and 65 degrees of freedom. Based on these values, a conclusion was made that the null hypothesis of exact fit had to be rejected (p < .05). Moreover, the P_{Value} for Test of Close Fit (RMSEA < 0.05) = 0.05 also indicated that the close fit null hypothesis was marginally rejected (p < 0.05). As indicated in Table 3.11, a CFI of 0.96 and an NNFI of 0.95 was obtained which indicated that the suggested cut-off values (0.95) were met. The SRMR (0.05) and the RMSEA (0.06) were also below the suggested cut-off value for good fit (0.08). All items obtained significant completely standardised factor loadings that ranged from 0.40 (item SC10) to 0.81 (item SC7). Based on this basket of evidence, good model fit was concluded.

Table 3.11

Goodness of fit statistics for the Self-control measurement model

Goodness of Fit Statistics	
Normal Theory Weighted Least Squares Chi-Square	139.57 (P = 0.00)
Satorra-Bentler Scaled Chi-Square	124.84 (P = 0.00)
Degrees of Freedom	65
Chi-Square Corrected for Non-Normality	205.83 (P = 0.00)
Non-Normed Fit Index (NNFI)	0.95
Comparative Fit Index (CFI)	0.96
Root Mean Square Residual (RMR)	0.05
Standardized RMR	0.05
Root Mean Square Error of Approximation (RMSEA)	0.06
90 Percent Confidence Interval for RMSEA	(0.04; 0.08)
P-Value for Test of Close Fit (RMSEA < 0.05)	0.05

3.9.4 Financial delay of gratification

Hoerger et al. (2011, p.11) developed the Delaying Gratification Inventory (DGI), known as “the first theoretically-driven five-factor measure of individual differences in the tendency to delay gratification”. This survey consists of 5 domains and 35 items. Participants’ ratings are indicated on a 5-point Likert scale (1= very unlikely, 2= unlikely, 3= neither, 4= likely, 5 =very likely). The domains are categorized according to food, physical pleasures, social interactions, money, and achievement. For the purposes of this study, the money domain subscale was utilised. According to Hoerger et al. (2011, p.12), the money domain subscale measures financial delay of gratification in the following: “splurging, paying bills on time, and financial distress”. This subscale consists of seven items. Sample items includes, “I enjoy spending

money the moment I get it", "When someone gives me money, I prefer to spend it right away", and "I try to save away a little money in case an emergency should arise".

Confirmatory Factor Analysis (CFA) supported the hypothesised five-factor model, which was robustly upheld across demographic groups (Hoerger et al., 2011). The CFA model fit was examined with LISREL 8.80 using robust maximum likelihood estimation, which produces the Satorra-Bentler chi-square. The following fit statistics were reported; Comparative Fit Index (CFI) = 0.96, the Normed Fit Index (NFI) = 0.96, Root Mean Square Error of Approximation (RMSEA) = 0.05, standardized Root Mean Residual (SRMR) = 0.05, the Akaike Information Criterion (AIC) = 18,031, Satorra-Bentler scaled chi-square $\chi 2 = 17{,}87$, $df = 550$, $p < 0.00$, and the ratio of chi-square to degrees of freedom $\chi 2 / df = 32.49$.

According to Hoerger et al. (2011), the DGI showed psychometrically strong and sound internal consistency ($\alpha \geq 0.90$), test-retest reliability ($r = 0.90$) and construct validity. Additionally, "the theoretically-derived five-factor model indicated slight measurement invariance when constrained by factor structure, factor loadings, or the factor variance-covariance matrix" (Hoerger et al., 2011, p.13).

3.9.4.1 Descriptive statistics and item analysis

The results of this study indicated that the FDOG scale[18] obtained an alpha of 0.80, demonstrating high internal consistency. The inter-item correlations ranged from 0.35 (item 2) to 0.65 (item 4) with squared multiple correlations ranging from 0.17 (item 2) to 0.49 (item 6). The inter-item correlation and squared multiple correlation of item 2 (DOG2) was clearly somewhat out of sync with the rest of the items. Moreover, the results revealed that the deletion of item DOG2 would have incurred an increase, albeit very small, in the Cronbach's alpha ($\Delta = 0.01$) resulting in 0.81. Based on this marginal increase, it was decided not to delete the item from the data pool. In summary, all items were retained for further analysis as no excessively poor items were identified.

[18] For the purpose of this study, the money domain subscale of the DGI, utilised in this study, will be simply referred to as the Financial Delay of Gratification scale.

Table 3.12

The means, standard deviation and reliability statistics for the Financial delay of gratification scale.

	Number of Items	M	SD	α
Financial delay of gratification	7	28.96	4.35	0.80

Table 3.13

Item statistics for the Financial delay of gratification scale.

Variable	Mean if deleted	Variance if deleted	Standard Deviation if deleted	Item-Total Correlation	Squared Multiple R	Alpha if deleted
DOG1	25.21	12.62	3.55	0.63	0.44	0.76
DOG2	24.83	15.38	3.92	0.35	0.17	0.81
DOG3	24.84	13.81	3.72	0.57	0.34	0.77
DOG4	24.68	15.29	3.91	0.65	0.47	0.77
DOG5	24.46	14.80	3.85	0.52	0.31	0.78
DOG6	24.97	14.30	3.78	0.63	0.49	0.76
DOG7	24.82	14.31	3.78	0.48	0.31	0.79

3.9.4.2 Confirmatory factor analysis

When testing for the multivariate normality assumption with PRELIS, it was found that the DOG scale failed to obtain multivariate normality (as reported in Table 3.14). Therefore, the null hypothesis of multivariate normality was rejected (skewness and kurtosis: $\chi 2 = 546.17$, $p = 0.00$). Subsequently, the RML technique was utilised in order to derive the model's parameter estimates.

Table 3.14

Test of multivariate normality for continuous variable – Financial delay of gratification

Skewness			Kurtosis			Skewness and Kurtosis	
Value	Z-Score	P-Value	Value	Z-Score	P-Value	Chi-square	P-Value
22.65	20.96	0.00	99.17	10.32	0.00	546.17	0.00

3.9.4.3 Evaluation of the measurement model

The S-Bχ_2 statistic achieved a value of 30.233 ($p = 0.00$) with 14 degrees of freedom. The null hypothesis of exact fit should therefore be rejected ($p < 0.05$). Furthermore, the P_{Value} for Test of Close Fit (RMSEA < 0.05) = 0.11 was considered. This result revealed that the close fit null hypothesis could not rejected ($p > 0.05$) and that the measurement model obtained close fit. The CFI (0.97) and NNFI (0.96) values indicated that the suggested cut-off values (0.95) were met. The SRMR (0.05) and the RMSEA (0.07) were both below the suggested cut-off value of 0.80 suggested for good

model fit (Table 3.15). Moreover, the CFA results revealed that all factor loadings were statistically significant at t ≥ |1.69|. The lambda-X completely standardised solution showed that the factor loadings ranged from 0.40 (item DOG2) to 0.78 (item DOG1). In summary, it could be concluded that the FDOG measurement model achieved good model fit.

Table 3.15

Goodness of fit statistics for the Financial delay of gratification measurement model

Goodness of Fit Statistics	
Normal Theory Weighted Least Squares Chi-Square	40.34 (P = 0.00)
Satorra-Bentler Scaled Chi-Square	30.23 (P = 0.00)
Degrees of Freedom	14
Chi-Square Corrected for Non-Normality	44.13 (P = 0.00)
Non-Normed Fit Index (NNFI)	0.96
Comparative Fit Index (CFI)	0.97
Root Mean Square Residual (RMR)	0.04
Standardized RMR	0.05
Root Mean Square Error of Approximation (RMSEA)	0.07
90 Percent Confidence Interval for RMSEA	(0.03; 0.11)
P-Value for Test of Close Fit (RMSEA < 0.05)	0.11

3.9.5 Financial literacy

Van Rooij et al. (2012) developed a financial knowledge[19] instrument which determines the extent to which an individual has the basic knowledge of key financial concepts, and the ability to successfully apply numeracy skills in different financial situations. This instrument consists of two sets of questions, namely, simple literacy questions and advanced literacy questions. For the purposes of this study, only the simple literacy questions, which includes five items, was utilised. These items are classified as basic knowledge items to measure numerical skills and the understanding of financial concepts (such as inflation, simple and compound interest, and the value of money in time). For the purpose of this study, the scale was adapted to fit South Africa's currency. As responses on the Financial literacy scale was dichotomous, it was not possible to conduct a reliability analysis or a CFA on this scale. An item response theory analysis could have been employed, but it was not conducted as this was not the main goal of the study, and therefore not considered to be within the scope of this master's thesis.

[19] Financial knowledge is closely related to financial literacy and was used interchangeably with financial literacy in this thesis (Gale & Levine, 2010; Hastings et al., 2012; Lusardi & Mitchell, 2014).

The financial knowledge scale consists of, amongst other, items such as “Suppose you had R100 in a savings account and the interest rate was 2% per year. After five years, how much do you think you would have in the account if you left the money to grow?” and “Imagine that the interest rate on your savings account was 1% per year and inflation was 2% per year. After one year, how much would you be able to buy with the money in this account?”.

3.9.6 Financial self-efficacy

The Financial Self-Efficacy Scale (FSES), developed by Lown (2011), was modelled directly on the GSES (Schwarzer & Jerusalem, 1995), by incorporating specific references to financial management in six of the original ten statements. The FSES was utilised in this study. The FSES measures behavioural aspects of personal financial management and included items such as “It is hard to stick to my spending plan when unexpected expenses arise”, “It is challenging to make progress toward my financial goals” and “When unexpected expenses occur, I usually have to use credit”.

Three items from the FSES were adapted to more clearly tap into the concept of self-efficacy. Item 1 was originally phrased as “It is hard to stick to my spending plan when unexpected expenses arise”, and was changed to “I am confident in my ability to stick to my spending plan when unexpected expenses arise”. Item 2 was adapted from “I will be able to achieve most of the goals that I have set for myself” to “I am confident in my ability to make progress toward my financial goals”. Lastly, item 3 was changed from “When unexpected expenses occur, I usually have to use credit” to “I am confident that my financial competence should prevent me from being unable to handle unexpected expenses.”

In the original development study, the 6-item FSES demonstrated a high alpha reliability of 0.76, criterion-related validity and construct validity (Lown, 2011). Moreover, Lown (2011) indicated that the factor analysis of the FSES supported the unidimensionality of the instrument. Furthermore, it was indicated that the GSES and FSES are moderately, positively related ($r = 0.37$) but that financial self-efficacy is different from general self-efficacy. The FSES is regarded as a short, effective and efficient instrument to both administer and score.

3.9.6.1 Descriptive statistics and item analysis

As reported in Table 3.16, the Financial self-efficacy scale obtained an alpha of 0.80, indicating satisfactory internal consistency (Nunnally & Bernstein, 1994). When analysing Table 3.17, it was evident that item 6 (SE6) obtained the lowest inter-item correlation (0.48), whereas, item 2 (SE2) obtained the highest inter-item correlation (0.72). Furthermore, the squared multiple correlations ranged from 0.26 (item SE6) to 0.54 (item SE2). Moreover, no item, if deleted, would have resulted in an increase in the Cronbach alpha attained. All the items were, therefore, retained for further data analysis.

Table 3.16

The means, standard deviation and reliability statistics for the Financial self-efficacy scale.

	Number of Items	M	SD	A
Financial self-efficacy	6	23.33	3.95	0.80

Table 3.17

Item statistics for the Financial self-efficacy scale.

Variable	Mean if deleted	Variance if deleted	Standard Deviation if deleted	Item-Total correlation	Squared Multiple R	Alpha if deleted
SE1	19.67	10.92	3.31	0.58	0.38	0.77
SE2	19.33	11.41	3.38	0.72	0.54	0.74
SE3	19.58	10.92	3.30	0.51	0.30	0.79
SE4	19.28	12.27	3.50	0.54	0.34	0.78
SE5	19.28	10.55	3.25	0.60	0.41	0.76
SE6	19.52	11.19	3.35	0.48	0.26	0.79

3.9.6.2 Confirmatory factor analysis

As reported in Table 3.18, data derived for the Financial self-efficacy scale failed to meet the multivariate normality assumption. In other words, the null hypothesis of multivariate normality was rejected (skewness and kurtosis: $\chi 2 = 189.07$, $p = 0.00$). Subsequently, RML estimation was employed.

Table 3.18

Test of multivariate normality for continuous variable – Financial self-efficacy

Skewness			Kurtosis			Skewness and Kurtosis	
Value	Z-Score	P-Value	Value	Z-Score	P-Value	Chi-square	P-Value
8.94	11.85	0.00	63.87	6.95	0.00	189.07	0.00

3.9.6.3 Evaluation of the measurement model

The results obtained for the CFA of the single factor measurement model (Table 3.19) indicated that the S-Bχ^2 statistic achieved a value of 11.93 (p = 0.21). It can therefore be concluded that the exact fit hypothesis was not rejected and the Financial self-efficacy measurement model did obtain exact fit. The suggested cut-off values for the CFI (0.99) and NNFI (0.99) values were met. Moreover, the SRMR (0.03) and the RMSEA (0.04) were well below the suggested cut-off value of 0.08 for good model fit. Furthermore, the CFA results revealed that the factor loadings were all statistically significant at $t \geq |1.69|$. The lambda-X completely standardised solution values ranged from 0.43 (item SE4) to 0.71 (item SE5). In conclusion, the Financial self-efficacy measurement model achieved very good model fit.

Table 3.19

Goodness of fit statistics for the Financial self-efficacy measurement model

Goodness of Fit Statistics	
Normal Theory Weighted Least Squares Chi-Square	14.81 (P = 0.09)
Satorra-Bentler Scaled Chi-Square	11.937 (P = 0.21)
Degrees of Freedom	9
Chi-Square Corrected for Non-Normality	15.21 (P = 0.08)
Non-Normed Fit Index (NNFI)	0.99
Comparative Fit Index (CFI)	0.99
Root Mean Square Residual (RMR)	0.03
Standardized RMR	0.03
Root Mean Square Error of Approximation (RMSEA)	0.04
90 Percent Confidence Interval for RMSEA	(0.00; 0.09)
P-Value for Test of Close Fit (RMSEA < 0.05)	0.54

3.10 CONCLUSION

The purpose of this chapter was to present the proposed hypotheses, based on the literature review. The research design and statistical analyses techniques were also clarified. Information on the reliability and validity of the various measurement instruments were provided. In summary, the psychometric properties of the measurement instruments presented in this chapter achieved sufficient support to represent the latent variables in the saving behaviour structural model. In the next chapter, the research results will be presented.

CHAPTER 4: RESEARCH RESULTS

4.1 INTRODUCTION

The aim of this research study was to determine whether certain individual differences variables can be used to account for variance in saving behaviour amongst South African employees. The purpose of this chapter is to report on the Partial Least Squares (PLS) results of the measurement (i.e. the outer) and structural (i.e. the inner) model.

This chapter commences with the validation of the measurement model which includes the discussion of discriminant validity and outer loadings. Thereafter, the results pertaining to the structural model will be discussed.

4.2 VALIDATION OF THE MEASUREMENT (OUTER) MODEL

4.2.1 Internal consistency (Cronbach's Alpha), Composite Reliability and AVE values

The measurement instruments used in this research study were evaluated to determine whether acceptable internal consistency and convergent validity were displayed[20]. Chapter three reported on the internal consistency calculated (with *Statistica*), resulting in a Cronbach's Alpha for every instrument. The results indicated that the internal consistency of the measurement instruments ranged from 0.77 to 0.86. All measurement instruments therefore exceeded the suggested cut-off value of 0.70 for good internal consistency (Nunnally & Bernstein, 1994).

The composite reliability score (calculated as part of the PLS analysis) indicates the amount of variance in an item that is attributable to the construct it is intended to measure. A satisfactory composite reliability criterion requires a value of 0.70, whereas values below 0.60 are considered dissatisfactory (Nunnally & Bernstein, 1994). The composite reliability and AVE results for the measurement model are presented in Table 4.1. The results were indicative of acceptable composite reliability (all instruments > 0.80). This, together with the separate instrument internal consistency results, reported in chapter three, provided sufficient evidence of acceptable internal consistency of the measurement instruments.

[20] The Financial literacy construct is not present in the results reported in Table 4.1 due to the scoring utilised for this instrument.

The assessment of convergent validity is critical for the empirical evaluation of measurement models in PLS. As previously mentioned, the AVE is analysed to assess the convergent validity of constructs. An AVE value of 0.50 and above demonstrates good convergent validity (Hair et al., 2011).

The financial self-efficacy scale displayed good convergent validity (i.e. acceptable AVE value exceeding 0.50). The AVE values of both the financial delay of gratification and saving behaviour scales were very close to the cut of value (0.50) and therefore this was not considered to be a cause for serious concern. The self-control scale, however, displayed an AVE of 0.38 which is much lower than the 0.50 cut off value, and therefore indicates an area of concern. The results pertaining to this construct will be interpreted within the limitations that this result posed.

Table 4.1

Composite Reliability and AVE

Latent Variable	Composite Reliability	AVE
Saving behaviour	0.84	0.47
Self-control	0.89	0.38
Financial delay of gratification	0.86	0.48
Financial self-efficacy	0.87	0.52

4.2.2 *Discriminant Validity*

The establishment of discriminant validity provides the researcher with proof that measures of different constructs only relate modestly with one another (Yang, Hinkle & Wyckoff, 2018). To determine whether discriminant validity exists one of two methods can be utilised. Firstly, the value of the square root of each construct's AVE should be bigger than the correlations with other constructs for discriminant validity to exist (Fornell & Larcker, 1981). Secondly, Henseler, Ringle and Sarstedt (2015) introduced the Heterotrait-Monotrait ratio (HTMT) to assess discriminant validity. The evaluation of the HTMT of the correlations entails the "average of the correlations of indicators across constructs measuring different phenomena relative to the average of the correlations of indicators within the same construct" (Henseler et al., 2015, p.120). Hence, cross-loadings of items with its specific construct should not be lower than its loading with another construct. Furthermore, Hanseler et al. (2015) argue where "the indicators of two constructs display an HTMT value that is smaller than one, it poses the indication that the true correlation between the two constructs is most

likely different from one" (Henseler et al., 2015, p.121). The discriminant validity results of measurement instruments used in this research study were calculated based on the Heterotrait-Monotrait ratio (presented in Table 4.2). As indicated below, all measurement instruments, and per implication the constructs they represent, achieved discriminant validity.

Table 4.2

Discriminant Validity (Heterotrait-Monotrait ratio)

	Original sample	2.50%	97.50%	Discriminate
Financial literacy -> Financial delay of gratification	0.35	0.00	0.20	Yes
Saving behaviour -> Financial delay of gratification	0.54	0.01	0.38	Yes
Saving behaviour -> Financial literacy	0.32	0.00	0.20	Yes
Self-control -> Financial delay of gratification	0.65	0.01	0.53	Yes
Self-control -> Financial literacy	0.11	0.04	0.06	Yes
Self-control -> Saving behaviour	0.27	0.05	0.20	Yes
Financial self-efficacy -> Financial delay of gratification	0.85	0.00	0.74	Yes
Financial self-efficacy -> Financial literacy	0.35	0.00	0.19	Yes
Financial self-efficacy -> Saving behaviour	0.60	0.00	0.46	Yes
Financial self-efficacy -> Self control	0.58	0.00	0.46	Yes
Gender -> Financial delay of gratification	0.17	0.02	0.06	Yes
Gender -> Financial literacy	0.28	0.00	0.14	Yes
Gender -> Saving behaviour	0.45	0.00	0.30	Yes
Gender -> Self control	0.06	0.06	0.04	Yes
Gender -> Financial self-efficacy	0.20	0.01	0.07	Yes

4.2.3 *Evaluating the Outer Loadings*

The evaluation of outer loadings[21] requires that observed variables were denoted with item responses. PLS bootstrap analysis was used to determine whether the item loadings of the outer model were significant or not. The factor loadings were evaluated by analysing the 95% confidence interval and investigating whether zero fell within this interval. Should this be the case, the factor loadings would not be classified as being statistically significant. On the contrary, if zero did indeed fall within the 95% confidence interval, the factor loadings would be statistically significant. The outer loading results for all constructs are presented and discussed below.

[21] As mentioned, no outer loadings were calculated for the Financial literacy scale as the total score reflecting levels of Financial literacy were calculated for input into the final model.

Table 4.3

PLS-SEM Outer Loadings for Financial delay of gratification: Item level

Scale	Items	Outer loading	2.50%	97.50%	Significant
Financial delay of gratification	DOG1	0.77	0.70	0.82	Yes
	DOG2	0.51	0.28	0.67	Yes
	DOG3	0.70	0.57	0.80	Yes
	DOG4	0.78	0.70	0.85	Yes
	DOG5	0.64	0.51	0.76	Yes
	DOG6	0.79	0.72	0.84	Yes
	DOG7	0.59	0.41	0.74	Yes

The results, as depicted above in Table 4.3, presents the outer loading results for financial delay of gratification at the item level. The results revealed that all items loaded (ranging from .51 to .79) significantly on to the latent construct of financial delay of gratification. A similar result emerged for the saving behaviour scale (as indicated in Table 4.4 below), where all the items loaded significantly on the latent variable of saving behaviour. Table 4.4 indicates that the significant outer loading values ranged from 0.58 (item SB4) to 0.80 (item SB1). The results for the self-control scale (Table 4.5) showed that significant loadings for all items in this scale were obtained. The loadings ranged from 0.50 (item SC10) – 0.74 (item SC7).

Table 4.4

PLS-SEM Outer Loadings of saving behaviour: item level

Scale	Items	Outer loading	2.50%	97.50%	Significant
Saving behaviour	SB1	0.80	0.75	0.85	Yes
	SB2	0.73	0.62	0.81	Yes
	SB3	0.77	0.70	0.84	Yes
	SB4	0.58	0.44	0.70	Yes
	SB5	0.61	0.50	0.70	Yes
	SB6	0.59	0.46	0.70	Yes

Table 4.5

PLS-SEM Outer Loadings of Self-control: item level

Scale	Items	Outer loading	2.50%	97.50%	Significant
Self-control	SC1	0.71	0.64	0.77	Yes
	SC2	0.62	0.46	0.72	Yes
	SC3	0.68	0.57	0.77	Yes
	SC4	0.52	0.32	0.66	Yes
	SC5	0.64	0.50	0.73	Yes
	SC6	0.52	0.36	0.63	Yes
	SC7	0.74	0.66	0.81	Yes
	SC8	0.58	0.44	0.69	Yes
	SC9	0.60	0.48	0.70	Yes
	SC10	0.50	0.32	0.63	Yes
	SC11	0.60	0.43	0.74	Yes
	SC12	0.66	0.54	0.74	Yes
	SC13	0.57	0.40	0.69	Yes

Table 4.6

PLS-SEM Outer Loadings of Financial self-efficacy: item level

Scale	Items	Outer loading	2.50%	97.50%	Significant
Financial self-efficacy	SE1	0.74	0.65	0.81	Yes
	SE2	0.85	0.79	0.89	Yes
	SE3	0.65	0.52	0.74	Yes
	SE4	0.64	0.51	0.74	Yes
	SE5	0.75	0.63	0.82	Yes
	SE6	0.67	0.58	0.76	Yes

In addition, the results of the outer loading values of the Financial self-efficacy items (as shown above), revealed that all the items loaded significantly on the latent construct of Financial self-efficacy. Table 4.5 indicates that the significant outer loading values ranged from .64 (item SE4) to 0.85 (item SE2).

4.2.4 Correlations between variables

A correlation matrix (Table 4.7) was constructed to further explore, and provide additional insight into the nature of the relationships between all variables, utilised in this research study. The correlation results provide insight regarding the significance, strength and direction of the relationships between variables. As noted in the correlation matrix, all relationships between variables were statistically significant. Moreover, all relationships were in the expected hypothesised direction. The strengths of these relationships ranged from 0.18 to 0.53.

Table 4.7

Descriptive Statistics: Means, Standard Deviations, Reliabilities, and Correlations

Variable		Mean	SD	1	2	3	4	5
1.	Saving behaviour	18.70	6.52	(0.77)				
2.	Self-control	46.12	7.48	0.18**	(0.86)			
3.	Financial delay of gratification	28.96	4.35	0.42**	0.53**	(0.80)		
4.	Financial literacy			0.28**	0.05	0.31**	-	
5.	Financial self-efficacy	23.33	3.95	0.44**	0.36**	0.54**	0.29**	(0.80)

Note: Coefficient alphas are along the diagonal; **p < 0.01; *p < 0.05

As indicated in Table 4.8 below, Guilford (cited in Tredoux & Durheim, 2002), provides a guideline when interpreting the strength of relationships amongst variables. According to Guilford's reference, a substantial relationship exists between saving behaviour and financial delay of gratification, saving behaviour and financial self-efficacy and financial delay of gratification and self-control. Furthermore, a slight relationship was found between self-control and saving behaviour. The financial literacy, saving behaviour relationship and financial literacy, financial delay of gratification relationship was found to be small and weak. Additionally, no significant relationship was found between financial literacy and self-control.

Table 4.8

Guilford's informal interpretations of the magnitude of r

Absolute value of r	Interpretation
< 0.19	Slight, almost no relationship
0.20 – 0.39	Low correlation, definite but small/weak relationship
0.40 – 0.69	Moderate correlation; substantial relationship
0.70 – 0.89	High correlation; strong relationship
0.90 – 1.00	Very high correlation; very dependable relationship

Note. Adapted from *Number, Hypotheses & Conclusions: A Course in Statistics for the Social Sciences* (p. 182), by C. Tedoux and K. Durrheim, 2002, Cape Town: University of Cape Town Press. Copyright 2002 by UCT Press.

4.3 VALIDATION OF THE STRUCTURAL (INNER) MODEL

The Coefficient of Determination (R^2) determines how much variation of each endogenous variable is accounted for by the whole model. As depicted below (Table 4.8), the R^2 values of the dependant variables ranged from 0.10 (Financial self-efficacy) to 0.37 (financial delay of gratification). According to Chin (1998), values of 0.67 are deemed significant, while values of 0.33 and 0.19 are considered moderate

and weak respectively. The results revealed that 36% of variance in saving behaviour (i.e. moderate levels of variance) is being explained by the model (i.e. the variables linked to saving behaviour in the model). Moreover, 37% of reported variance that is accounted for in financial delay of gratification can be attributed to the effect of only self-control. Although only moderate levels of variance in saving behaviour were being accounted for by this model, it should be noted that the model is relatively simple and therefore it could be argued that a range of other potential factors could be included in the model to account for saving behaviour. Therefore, the results reported are considered reasonable given the fact that this model was a relatively simple representation of the possibly dynamics underlying saving behaviour as a whole.

Table 4.9

R square values for the saving behaviour structural model

Variable	R square
Financial delay of gratification	0.37
Saving behaviour	0.36
Financial self-efficacy	0.10

Additionally, the nine hypothesised paths contained in the structural model, was tested via PLS (results depicted in Table 4.10 below). The results revealed that only four of the nine paths were found to be statistically significant. The significant paths (Table 4.10) are depicted in Figure 4.1 and highlighted in red.

Table 4.10

Path Coefficients

Path	Path coefficient	2,50%	97,50%	Sig.	P-value
Self-control -> Saving behaviour	-0.07	-0.21	0.07	No	0.38
Financial delay of gratification -> Saving behaviour	0.18	-0.07	0.41	No	0.12
Self-control -> Financial delay of gratification	0.61	0.54	0.70	Yes	0.00
Financial literacy -> Saving behaviour	0.04	-0.10	0.16	No	0.52
FL*DOG -> Saving behaviour	0.04	-0.09	0.15	No	0.51
Gender*FL -> Saving behaviour	0.03	-0.10	0.19	No	0.65
Financial self-efficacy -> Saving behaviour	0.34	0.16	0.55	Yes	0.00
Financial literacy -> Financial self-efficacy	0.32	0.18	0.45	Yes	0.00
Gender -> Saving behaviour	-0.30	-0.42	-0.18	Yes	0.00

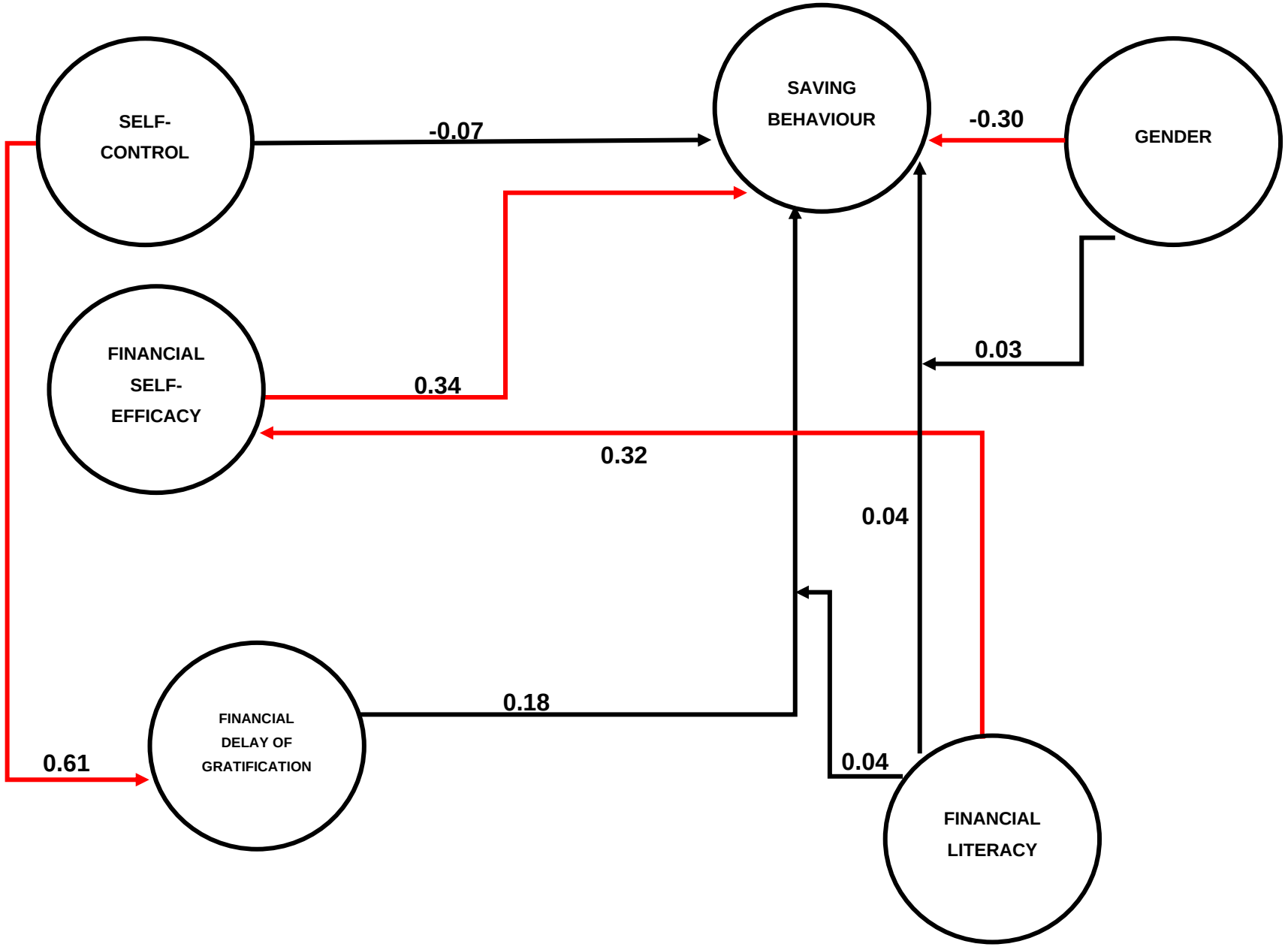

Figure 4.1. The final saving behaviour structural model with significant hypothesised effects.

4.4 INTERPRETATION OF THE PROPOSED HYPOTHESES

Hypothesis 1: Self-control has a positive linear relationship with saving behaviour.

The results indicated that Hypothesis 1 failed to be corroborated, as the path for the self-control, saving behaviour relationship, was found to be non-significant ($p > 0.05$). This hypothesis intended to validate the notion that an individual's self-control is a key factor for long-term financial success, that predicts engagement in saving behaviour (Strömbäck et al., 2017). It was argued that it is probable that individuals with higher levels of self-control are more likely to regularly engage in saving behaviour and achieve higher levels of wealth accumulation (Choi, Laibson & Madrian, 2011; Rha, Montalto & Hanna, 2006).

Achtziger et al., (2015) argued that the lack of self-control evidently increases the probability of engaging in counterproductive financial behaviour. Furthermore, the inability to control dominant response tendencies might hinder an individual to exhibit control over financial decisions, such as the choice to engage in saving behaviour. Regardless of the arguments presented above, the results of this study indicated that support was not found for hypothesis one.

Hypothesis 2: Financial delay of gratification has a positive linear relationship with saving behaviour.

The results (presented in Table 4.7) revealed that no support for a statistically significant direct relationship between financial delay of gratification and saving behaviour ($p > 0.05$) was found. Therefore, hypothesis two was not supported by the results. For the purpose of this study it was argued that financial delay of gratification will have a positive effect on saving behaviour. In other words, when the ability to delay immediate gratification exists, an individual may be more likely to engage in saving behaviour (where rewards are only evident in the future). Furthermore, it was argued that individuals with lower levels of financial delay of gratification may fail to consider the future consequences of their immediate actions or decisions (Hughes, 2013). However, the results of this study did not provide evidence of a significant direct relationship between these two variables, based on these proposed arguments.

Hypothesis 3: Self-control has a positive linear relationship with financial delay of gratification.

According to Table 4.7, hypothesis 3 was supported by the results as a statistically significant path coefficient, with a value of 0.61, was obtained for the self-control, financial delay of gratification, relationship. The results also supported the positive hypothesised direction of the relationship between self-control and financial delay of gratification. It was argued that when higher levels of self-control are prevalent (Baumeister, 2002) the likelihood of having the ability to resist an impulse to take an immediately available financial reward, and instead wait to obtain a more-valued reward in the future, will likely be evident. Given that hypothesis three was corroborated by the findings, it can be deduced that higher levels of self-reported self-control are indeed associated with higher levels of self-reported financial delay of gratification.

Hypothesis 4: Financial literacy has a positive linear relationship with saving behaviour.

In chapter two it was argued that an individual's basic knowledge of key financial concepts, and the ability to successfully apply numeracy skills in different financial situations will increase the likelihood of engaging in desirable financial practices (Mien & Thao, 2015; Van Rooij, Lusardi & Alessie, 2012), as defined and measured within the parameters of the construct of saving behaviour, in this study. It was therefore hypothesised that higher levels of financial literacy would directly impact on the likelihood of engaging in saving behaviour. This theorising was not supported by the results as the path coefficient representing this relationship, was non-significant ($p > 0.05$). Therefore, the results of this study failed to provide evidence to corroborate hypothesis four.

Hypothesis 5: Financial Literacy moderates the relationship between financial delay of gratification and saving behaviour.

In this study it was further hypothesised that higher levels of financial literacy would possibly amplify the impact of the self-regulation mechanism inherent to financial delay of gratification on saving behaviour. However, the results revealed that this theorising was not supported by the results (non-significant path coefficient, $p > 0.05$). Hence, no evidence emerged to support the notion that financial literacy does indeed moderate

the financial delay of gratification, saving behaviour relationship, and therefore hypothesis five was not supported by the results.

Hypothesis 6: Gender has a negative linear relationship with saving behaviour.

It was argued that gender will influence saving behaviour as men, on average, have higher levels of finance-related knowledge and therefore engage in more sound financial behaviours such as saving (Chen & Volpe, 2002). It was also empirically found that men, on average, have more knowledge regarding financial management and financial planning, which in turn increases their higher tendency to engage in saving behaviour (Chen & Volpe, 2002). It was therefore hypothesised that gender would directly impact the likelihood of engaging in saving behaviour. This theorising was supported by the results as the path coefficient (-0.30) representing this relationship, was significant ($p < 0.05$). Therefore, the results of this study corroborated hypothesis six.

Hypothesis 7: Gender moderates the relationship between financial literacy and saving behaviour.

Past research on the influence of gender on financial literacy generally revealed that women has lower levels of financial literacy than men (Chen & Volpe, 2002; Van Rooij et al., 2017). Van Rooij et al. (2017) reported that differences between levels of financial literacy, across genders, remains the same regardless of changes in amongst other, marital status, education and income.

Hypothesis seven predicted that gender would moderate the relationship between financial literacy and saving behaviour. However, given the results of this research study, this argument was not supported since the hypothesised path coefficient was found to be statistically insignificant ($p > 0.05$), and therefore hypothesis seven was not supported by the results.

Hypothesis 8: Financial self-efficacy has a positive linear relationship with saving behaviour.

For the purposes of this study it was argued that the higher the levels of the belief an individual has in their ability to make confident finance-related decisions (i.e. financial

self-efficacy), the higher self-reported saving behaviour would be. Support was found for hypothesis eight as the results indicated a statistically significant path coefficient of 0.34 ($p < 0.05$). The predicted direction of the relationship was also substantiated by the results.

In this study, it was argued that when an individual possesses higher levels of financial self-efficacy, it would equip them to have confidence in their ability to engage in sound finance-related decision making and in turn increase the probability to engage in saving behaviour (Danes & Haberman, 2007). It was argued that an individual will be more likely to engage in saving behaviour if they have confidence in their ability to make sound financial decisions. Given that hypothesis eight was supported, it can be deduced from the results that the belief in the ability to make sound financial decisions would indeed seem to increase the likelihood to engage in saving behaviour.

Hypothesis 9: Financial literacy has a positive linear relationship with financial self-efficacy.

The results revealed (as indicated in Table 4.7), that support was found for hypothesis nine, as a statistically significant path coefficient of 0.32 ($p < 0.05$) emerged. Additionally, the predicted direction of the relationship was also substantiated by the results. As hypothesis 9 was found to be corroborated by the results, it can be derived from the results that higher levels of financial knowledge regarding compound interest, inflation, and time discounting, will increase the likelihood of higher levels of self-reported confidence in the ability to make financial decisions.

4.5 SUMMARY

The aim of chapter four was to present and discuss the PLS results of both the measurement (outer) and structural (inner) model. Firstly, the validation of the outer model encompassed a discussion regarding alpha coefficients, composite reliabilities and AVE values of the variables contained in the structural model. Furthermore, the discriminant validity and outer-loadings of the scales were interpreted. Thereafter, the results of the proposed hypotheses contained within the structural model, were discussed. The following chapter will focus on the interpretation of the research results, identify the limitations of this research study, provide recommendations for future research, and discuss the practical implications of this research.

CHAPTER 5: DISCUSSION

5.1 INTRODUCTION

The well-being of employees has a direct effect on sustained optimal organisational performance (Theron, 2017). According to Pescud et al. (2015), well-being includes personal satisfaction, work-life satisfaction, psychological and physiological health. A variety of components therefore attribute to an individual's overall well-being, with financial well-being being one of them. Financial well-being has broadly been defined as, "a multidimensional concept involving financial satisfaction, objective status of financial situation, financial attitudes and behaviour" (Joo, 2008, p. 21). Financial well-being has been shown to be a key predictor of overall well-being (Netemeyer et al., 2018). It is argued in this study that the overall well-being of South African employees, which includes the component of financial well-being, and thereby the implied direct influence on productivity and efficiency levels, is paramount to the development and growth of South Africa's economy.

The research initiating question of this study asked: *why does variance exists in the saving behaviour of employees in South Africa*? To this end this study specifically aimed to create a model[22] of some of the possible determinants of saving behaviour and aimed to practically explicate the relationship between the variables. Therefore, the primary research objective of this study was to develop a structural model that depicts the dynamics of the chosen variables that can possibly account for the psychological dynamics accounting for variance in saving behaviour.

A literature review was conducted in response to the research initiating question. The arguments were compiled through active theorising and were presented in chapter two. In an attempt to answer the research initiating question, a structural model was developed that visually represents the determinants of saving behaviour and their respective hypothesised relationships. Chapter three explicated the research methodology that was utilised to empirically evaluate the saving behaviour structural

[22] To reiterate again, it is acknowledged here that this is but one, and rather limited in scope, attempt to capture relevant factors in an explanatory model of this nature. It is acknowledged that there are possibly multiple significant factors not included in this model, that could further increase our understanding of the saving behaviour construct.

model. The results of various statistical analyses performed to test the model was presented in chapter four.

This final chapter aims to discuss the detailed results of the research study. In other words, inferences are made regarding the results derived from the structural model to determine whether saving behaviour has been successfully explicated in a manner that somewhat increases our knowledge and understanding of this phenomenon. Moreover, this chapter also includes the discussion of limitations of the study and provide recommendations for future research on saving behaviour. The development and testing of any explanatory structural model should aim to increase understanding of the phenomenon at hand, so as to enable the development and implementation of interventions that positively contributes to organisations, as well as society as a whole (Theron, 2017). Therefore, this chapter will also reflect on the managerial implications when saving behaviour, as a dimension of financial well-being, is prioritised within organisations.

5.2 RESULTS

5.2.1 Introduction

The concept of employee well-being and the importance thereof on the profitability of organisations has been widely researched. Employee well-being includes a wide range of dimensions such as emotional well-being, cognitive well-being, subjective well-being and financial well-being (Cotton & Hart, 2003; Keyes et al., 2002; Sorgente & Lanz, 2017). The influence of financial well-being on overall well-being is significant (Netemeyer et al., 2018) as the performance of employees are greatly influenced by factors such as financial stress. If organisations prioritise the importance of financial well-being, the possible counterproductive (such as lack of organisational commitment and absenteeism) effect of financial stress can be managed better.

As behavioural heterogeneity is evident when explaining differences in saving behaviour, it remains critical that specific predictors affecting the saving behaviour of employees should be investigated. Subsequently, the focus of this research study was to investigate individual differences that may influence the extent to which individuals engage in saving behaviour. The literature review culminated in a structural model of possible predictors which included self-control, financial self-efficacy, financial literacy,

gender and financial delay of gratification. The empirical results, presented in chapter four, will be discussed below.

5.3 INTERPRETATION OF THE STRUCTURAL (INNER) MODEL RESULTS

An important predictor within the context of this study was self-control and its relation to saving behaviour. Widespread support has consistently been found that self-control is an important predictor in saving behaviour (Achtziger et al., 2015; Gathergood, 2012; Rha et al., 2006). In other words, higher levels of self-control are known to be correlated with higher levels of saving behaviour (Strömbäck et al., 2017). Furthermore, it was found that individuals struggling with self-control in the financial domain are more likely to be faced with situations such as unforeseen expenses and credit withdrawals, are less likely to regularly save money and have enough money for their retirement (Gathergood, 2012). According to Strömbäck et al. (2017), the lack of self-control is in line with the behavioural life-cycle (BLC) originally formulated by Shefrin and Thaler (1988). The BLC suggests that behaviour is influenced by a dual preference framework that exists within individuals. According to Shefrin and Thaler (1988), the first preference, the “planner”, is defined as an individual whose thoughts are directed toward long-term planning. In contrast, the thoughts of the “doer” are concerned with the current situation. It is further argued that financial behaviour is determined by both the ability to control impulses and the extent to which money is valued. In line with the above, this study argued that the ability to be able to interrupt undesired behaviours and to alter or override one’s dominant response tendencies (Achtziger et al., 2015), will increase the likelihood of engaging in saving behaviour. However, this line of reasoning was not substantiated by the findings of this research study.

Strömbäck et al. (2017) utilised the Financial Management Behaviour Scale (FMBS), developed by Dew and Xiao (2011), to measure the relationship between self-control and financial behaviour. They measured three aspects of financial management (financial anxiety, financial security, financial management behaviour), whereas the current research study only utilised the financial management behavioural subscale renamed as “saving behaviour”. The questionnaire, as utilised in research conducted by Strömbäck et al. (2017), asked respondents to rate how often they have engaged in a certain behaviour, given a certain time-frame. The purpose was to determine

whether self-control (as a psychological characteristic) can improve the understanding of how individuals make financial decisions, reflected through the three aspects of financial management measured in their study (Strömbäck et al., 2017). Results reported that higher levels of self-control (measured with the full FMBS) have a positive effect on general financial behaviour (Strömbäck et al., 2017). General financial behaviour included the probability of saving money from every salary, lower levels of anxiety with regards to financial matters and less feelings of insecurity in current and future financial situation(s). Hence, financial behaviour, as measured in their study, included a wider range of financial behaviours, with the saving behaviour component only being one part of it. Although a significant relationship was found between self-control and financial management behaviour, this relationship was not strong (0.24; $p < 0.01$) (Strömbäck et al., 2017). However, this relationship still existed after controlling for income, age, gender, education and financial literacy. In the current research study, these demographic characteristics could not be included in the structural model as control variables. It may therefore be possible that the more restricted measurement of financial management, captured in only saving behaviour that was measured in this study, (compared to the Strömbäck et al. 2017 study) as well as the lack of use of control variables, may possibly account for the non-significant result between self-control and saving behaviour, obtained in this study.

Moreover, some researchers have reported results to suggest that the relationship between self-control and saving behaviour is possibly moderated by other variables (e.g. professional financial advice). For example, Liu, Yilmazer, Loibl and Montalto (2019) investigated whether individuals with higher levels of self-control save more than those with lower levels of self-control and whether professional financial advice has a positive moderating effect on the relationship between self-control and saving behaviour. Liu et al. (2019, p.25) utilised 2005-2009 data from the “Saving and old age provision in Germany” which is considered representative of the residential population in Germany. The data was therefore longitudinally collected over a period of four years. The questions were framed in a manner that aimed to determine how individuals view their financial behaviours and financial situations. Results reported a significant positive relationship between self-control and financial behaviours ($p < 0.01$) (consisting of dimensions, amongst other, saving habits and utilisation of account overdrafts).

Additionally, Liu et al. (2019) argued that professional financial advice can assist individuals to make better and more informed decisions. Therefore, it was reasoned that professional financial advice would strengthen the relationship between self-control and saving behaviour by means of assisting individuals and households to improve their self-control by implementing financial plans. The results provided support for the moderating effect of financial advice in this relationship. In other words, the influence of professional financial advice on saving behaviour is greater for individuals with lower levels of self-control (Liu et al., 2019). Based on this result, it may be possible that the relationship between self-control and saving behaviour may be more complex in nature than the direct relationship proposed in the current study, and therefore may further account for the non-significant relationship reported in the results.

Another focal determinant of saving behaviour that was presented in the research study was financial delay of gratification. Delay of gratification was defined as “a sensitivity to reward that is manifested in the willingness or ability to pass up enjoyment or something of value now, with the aim of achieving something of greater enjoyment or value in the future” (Hughes, 2013, p.74). Norvilitis (2006) examined the extent to which certain factors (such as delay of gratification, financial knowledge, age, number of credit cards and attitudes toward credit-card use) can be related to the credit-card debt of college students. A sample of 448 students was utilised. To measure financial delay of gratification, the Delay of Gratification Scale (developed by Ray and Najman, 1986) was utilised. It was found that delay of gratification predicted levels of debt (0.20; $p < 0.01$).

In the current research study, it was argued that the ability to forego an immediately rewarding outcome for an outcome at some future point in time, will positively predict the extent to which an individual will engage in saving behaviour. However, results indicated that this direct path between financial delay of gratification and saving behaviour was not supported. Consequently, more research into the use of delay of gratification as a predictor in relation to financial management behaviours, were consulted. It was revealed that some studies have shown delay of gratification can also serve to be a moderator or mediator in the explicating the relationship between financial behaviour and other variables. For example, a study done by Norvilitis and

MacLean (2010) examined the relationship between a parent's influence on the teaching and modelling of financial concepts and the extent to which this affects the credit card debt of college students. The sample consisted of 173 college students. It was found that "hands-on mentoring of financial skills was most strongly related to lower levels of credit card debt" (Norvilitis & MacLean, 2010, p.55). This relationship was mediated by financial delay of gratification. Therefore, some evidence suggest that financial delay of gratification not only serves as a main effect on financial management behaviours, but also possibly as a mediator in the relationship between predictors of financial behaviour, and the financial management behaviour of individuals. Based on the research studies discussed above, it is once more deduced that the direct relationship between financial delay of gratification and saving behaviour proposed in this model, may in fact be more complex than a simple direct effect.

Furthermore, it was argued that a positive relationship exists between self-control and of financial delay of gratification, thereby also implying that the effect of self-control on saving behaviour is mediated by financial delay of gratification. A study conducted by Duckworth, Tsukayama, and Kirby (2013) found self-control to be the main psychological mechanism underlying delay of gratification. It was argued that delay of gratification predicts life outcomes because it is a measurement of self-control. In other words, this study investigated whether self-control is related to traits such as delay of gratification. A total of two studies were conducted on a group of 56 school-age children (study one) and 966 preschool children (study 2). It was found that the predictive power of delay of gratification derives primarily from self-control. Therefore, general delay of gratification (as was measured in this study), was found to be a predictor of general self-control. In the current study, however, general self-control was found to predict an even narrower self-regulation mechanism, as encapsulated with the measurement of financial delay of gratification, broadening our understanding of self-control in its effect on domain specific delay of gratification, such as in financial behaviour. However, financial delay of gratification did not have a direct effect on saving behaviour in the current research study. This indicates that the results reported in the current research study did not support the notion that financial delay of gratification mediates the relationship between self-control and saving behaviour.

The current research study hypothesised that a direct positive relationship exists between financial self-efficacy and saving behaviour. In line with this reasoning, Farrell et al. (2016) conducted a study to explicate this relationship. It was reasoned that the management of personal finances is more complex than merely the relationship between levels of financial literacy and saving behaviour. Therefore, it was argued that a sense of self-assuredness or self-belief capabilities is critical in explaining personal financial behaviour (Farrell et al., 2016). The results suggested that financial self-efficacy is a strong predictor of both the number, and type, of financial products that is held. Financial products were defined as investments, mortgages, savings accounts, credit card use and insurance (Farrell et al., 2016). More specifically, the results revealed that higher levels of financial self-efficacy are likely to be associated with more favourable financial behaviours (such as investments, mortgages and savings). On the contrary, higher levels of financial self-efficacy were also found to be less associated with debt-related products (such as credit cards and loans). It was found that financial self-efficacy was a stronger predictor (using Seemingly Unrelated Regression Equations (SURE)) than factors such as education, financial risk preferences, household income and financial literacy, in predicting personal finance behaviour (Farrell et al., 2016).

In the current research study, the results of the hypothesised relationship regarding the predicted positive linear relationship between financial self-efficacy and saving behaviour (hypothesis 7) was statistically significant (0.34; $p < 0.05$), corroborating other research in this regard. It was argued that the ability to make confident finance-related decisions, is possibly associated with more saving behaviour. According to Bandura (2001), the presence of efficacy will enable individuals to persevere regardless of difficulties or challenges. Furthermore, financial self-efficacy involves the belief in the ability to make successful financial decisions. Therefore, the results reported supported the notion that financial self-efficacy did indeed directly predict saving behaviour. The findings of the current study also partly confirmed the results found by Farrell et al. (2016) in that both financial self-efficacy and financial literacy were used to predict engagement in saving behaviour. However, in the Farrell et al. (2016) study financial self-efficacy was a stronger predictor than financial literacy. Moreover, in the current research study, financial self-efficacy was a significant direct predictor of saving behaviour, and not financial literacy – emphasising that financial

self-efficacy may possibly be a more salient direct predictor of saving behaviour than financial literacy. This result also further underscores the result found in this study, that the relationship of financial literacy on saving behaviour, is mediated by financial self-efficacy.

The current research study also proposed a direct positive relationship between financial-literacy and saving behaviour. It was argued that a strong relationship exists between financial knowledge[23] and the likelihood of engaging in desirable financial practices, such as saving (Mien & Thao, 2015). For example, a study conducted by Mien and Thao (2015) investigated the factors influencing personal financial management behaviours (measured with the Consumer Credit Survey, developed by Perry and Morris, 2005). These factors included personal financial attitude, financial knowledge and locus of control. A survey approach was utilised on young-adults in Vietnam. The findings suggested (SEM) that personal financial attitude, financial knowledge and locus of control have direct effects on financial management (Mien & Thao, 2015). Financial knowledge had a significant, positive direct relationship with financial management behaviours. The regression coefficient of financial knowledge was 0.348. This indicates that an increase in financial knowledge would positively increase personal financial management behaviour (p-value = 0.00).

Additionally, a study conducted by Lusardi (2008) aimed to determine the levels of financial literacy amongst citizens of the United States. Lusardi (2008) reasoned that levels of financial literacy will influence financial-related behaviour such as saving. The method of data collection included a survey that asked respondents to answer questions relating to barriers experienced when engaging in saving behaviour, utilisation of financial advice and self-rated level of financial knowledge. Additionally, focus-groups and in-depth interviews were conducted with respondents. The results of the study conducted by Lusardi (2008) confirmed that low levels of financial literacy directly influence the ability to save and to secure a comfortable retirement. In other words, it was reported that the lack of knowledge regarding basic financial concepts can be linked to lower levels of saving behaviour.

[23] As mentioned previously, financial knowledge is closely related to financial literacy and was therefore used interchangeably with financial literacy in this thesis (Gale & Levine, 2010; Hastings et al., 2012; Lusardi & Mitchell, 2014).

Regardless of the results reported in the studies mentioned above, the relationship between financial literacy and saving behaviour was found to be insignificant in the current research study. It should, however, be noted that support was found for the predicted positive linear relationship between financial literacy and financial self-efficacy (hypothesis 8), which is discussed below. These results, therefore, could be interpreted to suggest that the effect of financial literacy on saving behaviour is not a direct effect, but that in fact financial self-efficacy mediates the relationship between financial literacy and saving behaviour.

In the current research study, it was also argued that financial literacy will positively predict financial self-efficacy. Results corroborated this notion as this relationship was found to be statistically significant (0.32; $p < 0.05$). The Social Learning Theory can be applied as a theoretical foundation to understand how a variety of interacting factors influence the behaviour of individuals (Bandura, 1978). Behaviour is influenced through, amongst other, cognitive processes, emotions and the environment (Bandura, 1978). Therefore, this research study took the stance that behaviours can be attributed to a continuous reciprocal interaction between personal factors (cognition, e.g. financial self-efficacy), the environment (access to information, e.g. financial literacy) and subsequent emotions derived through the evaluation of the interaction between these factors. Subsequently, it was argued that an increase in levels of financial literacy will increase the possibility that an increase in confidence in the ability to make sound financial decisions, will occur. Additionally, by applying the theoretical logical underpinning reciprocal determinism, it was argued that an increase in levels of financial literacy will positively and directly influence the extent to which positive emotions, related to one's confidence in financial management behaviours, is experienced. Hence, it was argued that financial literacy will positively influence financial self-efficacy in that an increase in financial knowledge will positively influence an individual's confidence in their ability to make sound decisions based on the attained knowledge, and that more self-efficacy could potentially again result in more financial responsible behaviours – such as engaging in attaining more financial knowledge – resulting in a positive gain spiral (although the effect of self-efficacy on financial literacy was not formally tested in this study).

Lastly, it was argued in the current research study that gender will have a direct effect on saving behaviour. However, research on the effect of gender on financial management behaviours (such as saving) has delivered mixed results. For example, Sereetrakul, Wongveeravuti and Likitapiwat (2013) examined the extent to which gender may affect the saving and spending behaviours of teenagers. The results indicated females had a more positive attitude towards saving behaviour ($p = 0.000$). Whereas, males had a more positive attitude towards spending money ($p = 0.002$).

Additionally, Speelman, Clark-Murphy and Gerrans (2012) investigated the impact of demographic factors on the investment in savings funds. Data was derived from four Australian retirement savings funds between 1995 and 2001. A two-step cluster analysis was performed using SPSS (Speelman et al., 2012). It was found that gender is one of the two (the other variable being risk) dominant factors when predicting the investment in savings funds. Speelman et al. (2012) found that women had lower levels of ability to accumulate sufficient funds for retirement. These results were attributed to more disrupted work patterns and lower incomes. The current research study found that gender (as a main effect) had a direct relationship on saving behaviour. Due to the manner in which the items were coded in the current research study, (male = 1, female = 2), the negative relationship suggest that men may possibility report higher levels of saving behaviour than women, which fits in with the Speelman et al., (2012) study in explaining some of the reasons for this phenomenon in women.

5.4 MODERATING EFFECTS

The determinants of the saving behaviour structural model included two interaction/moderating effects. These were assessed and fitted as part of the PLS analysis of the model. The first moderating relationship that was tested was the moderating impact of financial literacy on the relationship between financial delay of gratification and saving behaviour. It was argued that higher levels of financial knowledge will increase the probability of engaging in saving behaviour (Parrotta & Johnson, 1998). Furthermore, it was argued that two individuals with similar levels of financial delay of gratification may report different levels of saving behaviour, based on their levels of financial literacy. It was proposed that this effect may be due to the fact that higher levels of financial literacy may influence the self-regulation mechanism inherent to financial delay of gratification. It was argued that higher levels of financial

literacy will influence the extent to which an individual is not only aware of, but also grasps the reasoning and possible advantages, of engaging in saving behaviour, thereby influencing their financial delay of gratification. This theorising was unfortunately not supported by the results.

The second moderating relationship that was tested was the moderating impact of gender on the relationship between financial literacy and saving behaviour. This interaction effect was also not supported by the results (0.03; $p > 0.05$). Previous research, empirically evaluating gender as a moderator in explaining differences in financial behaviour of individuals, exists (Falahati & Sabri, 2015; Sabri, Abdullah, Zenhendel & Ahmad, 2018).

For example, Sabri et al. (2018) investigated the moderation effect of gender on the relationship between financial capability and financial literacy, money attitude, and financial stress. A multi-group analysis of SEM (with AMOS) was utilised to analyse the data. Results corroborated the hypothesis that gender has a moderating effect on the overall model. More specifically, the results revealed a significant moderating effect of gender on the relationship between financial capability and financial stress for females but not for males (β Female = 0.095; $p \leq 0.01$; β Male = 0.075; $p = 0.215$). Moreover, the relationship between financial capability and financial literacy were found to be significant, for both males and females (β Female = 0.024; $p = 0.032$; β Male = 0.015; $p \leq 0.001$).

Additionally, a study conducted by Falahati and Sabri (2015) aimed to evaluate the moderating effect of gender on the determinants of financial well-being in a sample of Malaysian college students. A multi-group analysis approach (using AMOS) was utilised in this research study. The results revealed that financial knowledge is a greater predictor (z-score = 2.739) of financial well-being amongst female students. Moreover, financial management was found to be a greater predictor (z-score = 14.49) of financial strain amongst male students. Lastly, financial knowledge had a stronger effect (z score = 10.45) on predicting financial management amongst male students (Falahati & Sabri, 2015).

The findings of these studies supported the notion that gender has a significant moderating effect on determinants of financial well-being. Regardless of the studies

presented above, the results of the current study did not support the moderating effect of gender on the relationship between financial literacy and saving behaviour. Based on the cited studies, however, it is clear that multiple predictors related to financial literacy, and different conceptualisations of financial management behaviour (i.e. not just saving behaviour) were utilised in these studies. This suggests that the effect of gender as a moderator is perhaps more salient in the more nuanced descriptions of behaviours related to financial knowledge, management and financial well-being, than the effect that was tested for in this study.

5.5 CONCLUSION OF THE OVERALL MODEL

The reported results of the overall model indicated that financial self-efficacy is the strongest direct predictor[24] of saving behaviour for South African employees (0.34). Furthermore, financial literacy was shown to be a direct predictor of financial self-efficacy (0.32), thereby implying that the effect of financial literacy on saving behaviour, is in fact, mediated by financial self-efficacy. Self-control (-0.07), financial delay of gratification (0.18) and financial literacy (0.04) did not directly predict saving behaviour. The proposed moderation effects did not achieve statistically significant results and therefore no support was found for the moderating effects of both gender and financial literacy.

5.6 LIMITATIONS OF THE STUDY

Several limitations of this study should be noted. Firstly, the use of the non-probability convenience sampling technique encompasses that sampling error cannot be calculated (Blumberg, Cooper & Schindler, 2008). Therefore, the results of this study should be cautiously and tentatively viewed until larger samples can be found through probability sampling. Subsequently, the results presented cannot be generalised to the South African population. Secondly, this research study only included a limited number of possible predictors of saving behaviour. It is therefore noted that a few additional predictors could have been included in the model.

Thirdly, the manner in which data was collected in this study was a limitation. Sallis and Saelens (2000) regards the use of a self-report method as one of the most widely

[24] It should be noted that this was a cross-sectional study and that the PLS methodology does not allow for conclusive judgement about the causality of the predictors in the model. Although the term predictor is used, causality can only be tested with a longitudinal design.

used methods of data collection, commenting on both the strengths and limitations thereof. The strengths include, amongst other, that self-report is useful in collecting a large number of information at a relatively low cost. Regardless of the strengths, response bias is described as a definite limitation when self-report is utilised. Response bias is defined as “the tendency to respond to questions in a manner that, although systematic, interferes with the validity of the response” (Paulhus & Vazire, 2007, p. 228).

Typical response biases include socially desirable responding, acquiescent responding and extreme responding. Social desirable responding occurs when respondents convey an overly positive self-description through providing particular responses to questionnaires (Paulhus & Vazire, 2007). Acquiescent responding refers to the tendency of respondents to generally agree with question statements without necessarily considering the content of the question; while extreme responding refers to the tendency to respond only to the extreme ends of the response scale (either 1 or 5) (Paulhus & Vazire, 2007).

Finally, some of the demographic information that was collected in the current research study were not included as predictors, or even control variables, in the model, despite the fact that evidence exist to suggest that they may influence saving behaviour. For example, Belke, Dreger and Ochmann (2012) investigated the relationship between age and saving behaviour and found that age has a direct effect on levels of engagement in saving behaviour. Results corroborated the notion that engagement in saving behaviour increases as age increase. This was partly attributed to more awareness regarding retirement provision and increasing immobility (Belke et al., 2012). Moreover, Love (2008) found empirical results that marital status and number of dependents account for differences in saving behaviour. For example, it was found that widowhood causes decreases in investments, with this impact being the largest for individuals with children. Moreover, divorce influenced the reallocation of investments in different directions; women chose more low-risk saving and investment options, whereas, men allocated their money in riskier investments (Love, 2008). Further, number of dependents have been shown to have a significant effect on saving and investment decisions. For example, it was reported that males with dependents increase their investment in shares by less than half as much as males without

dependants. It should be noted that the current research study did collect data on some of these demographic variables. However, the PLS analyses does not allow for adding such predictors into the model as control variables. It is therefore regarded a large limitation of this study, which needs to be considered in future research conducted on the saving behaviour of South African employees.

5.7 RECOMMENDATIONS FOR FUTURE RESEARCH

The saving behaviour structural model was developed to gain insight and understanding into why employees vary in the extent to which they engage in saving behaviour. The aim of the study was to determine whether certain individual differences variables can be used to account for variance in saving behaviour amongst South African employees, in order to provide insights into interventions focussing on financial well-being, and more specifically saving behaviour.

It should, however, be noted that the saving behaviour structural model proposed in this study, and thereby the relationships between the determinants of saving behaviour, are mere approximations of but one, very limited explication of the underlying nomological structure of the saving behaviour phenomena. Consequently, as a recommendation for future research, the re-evaluation of the latent variables chosen for this specific research study should include the possibility of including (or excluding) certain variables or pathways in the model. Additionally, variables such as income[25], number of dependants and education can be included in the model to better explicate the relationships between individual differences variables and saving behaviour of South African employees.

A second recommendation is that the saving behaviour structural model should be tested longitudinally and on a larger, representative sample. Due to the use of the PLS methodology, feedback loops and bi-directional paths could not be modelled in this study. If another SEM data analysis method, such as SEM with LISREL is employed, feedback loops and bi-directionality could be modelled. For example, it would be valuable to determine how factors such as financial literacy and financial self-efficacy influence saving behaviour over time. Moreover, a larger and more representative

[25] Although this study did measure some of these demographic variables, the PLS analyses does not allow for adding such predictors into the model as control variables. This is a rather large limitation of this study, which needs to be addressed in future South African research on saving behaviour.

sample would make the results more generalizable. In conclusion, future studies focussing on saving behaviour of South African employees should utilise larger samples of research participants, while also considering the appropriate sampling method.

5.8 MANAGERIAL IMPLICATIONS

This research study aimed to investigate possible determinants of saving behaviour to inform the development of interventions (e.g. related to financial literacy and financial self-efficacy – both malleable variables) that could be utilised to improve saving behaviour, and per implication, financial well-being of South African employees. Financial well-being has been shown to have an effect on the productivity and efficiency of employees. Therefore, practical solutions in terms of increasing financial well-being may be of great value to South African organisations.

The results of this research study provided insight as to how organisations can influence the saving behaviour of South African employees and thereby contribute to higher levels of financial, and overall well-being. The results revealed that higher levels of financial literacy will increase financial self-efficacy. Moreover, financial self-efficacy was shown to be a direct predictor of engagement in saving behaviour. The results therefore suggest that if organisations design and implement interventions aimed to increase the financial literacy of employees, financial self-efficacy should likely increase. Furthermore, an increase in financial self-efficacy will possibly have a positive influence on saving behaviour. Therefore, based on these results, this section aims to provide and explore managerial implications based on these results.

Firstly, Letkiewicz (2012) suggests choice architecture (initially proposed by Thaler and Sunstein, 2008) to increase levels of financial literacy. Choice architecture encompasses the design of an environment that promotes optimal decision making (Letkiewicz, 2012). With regards to financial literacy and linking choice architecture to possible interventions that organisations can implement to increase levels of financial literacy – organisations can create environments that encourages investment in saving behaviour. According to Thaler and Sunstein (2008), the concept of choice architecture can be utilised to design options as to what employees choose to do with their “take-home” salaries. The behaviour of engaging in saving behaviour (such as saving a certain percentage of salary in an account that generates good compound

interest), which will be encouraged through choice architecture, can be designed in a manner in which it is presented as the “default option”. The psychology behind this intervention encapsulates that a choice environment guides decision-making as individuals who prefers something other than the “default option” must intentionally choose another option (Thaler & Sunstein, 2008). Johnson, Hassin, Baker, Bajger and Treuer (2013) are of the opinion that the absence of considering the impact of choice infrastructure and examining the related psychological factors can have a detrimental financial impact on organisations as the relevance thereof becomes increasingly important.

Moreover, training and development interventions that aims to increase financial literacy and financial management skills should be considered within organisations. Organisations should aim to increase levels of financial literacy by conducting training that not only creates awareness on important financial management information but also equips employees with certain skills to better manage their own finances and make good financial decisions (Hathaway & Khatiwada, 2008; Topa, Lunceford & Boyatzis, 2018). This can occur through training sessions with financial advisors or participating in financial education programs. Burke and Hung (2015) investigated the influence of working with a financial advisor on saving behaviour. While limited evidence were found to suggest that advisers have a direct impact on the saving behaviour of clients, evidence were found that “those who receive financial advice are more likely to have a plan for retirement, feel more confident about retirement preparations, and are more likely to have retirement goals” (Burke & Hung, 2015, p.18).

Further to this, financial education programs should also be considered as an intervention to increase financial well-being within organisations. By involving employees to actively take part in this process with the assistance of financial advisors or educators, they are enabled to grasp the significant impact of certain financial concepts such as the difference between simple and compound interest rates. For example, the financial well-being program at the *United Services Automobile Association* in the United States is designed to assist their 32 896 employees with getting control of the full scope of their finances (Albrecht, 2019). The program includes activities focused on setting a personal budget, handling both regular and unexpected financial challenges, and to establish a will and plan for retirement (Albrecht, 2019). Organisations can further also allow employees more insight into package structuring

so that they can control how much of their take home pay is allocated to long term saving (e.g. retirement fund) (Miller, 2019).

Lastly, Falahati and Sabri (2015) suggested that a professional curriculum at schools that incorporates basic skills in financial knowledge, should be considered. It was argued that school students should be taught to develop financial skills and learn to apply this knowledge from an early age. Therefore, the holistic focus of such a curriculum should include essential financial knowledge and skills, but also aim to increase amongst other, self-efficacy, problem solving skills, and appropriate use of financial assets (Falahati & Sabri, 2015)

5.9 CONCLUSION

The purpose of this study was to put forward a possible nomological network of factors influencing saving behaviour as a means to better understand and conceptualise the psychological processes underlying saving behaviour amongst employees in South Africa. The study provided insights into the complexity of the saving behaviour phenomenon and to a few predictors thereof. The insights presented in this research study can enable organisations to design and implement interventions that will positively influence the saving behaviour of employees and thereby their financial well-being. An increase in financial well-being will have a positive impact on overall well-being and therefore productivity and efficiency.

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APPENDIX A: ETHICAL CLEARANCE APPROVAL

UNIVERSITEIT
STELLENBOSCH
UNIVERSITY

APPROVED WITH STIPULATIONS
REC: SBER - Initial Application Form

24 April 2019

Project number: IPSY-2019-9058

Project title: THE DEVELOPMENT AND EMPIRICAL EVALUATION OF A SAVING BEHAVIOUR STRUCTURAL MODEL

Dear Ms Kristi Kleingbiel

Your REC: SBER - Initial Application Form submitted on 28 February 2019 was reviewed by the REC: Humanities and approved with stipulations.

Ethics approval period:

Protocol approval date (Humanities)	Protocol expiration date (Humanities)
24 April 2019	23 April 2022

REC STIPULATIONS:

The researcher may proceed with the envisaged research provided that the following stipulations, relevant to the approval of the project are adhered to or addressed:

1) The researcher mentions in the short informed consent form that only she and an international collaborator will have access to the data. However, in the primary consent form attached to section 5, and in the REC application form (section 6), the researcher does not indicate that data will be shared with an international collaborator. Please clarify whether data will be shared with the collaborator and if so, what data will be shared. It is also required that this information be included in all consent forms to be presented to respondents [RESPONSE REQUIRED]

2) The researcher is reminded to supply the REC with proof of permission from the Division for Information Governance as soon as such permission is obtained. [ACTION REQUIRED]

2) The researcher is reminded to submit proof of permission obtained from the Division for Information Governance as soon as this is available.

HOW TO RESPOND:

Some of these stipulations may require your response. Where a response is required, you must respond to the REC within **six (6)** months of the date of this letter. Your approval would expire automatically should your response not be received by the REC within 6 months of the date of this letter.

Your response (and all changes requested) must be done directly on the electronic application form on the Infonetica system: https://applyethics.sun.ac.za/Project/Index/13895

Where revision to supporting documents is required, please ensure that you replace all outdated documents on your application form with the revised versions. Please respond to the stipulations in a separate cover letter titled "**Response to REC stipulations**" and attach the cover letter in the section **Additional Information and Documents**.

Please take note of the General Investigator Responsibilities attached to this letter. You may commence with your research after complying fully with these guidelines.

If the researcher deviates in any way from the proposal approved by the REC: Humanities, the researcher must notify the REC of these changes.

Please use your SU project number (9058) on any documents or correspondence with the REC concerning your project.

Please note that the REC has the prerogative and authority to ask further questions, seek additional information, require further modifications, or monitor the conduct of your research and the consent process.

FOR CONTINUATION OF PROJECTS AFTER REC APPROVAL PERIOD

Please note that a progress report should be submitted to the Research Ethics Committee: Humanities before the approval period has expired if a continuation of ethics approval is required. The Committee will then consider the continuation of the project for a further year (if necessary)

Included Documents:

Document Type	File Name	Date	Version
Research Protocol/Proposal	K Kleingbiel Research proposal FINAL	22/01/2019	
Data collection tool	Questionnaire - Kristi Kleingbiel	19/02/2019	Final
Request for permission	IRP	19/02/2019	Final
Default	Measurement instrument - Delay of Gratification	19/02/2019	Final
Default	Measurement instrument - Financial Literacy	19/02/2019	Final
Default	Measurement instrument - Saving Behaviour	19/02/2019	Final
Default	Measurement instrument - Self-control	19/02/2019	Final
Default	Measurement instrument - Self-efficacy	19/02/2019	Final
Default	Short informed consent form - Kristi Kleingbiel	21/02/2019	Final
Informed Consent Form	Informed consent - Kristi Kleingbiel	21/02/2019	Final

If you have any questions or need further help, please contact the REC office at cgraham@sun.ac.za.

Sincerely,

Clarissa Graham

REC Coordinator: Research Ethics Committee: Human Research (Humanities)

National Health Research Ethics Committee (NHREC) registration number: REC-050411-032.
The Research Ethics Committee: Humanities complies with the SA National Health Act No.61 2003 as it pertains to health research. In addition, this committee abides by the ethical norms and principles for research established by the Declaration of Helsinki (2013) and the Department of Health Guidelines for Ethical Research: Principles Structures and Processes (2nd Ed.) 2015. Annually a number of projects may be selected randomly for an external audit.

APPENDIX B: INFORMED CONSENT FORM

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jou kennisvennoot • your knowledge partner

STELLENBOSCH UNIVERSITY

CONSENT TO PARTICIPATE IN RESEARCH

THE DEVELOPMENT AND EMPIRICAL EVALUATION OF A SAVING BEHAVIOUR STRUCTURAL MODEL

You are asked to participate in a research study conducted by Ms Kristi Kleingbiel from the Industrial Psychology Department at Stellenbosch Univeristy. The results obtained will contribute to the completion of a Masters of Commerce degree in Industrial Psychology. You are selected as a possible participant in this study because you are a South African employee that can give valuable input to the data gathering process of this study.

1. PURPOSE OF THE STUDY

Saving behaviour can be defined as income minus consumption in a specific time period. However, the purposes and meanings of saving behaviour could differ amongst individuals, as their need to accumulate consumable goods influences their behaviour. The purpose of this study is to identify person- centered variables that could account for saving behaviour. Empirical insights into factors that account for saving behaviour could inform financial awareness training initiatives in organisations, and in the long-term increase financial well-being of employees, and henceforth overall employee well-being.

2. PROCEDURE

If you volunteer to participate in this study, we would ask you to complete an online questionnaire that should take ± 15 minutes to complete. You will need to have access to the Internet in order to complete the questionnaire.

3. POTENTIAL RISKS AND DISCOMFORTS

This is a relatively risk-free study. The only potential discomforts you will be exposed to are (1) possible discomfort when reporting on your financial behaviour, (2) approximate level of income (Section A) and (3) your time to complete the questionnaire. You will not be required to write your name on the questionairre. If you experience any emotional distress during the completion of the questionnaire, please be advised that you are free to decline answering any question and may withdraw from the study at any point, by simply closing the browser window and exiting the survey, even if you do initially agree to take part. The data will only be utilised for research purposes and no consequences, positive or negative, will result from the findings.

4. POTENTIAL BENEFITS TO SUBJECTS AND/OR TO SOCIETY

Participation in this study has no direct benefit, monetary or otherwise, to the individual participant. However, it is hoped that the development of the saving behaviour structural model will add to the empirical knowledge base that currently exists. This knowledge will enable further engagement in future organizational interventions for the academic employee, learning institutions, organisations and society as a whole.

5. CONFIDENTIALITY AND ANONYMITY

Any information that is obtained in connection with this study and that can be identified with you will remain confidential and will be disclosed only with your permission or as required by law. Confidentiality will be maintained by restricting access to the data to the researchers (Kristi Kleingbiel and Prof Gina Görgens), by storing the data on a password-protected computer, and by only reporting aggregate statistics of the sample. The results of this study will be distributed in an unrestricted electronic thesis, as well as an article published in an accredited scientific journal. The publications will not reveal the identity of any research participant, or any of the individual findings obtained through the various questionnaires.

6. PARTICIPATION AND WITHDRAWAL

You can choose whether to be in this study or not. If you volunteer to be in this study, you may withdraw at any time without consequences of any kind. You may also refuse to answer any questions you don't want to answer and still remain in the study. The investigator may withdraw you from this research if circumstances arise which warrant doing so.

7. IDENTIFICATION OF INVESTIGATORS

If you have any concerns about the research, feel free to contact Kristi Kleingbiel (kkleingbiel@gmail.com / 078 399 9399) or Prof G Görgens (ekermans@sun.ac.za / 021 808 3596).

8. RIGHTS OF RESEARCH SUBJECTS

You may withdraw your consent at any time and discontinue participation without penalty. You are not waiving any legal claims, rights or remedies because of your participation in this research study. If you have questions regarding your rights as a research subject, contact Ms Maléne Fouché [mfouche@sun.ac.za; 021 808 4622] at the Division for Research Development, Stellenbosch University.

CONSENT FORM (please tick the appropriate box):

I hereby consent to voluntarily participate in this study. I agree that my data may be integrated into a summary of the results of all the questionnaires without identifying me personally. I agree that the data may be used for future research purposes. ☐

I don't want to participate in this study. ☐

APPENDIX C: SHORT INFORMED CONSENT FORM

CONSENT TO PARTICIPATE IN RESEARCH

Dear _____,

I would like to invite you to take part in a survey, the results will enable further engagement in future organizational interventions for the academic employee, learning institutions, organisations and society as a whole.

Please take some time to read the information presented here, which will explain the details of this project. Your participation is entirely voluntary and you are free to decline to participate. If you decline, this will not affect you negatively in any way whatsoever. You are also free to withdraw from the study at any point, by simply closing the browser window and exiting the survey, even if you do initially agree to take part.

The purpose of this study is to identify person-centered variables that could account for saving behaviour. Empirical insights into factors that account for saving behaviour could inform financial awareness training initiatives in organisations, and in the long-term increase financial well-being of employees, and henceforth overall employee well-being.

The survey will take approximately 15 minutes to complete.

Please note that there is a risk that you might experience some discomfort when reporting on your financial behaviour and your approximate level of income. However, the data collected from you will be anonymous. You will not have to provide your name when completing the survey. If you feel distressed about your reflections of your current job security, please contact the SU Employee Assistance Programme coordinator at (021) 8084824.

RIGHTS OF RESEARCH PARTICIPANTS:
You have the right to decline answering any questions and you can exit the survey at any time withou reason. You are not waiving any legal claims, rights or remedies because of your participation in this resea If you have questions regarding your rights as a research participant, contact Mrs Malén (mfouche@sun.ac.za; 021 808 4622) at the Division for Research Development at Stellenbosch University.

Confidentiality will be maintained by restricting access to the data to the researchers (Kristi Kleingbiel and Prof Gina Görgens), by storing the data on a password-protected file on a password-protected computer, and by only reporting aggregate statistics of the sample.

If you have any questions or concerns about the research, feel free to contact Kristi Kleingbiel (kkleingbiel@gmail.com / 078 399 9399) or Prof G Görgens (ekermans@sun.ac.za / 021 808 3596).

Please click on the link (insert SunSurvey link here) if you want to participate.

APPENDIX D: SAVING BEHAVIOUR QUESTIONNAIRE

SECTION A – BIOGRAPHICAL INFORMATION

Please provide the following information about **yourself.** Fill in the necessary information or draw an X in the appropriate block.

AGE		
NUMBER OF DEPENDENTS		
MARITAL STATUS	Single	
	Married	
	Divorced	
	Separated	
	Widowed	
	Living together	
GENDER	Male	
	Female	
WHAT IS YOUR APPROXIMATE ANNUAL GROSS INCOME BEFORE TAXES?	R0-R54 344 per annum	
	R54 345-R151 727 per annum	
	R151 728-R363 930 per annum	
	R363 931-R631 120 per annum	
	R631 121-R863 906 per annum	
	R863 907-R1 329 844 per annum	
	R1 329 845+ per annum	
HIGHEST LEVEL OF EDUCATION	Doctorate	
	Masters degree	
	Honours degree/post graduate	
	Bachelors degree/advanced diploma	
	Diploma/advanced certificate	
	Grade 12	
	Grade 10	
INDUSTRY	Agriculture, forestry and fishing	
	Education	
	Construction	
	Wholesale & retail	
	Tourism	
	Finance, real estate, business services	
	Administration	
	Medical	
	Engineering	
	Other	

SECTION B – SAVING BEHAVIOUR

This scale consists of several items relating to saving behaviour. Read each item and indicate how often you have engaged in these activities in the past six months.

	1	**2**	**3**	**4**	**5**

	NEVER	RARELY	OCCASIONNALY	OFTEN	ALWAYS
1. Began or maintained an emergency savings fund.					
2. Saved money from your netto salary.					
3. Saved money from your netto salary for a long-term goal such as a car, education, house etc.					
4. Contributed money to a retirement (annuity) account.					
5. Bought shares or unit trusts.					
6. Saved money in a money market account.					

SECTION C – SELF-CONTROL

The following set of questions constitute an overall index of self-control. Read each item and indicate to what extent you are likely to engage in these behaviours.

	1	**2**	**3**	**4**	**5**
	NEVER	RARELY	OCCASIONNALY	OFTEN	ALWAYS
1. I am good at resisting temptation.					
2. I have a hard time breaking bad habits.					
3. I am lazy.					
4. I say inappropriate things.					
5. I do certain things that are bad for me, if they are fun.					
6. I refuse things that are bad for me.					

7. I wish I had more self-discipline.					
8. People would say that I have iron self-discipline.					
9. Pleasure and fun sometimes keep me from getting work done.					
10. I have trouble concentrating.					
11. I am able to work effectively toward long-term goals.					
12. Sometimes I can't stop myself from doing something, even if I know it is wrong					
13. I often act without thinking through all the alternatives.					

SECTION D – FINANCIAL DELAY OF GRATIFICATION

This questionnaire presents a list of items measuring your tendency to delay gratification. Consider the following items and indicate the extent to which you agree with each statement.

	1	2	3	4	5
	STRONGLY D ISAGREE	DISAGREE	UNDECIDED	AGREE	STONGLY AGREE
1. I enjoy spending money the moment I get it.					
2. When I am able to, I try to save away a little money in case an emergency should arise.					
3. It is hard for me to resist buying things I cannot afford.					

4. I try to spend my money wisely.					
5. I cannot be trusted with money.					
6. I manage my money well.					
7. When someone gives me money, I prefer to spend it right away.					

SECTION E – FINANCIAL LITERACY

Below are questions which determines the extent to which you have the basic knowledge of key financial concepts and the ability to successfully apply numeracy skills in different financial situations. Use the following scale to indicate the correct answers for the following questions:

	(i)	(ii)	(iii)	(iv)
Suppose you had R100 in a savings account and the interest rate was 2% per year. After five years, how much do you think you would have in the account if you left the money to grow?	More than R102	Exactly R102	Less than R102	Do not know
Suppose you had R100 in a savings account and the interest rate is 20% per year and you never withdraw money or interest payments. If compound interest applies, after five years, how much would you have in this account in total?	Do not know	Less than R200	More than R200	Exactly R200
Imagine that the interest rate on your savings account was 1% per year and inflation was 2% per year. After one year, how much would you be able to buy with the money in this account?	Exactly the same	More than today	Do not know	Less than today
Assume a friend inherits R10,000 today and his sibling inherits R10,000 three years from now. If the time value of money is considered, who is richer because of the inheritance?	The friend	His sibling	They are equally rich	Do not know

Suppose that in the year 2020, your income has doubled and prices of all goods have doubled too. In 2020, how much will you be able to buy with your income?	Do not know	Less than today	The same	More than today

SECTION F – FINANCIAL SELF-EFFICACY

This questionnaire presents a list of items measuring beliefs in your capabilities to mobilise the motivation, cognitive resources, and courses of action needed to meet given financial situational demands (i.e self-efficacy). Consider the following items and indicate the extent to which you agree with each statement.

	1	2	3	4	5
	STRONGLY DISAGREE	DISAGREE	UNDECIDED	AGREE	STONGLY AGREE
1. I am confident in my ability to stick to my spending plan when unexpected expenses arise.					
2. I am confident in my ability to make progress toward my financial goals.					
3. I am confident that my financial competence should prevent me from being unable to handle unexpected expenses.					
4. When I am faced with financial difficulty, I am confident in my ability to overcome it					
5. I lack confidence in my ability to manage my finances.					

6. I am confident in my ability to make sufficient provision for my retirement.					

Thank you for your time and willingness to complete this survey! It is greatly appreciated.