Analysing risk tolerance during the investor lifecycle

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DECLARATION

I declare that:

“ANALYSING RISK TOLERANCE DURING THE INVESTOR LIFECYCLE”

is my own work and that all the sources I have used or quoted have been indicated and acknowledged by means of complete references, and that this dissertation has not previously been submitted by me for a degree at any other university.

_____

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November 2018

LETTER FROM THE LANGUAGE EDITOR

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DECLARATION OF LANGUAGE EDITING

5 November 2018

To whom it may concern

This is to confirm that I, the undersigned, have language edited the completed research of Anzel van den Bergh for the *Masters of Commerce in Risk Management* entitled: Analysing risk tolerance during the investor lifecycle.

No changes were permanently affected and were left to the discretion of the author. The responsibility of implementing the recommended language changes rests with the author of the thesis.

Yours truly

Jomoné Müller

DEDICATION

First and foremost, I would like to dedicate this dissertation to my Lord and Saviour, Jesus Christ, as everything I do is to honour and glorify Him.

To my inspiring and hardworking father, Emile Heinrich Ferdinand van den Bergh, for being a leader and inspiration to me in the financial industry.

To my beloved sister, Franzel van den Bergh (20 June 1997 – 4 November 2014) who is dearly missed will always be my biggest inspiration and motivator.

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Proverbs 2: 6-8: For the Lord gives wisdom; from his mouth comes knowledge and understanding. He holds success in store for the upright, He is a shield to those whose walk is blameless, for He guards the course of the just and protects the way of his faithful ones.

Anzel van den Bergh

Vanderbijlpark

2018

LIST OF ABBREVIATIONS

ANOVA	Analysis of variance (ANOVA)
GFC	Global financial crisis
GL-RTS	Grable and Lytton's risk tolerance scale
MPT	Modern Portfolio Theory
NRFR	Nominal risk-free rate
PUTs	Property unit trusts
REITs	Real Estate Investment Trusts
RRFR	Real risk-free rate
SCF	Survey of Consumer Finances
SML	Security market line
SPSS	Statistical Package for the Social Studies

ABSTRACT

Keywords: risk tolerance, financial planners, financial institutions, individual investors, demographical factors, investment decisions, investor lifecycle, risk categories (risk profiling), asset allocation decisions, Survey of Consumer Finances (SCF), self-report on lifecycle, Grable and Lytton risk tolerance scale (GL-RTS)

Analysing risk tolerance during the investor lifecycle is important to provide financial planners, financial institutions and individual investors with a framework to facilitate the recognition and implementation of suitable investment strategies as well as successful financial and investment planning. The role of financial planners in the South African context is becoming more important as most individuals require the assistance of financial planners to facilitate them with their financial and investment planning. Theoretically, it is believed that individual investors make rational investment decisions and are considered to be rational wealth-maximisers who make decisions to capitalise on available opportunities. Accordingly, South African financial planners and financial institutions assume that individual investors behave rationally when making investment decisions. This is by reason of that individual investors' risk profiles are measured through risk assessment forms that include two elements, namely risk tolerance and risk personalities, but do not take into consideration what risk individual investors cannot tolerate. However, as concluded from this study, it is evident that individual investors within the South African context do not make rational investment decisions. Furthermore, in reality, the level of risk tolerance individual investors are willing to tolerate differs from theory and is primarily reliant on their personal traits and attitudes towards risk. The difficulties that financial planners, financial institutions and individual investors face in recognising and implementing suitable investment strategies often take on preferences that relate to how individual investors recognise risk and behave towards risk.

In order to accurately determine individual investors' risk profiles and ensure the successful implementation of investment strategies when making investment decisions, a thorough analysis of risk tolerance during the investor lifecycle is provided. The theoretical objectives provided an in-depth analysis of the risk tolerance and investment decisions of individual investors. A theoretical framework was contextualised that assisted with the achievement of the empirical objectives of this research study. It can be concluded from the theoretical objectives that risk tolerance is an imperative factor that should be taken into consideration when planning individual investors' investment strategies. Also, demographical and socio-economic factors influence the levels of risk tolerance that individual investors are willing to tolerate. Furthermore, it is imperative that individual investors acknowledge their position in the investor lifecycle as it

is a vital element in the management of an effective investment portfolio. Moreover, individual investors' asset allocation decisions vary at different phases of the investor lifecycle.

The primary objective of this study was to analyse risk tolerance during the investor lifecycle. The research design consisted of a literature review and an empirical study whereby a quantitative research approach and a positivistic research paradigm were applied. The target population for this study was individual investors from an investment company within the South African context. A convenience sampling method was applied whereby the participants were selected based on the ease and convenience in order to attain an unbiased sample.

The research instrument was a self-administered electronic questionnaire that was electronically distributed to 800 clients in the data base of the designated South African investment company in order to obtain the primary quantitative data. The investment company through which the questionnaire was distributed determined the sample size. A sample size of 683 respondents was reached and analysed given response rates and time constraints. The demographical information for this study was obtained in order to acquire the necessary background information and socio-economic characteristics of the participants by means of demographic questions. The demographic questions included age; gender; ethnicity; marital status; nationality; home province; home language and annual income. The questionnaire also consisted of questions where the participants were asked to indicate the instruments they have invested in and how long they had invested in these investment instruments. Furthermore, the questionnaire also consisted of the following scales: self-report on lifecycle; Survey of Consumer Finances (SCF) and Grable and Lytton risk tolerance scale (GL-RTS).

The results from this study indicated that certain demographical factors have a significant influence on South African individual investors' subjective and actual risk tolerance. Moreover, the level of risk tolerance individual investors are willing to tolerate are not entirely according to theory and depends on certain demographical factors and their perceptions and attitudes towards risk. Individual investors' level of subjective risk tolerance, their perceptions and attitudes towards risk, differs from the actual levels of risk they are willing to tolerate. South African individual investors' perceptions and attitudes towards risk indicated that they are conservative individual investors who are willing to tolerate low levels of risk. However, South African individual investors' actual level of risk tolerance indicated that they are moderate individual investors that tolerate medium levels of risk. Furthermore, it can be concluded that the more positive and greater individual investors' perceptions and attitudes towards risk is; the higher levels of risk individual investors are likely to tolerate. In addition, individual investors' subjective and actual risk tolerance during certain phases of the investor lifecycle deviates and is not completely in line with theory.

The insights and findings obtained from this study will contribute significantly towards future research and the financial industry. It will provide financial planners, financial institutions and individual investors with a framework to facilitate the recognition and implementation of suitable investment strategies as well as successful financial and investment planning, not only within the South African context, but also internationally. Holistically, a framework is provided to analyse individual investors' risk tolerance during the investor lifecycle and contribute towards more accurate individual investors' and successful investment strategies when making investment decisions. Avenues for further research can contribute to construct a risk profiling model whereby individual investors risk profile in accordance with the factors influencing risk tolerance, perceived level of risk tolerance and phase in the investor lifecycle can be determined. In addition, the reasons for the difference between individual investors' subjective risk tolerance and actual risk tolerance or the deviation in individual investors' level of risk tolerance and phase in the investor lifecycle can be investigated.

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CHAPTER 1: INTRODUCTION AND BACKGROUND TO THE STUDY

"Wisdom is not a product of schooling but of the lifelong attempt to acquire it."

- Albert Einstein -

1.1 INTRODUCTION

The concept of risk tolerance has increasingly gained importance in the financial industry after the global financial crisis (GFC) in 2007 and is a fundamental factor that needs to be taken into consideration when making investment decisions. The concept of risk tolerance is not only stressed by financial planners and individual investors, but also by financial institutions and researchers (Gilliam *et al.,* 2010:30). Since the GFC, financial markets have been overwhelmed by extreme volatility worldwide. Individual investors' abilities to make investment decisions largely attributes to the profits made or losses incurred. Highly educated and prominent investors were also affected by the crisis, indicating that a gap exists in the traditional models of rational market behaviour (Subash, 2012:11). After the GFC, an emphasis was placed on understanding the fundamentals of the financial industry as both individual and corporate investors were devoted to having a better understanding of the concept of risk tolerance (Ryack, 2011:190).

According to Van den Bergh (2014:7) an investment strategy is only as successful as the foundation upon which it is built. Botha *et al.* (2012:541) defined an investment as the current commitment of money for a period of time with the purpose of deriving future benefits. In return, it will reward the investor for the time the funds are invested, the expected rate of inflation and the uncertainty of future payments. When planning an individual investor's investment strategy, the fundamental factor that needs to be considered is the risk tolerance of the individual investor (Rutgers, 2014:1). According to Botha *et al.* (2012:541) risk tolerance can be defined as the investor's degree of emotional acceptance of volatility or suffering a loss or attitude towards risk to meet objectives. Individual investors' willingness to take on risk are influenced by daily challenges and financial choices. It is important for financial planners to understand what drives risk tolerance as it largely influences individual investors' portfolio allocation and causes deviations in individual investors' risk tolerance. Financial planners will be able to identify the economic situations that will be likely to influence the individual investors' preference for risky assets if they have the knowledge and the ability to identify such factors (Guillemette & Nanigian, 2014:207).

The individual investor's financial needs must match the risk/return portfolio of the investment (Coronation Fund Managers, 2013:83). Individual investors prefer investments with the highest

expected return for the lowest possible level of risk (Botha *et al.,* 2012:527). An individual investor seeking higher expected returns has to make a trade-off by accepting a higher level of investment risk. Individual investors who are willing to take on different types of investment risk are in the best position to quantify risk, balance the risk and assess whether the risk is worth taking (Coronation Fund Managers, 2013:85). Numerous financial planners are attentive to the fact that after individual investors have experienced investment rewards they are more willing to take on investment risk. However, individual investors are less willing to take on investment risk after they have experienced consecutive losses in the financial market (Guillemette & Nanigian, 2014:207).

The most appropriate investment for each individual investor will depend on the investor's objectives and constraints such as the time horizon, income, available capital, liquidity requirements and emotional resilience (Reilly & Brown, 2012:33; Coronation Fund Managers, 2016:85). The individual investor's objectives and constraints should first be determined before the return objective, as the risk tolerance will influence the required rate of return. The only manner in which superior investment returns can be achieved is by taking on additional risk. The majority of individual investors are not willing to take on above-average risks in order to achieve above-average returns (Hanna & Chen, 1997:17).

The key to successful asset management is to identify which risks are worth taking. By investing all of the individual investors' money in one type of investment or asset class, substantial returns can be achieved but at greater risk levels. In order to earn substantial returns at lower risk levels, the individual investors' money can be diversified across different types of investments and asset classes. Diversification is not an assurance against loss, only against losing everything at once. Thus, the difficulty lies in choosing the right investment portfolios and asset classes to invest in (Coronation Fund Managers, 2016:97). In order to choose the right investment portfolios and asset classes, the individual investor's financial circumstances, financial goals, objectives, constraints, risk capacity, and risk tolerance need to be evaluated (Coronation Fund Managers, 2016:98).

Goodall (2005:3) stated that the objective of giving an individual investor the maximum return for the given level of risk accepted can be defined by knowing the investor's risk profile. Risk profiles are more detailed than simply being categorised by the financial industry into three main categories namely, aggressive phase, moderate phase, and conservative phase. If the individual investor's risk profile is correctly identified, it will determine whether the investment objectives will be successfully met or not. For this reason, it is vital that financial planners and individual investors wisely consider and determine how much risk the individual investor can tolerate before constructing an investment portfolio (Sanlam, 2013:2).

Warren Buffet stated that "investing is simple, but not easy". The difficulties that financial planners and individual investors face to identify and implement appropriate investment strategies are captured by this articulate sentence remarked by Warren Buffet (Jacobsen *et al*., 2014:1). These difficulties often take on preferences that relate to how individual investors perceive risk and act towards risk. The problem with not taking risk tolerance into account is that perceptions lead to actions. Mutswenje (2014:92) stated that regardless of the fact how well-educated and how much research individual investors have done, individual investors are most likely to behave irrationally with the fear of loss and uncertainty in the future.

1.2 THE PROBLEM STATEMENT

The role of financial planners in the South African context is becoming more important as most individuals need the assistance of financial planners to help them with their financial and investment planning (Coronation Fund Managers, 2013:71). It is evident from previous studies that the fundamental factor that needs to be taken in consideration when planning an individual investor's investment strategy, is the individual investor's ability to tolerate risk (Gilliam *et al.,* 2010:30; Larkin *et al.,* 2013:1; Guillemette & Nanigian, 2014:1; Grable, 2016:19). The concept of risk tolerance is stressed by numerous financial planners. Financial planners make use of risk assessment forms to evaluate individual investors' risk tolerance (Coronation Fund Managers, 2016:97).

Harty (2014:1) stated that it is of fundamental importance that individual investors acknowledge their position in the investor lifecycle, as it is an essential element in the management of an effective investment portfolio. The investor lifecycle illustrates the different stages of the individual investors in their investment life, which includes the accumulation-, consolidation-, spending- and gifting phase. The investor lifecycle also consists of both short-term and long-term investments. The manner in which individual investors invest their resources for short- and long-term goals, for example saving for a specific short-term goal or a long-term goal such as retirement, are affected by risk tolerance (Grable, 2016:19). Hanna and Chen (1997:17) further stated that it is expected that many individual investors put too much focus on short-term volatility, especially when investing for retirement. Asset allocation is one of the most fundamental decisions when investing for long-term goals. The asset allocation decisions of individual investors vary at different phases of the investor lifecycle. The importance of age for asset allocation is only relevant for the reason that the individual investors' personal circumstances and wealth change over time (Harty, 2014:1).

Mutswenje (2014:93) stated that in economic and financial theories it is primarily assumed that individual investors behave rationally when making investment decisions and are considered to be rational wealth-maximisers who make decisions to take advantage of available opportunities.

However, in reality, the level of risk tolerance individual investors are willing to take differs from theory and largely depends on their personal traits and attitudes towards risk (Jacobsen *et al*., 2014:1).

The difficulties that financial planners and individual investors face to recognise and implement suitable investment strategies often take on preferences that relate to how individual investors recognise risk and behave towards risk (Jacobsen *et al*., 2014:1). Despite the fact that risk assessment forms are of assistance in the establishment of individual investors' risk tolerance, it is not comprehensive enough to take certain factors into account. Examples of such factors are the availability of cash, relative income, responsibilities towards dependency as well as economic, political and market-related factors. Other factors that also need to be considered are not only what market risk individual investors can tolerate, but also what market risk they cannot tolerate, for example recognising savings that individual investors cannot afford to sell at a loss (Coronation Fund Managers, 2014:89). Risk profiling does not always assist individual investors to choose the most appropriate funds in relation to individual investors' goals and objectives as the riskiness of funds differs extremely within sectors and volatility changes over time (Coronation Fund Managers, 2016:99).

Despite the fact that international studies (Grable *et al.,* 2009:1; Larkin *et al.*, 2013:3; Mutswenje, 2014:92) have been conducted to investigate the factors that influence investment decisions, there still exists a need to determine the extent that both controlled (internal) and uncontrolled (external) risk factors affect individual investors' decision making during different phases of the investor lifecycle. These factors include the investors' objectives and constraints, demographic, economic, political and market-related factors. In addition, it is not evident that many studies have been focusing on the risk tolerance of individual investors among financial institutions within the South African context and the difficulties financial planners and individual investors are confronted with when factors influencing risk tolerance arise (Grable *et al.,* 2009:1; Larkin *et al.*, 2013:3; Mutswenje, 2014:102).

As a result, a thorough analysis of risk tolerance during the investor lifecycle within the South African context needs to be conducted.

1.3 OBJECTIVES OF THE STUDY

The following objectives have been formulated for the study:

1.3.1 Primary objective

The primary objective of this study was to analyse risk tolerance during the investor lifecycle. In order to attain this, the following objectives have been formulated.

1.3.2 Theoretical objectives

In order to achieve the primary objective of the study, the following theoretical objectives have been identified:

- Provide an in-depth analysis of risk tolerance by means of examining the theory behind risk tolerance by defining and explaining risk tolerance as well as depicting the relationship between risk and return.
- Examine the theoretical framework relating to the demographical factors that influence individual investors' risk tolerance.
- Examine the theoretical aspects relating to individual investors' investment decisions.

1.3.3 Empirical objectives

In order to achieve the primary objective of the study, the following empirical objectives have been identified:

- Determine the demographical factors that influence individual investors' risk tolerance when making investment decisions.
- Determine individual investors' level of risk tolerance.
- Determine individual investors' phase in the investor lifecycle.
- Determine how individual investors subjectively estimate their risk tolerance at different phases of the investor lifecycle.
- Determine the relationship between individual investors' risk tolerance and investor lifecycle.
- Determine the relationship between individual investors' actual risk tolerance and subjective risk tolerance and how it deviates from theory during different phases of the investor lifecycle.

1.4 RESEARCH DESIGN AND METHODOLOGY

This study consists of a literature review and an empirical study in order to explain how the research was designed and the methodology used in this study. This study comprised a quantitative research approach whereby a positivistic research paradigm was applied. Positivism holds the viewpoint that only reliable knowledge, based on experience and achieved by using scientific methods, is regarded as truthful knowledge (Dudovskiy, 2016a:1). Positivism is determined by the external environment, based on reality, and considers human behaviour as submissive and controlled (Dash, 2005:1). Creswell (2003:7) stated that the positivist paradigm initiates with the process of theory, data collection that supports or rejects the theory and subsequently applying the essential modifications before further tests are done.

1.4.1 Literature review

The literature study concentrated on the theory and drivers of risk tolerance, the individual investors' investment decision-making process and previous studies conducted, within the South African context as well as aboard, on risk tolerance. Information and research with regard to this study were accessed and obtained by making use of a series of secondary sources, which consist of publications, such as journal articles, textbooks, newspapers and magazine articles.

1.4.2 Empirical study

The methodology elements that outline the empirical component of this study are as follows:

1.4.2.1 Target population and sampling frame

The target population for this study included individual investors from a South African investment company.

1.4.2.2 Sample frame, sample method, and sample size

The sample frame of this study consisted of a convenience sample of the client database of an investment company, consisting of individual investors, within the South African context. By following a convenience sampling method, an unbiased sample was attained. Convenience sampling is regarded as a type of non-probability sampling method that depends on the collection of data from members of the population who are conveniently accessible to partake in the study (Dudovskiy, 2016b:1). As the researcher is acquainted with the sample size, participants were encouraged to engage in the study until the preferred sample size has been reached (Quinlan, 2011: 214).

The individual investors within the South African context, chosen to participate in this study were based on convenience. In order to attain an unbiased sample, the clients in the investment's company database were selected randomly. The questionnaire was electronically distributed to 800 clients in the database of the designated investment company, whereby the researcher aimed to reach and analyse a sample size of 683 respondents given response rates and time constraints.

1.4.2.3 Measuring instrument and data collection method

The primary quantitative data were collected using a self-administered electronic questionnaire that was presented and distributed to the client database of a designated South African investment company. The data were returned electronically, once the sample had been collected. Individual investors' risk tolerance during the investor lifecycle was analysed by means of a validated questionnaire.

Participants were requested to complete a questionnaire consisting of the following sections:

1.4.2.3.1 Category A: Demographic information

Demographic information is the statistical data of the socio-economic characteristics of a population for example age, gender, language, race, nationality, education, marital status and income (Merriam-Webster Dictionary, 2017:1).

1.4.2.3.2 Category B: Investment instruments

Markets can be catalogued into different categories reliant on the characteristics of the market or instrument used to create categories (van den Berg, 2004:12). Investments are mainly categorised into five main asset classes namely cash, bonds, equities, property and collectible assets (exotics) (Discovery, 2012:4; Coronation Fund Managers, 2017:124). Each of these asset classes consists of different characteristics, for example, time horizon and level of risk that make them applicable for different investment objectives (Coronation Fund Managers, 2017:124).

1.4.2.3.3 Category C: Self-report on lifecycle and Survey of Consumer Finances (SCF)

Self-report measures are a test, measure or survey that is reliant on an individual's personal report of their symptoms, behaviours, beliefs or attitude. Self-report data are mainly obtained through questionnaires or interviews (Pedneault, 2018:1). The first section of Category C included a self-report on lifecycle question. The second section included a question pertaining to the SCF. The SCF is used to collect data on finances of individuals and households such as assets and liabilities, demographic characteristics and financial attitude and behaviour (Grable & Lytton, 2001:43).

1.4.2.3.4 Category D: Grable and Lytton risk tolerance scale (GL-RTS)

The GL-RTS measures financial risk tolerance with the intend to manage the financial decision-making process with the purpose of achieving financial goals (Gilliam *et al.,* 2010:30). It is regarded as one of the most trustworthy measures of financial decisions. Therefore, this scale measures individuals with virtual investment options (Gilliam *et al.,* 2010:33).

1.4.3 Statistical analysis

The statistical package, IBM Statistical Package for the Social Studies (SPSS), Version 25 for Microsoft Windows, was used to analyse the data captured and collected. The following statistical methods were applied in this study to achieve the empirical objectives:

- Descriptive analysis
    - Frequencies
    - Measures of central tendency, dispersion, and shape
- Inferential analysis (significant tests)
    - Analysis of variance (ANOVA)
    - Chi-square tests for independence
    - Correlation analysis
    - Regression analysis

1.5 ETHICAL CONSIDERATIONS

In order for the research to be conducted in an ethical manner, permission was obtained from the investment company participating in this research study. Only the designated investment company viewing the client database and gathering the data had access to the client database. In addition, the participants' identities and contributions remained anonymous and confidential at all times during the research, as the researcher had no knowledge of the client database in order to facilitate high ethical standards and ensuring anonymity.

No participants were obliged to participate in this study, as the participation was strictly voluntary. Only raw data were received from the investment company and was solely used for the purpose of the research study. Therefore, information provided by the client database of the investment company was certain to remain confidential. It was indicated by the investment company assisting with the data collection, that the data may be published without any concerns, as long as the investment company remains anonymous at all times. As a result, the research study complied with the ethical guidelines of the North-West University (NWU, 2016:48).

1.6 CHAPTER CLASSIFICATIONS

This study consists of the following chapters:

Chapter 2 Theory of risk tolerance: Chapter 2 of this study provides an in-depth analysis of the theory of risk tolerance. This chapter aims to explain the literature review by defining and explaining risk tolerance. The relationship between risk and return is also explained. An overview of previous studies conducted on risk tolerance as well as the factors influencing individual investors' risk tolerance pertaining to demographical factors is also reviewed. This chapter encloses the theoretical framework of the study.

Chapter 3 Individual investors' investment decisions: Chapter 3 focuses on individual investors' investment decisions. The objective is to provide an understanding of what needs to be taken into consideration by individual investors when making investment decisions. This chapter details and explains the individual investor lifecycle theory, the individual investors' objectives and constraints, the five risk tolerance categories (risk profiles) as well as the traditional and non-traditional asset classes in South Africa.

Chapter 4 Research design and methodology: Chapter 4 details and explains the research design and methodology employed in this study. It provides discussions on the research design, research approach, sampling procedure, measuring instrument and data collection methods as well as the data collection procedure applied to the empirical part of the study. The data analysis and statistical procedures employed to assist with the achievement of the empirical objectives in this study is also discussed in this chapter.

Chapter 5 Analysis and interpretation of empirical findings: Chapter 5 reports on the results and findings of this study. The results obtained from the questionnaire are analysed, interpreted and assessed in this chapter. Furthermore, the results of the statistical analysis procedures that were applied in order to execute the analysis of the data sets are reported on. The results and findings as per empirical objectives are conferred.

Chapter 6 Conclusion and recommendations: Chapter 6 provides a final synopsis of this study. It presents the conclusion drawn from this study together with subsequent recommendations. Results obtained and conclusions drawn as per empirical objectives of the study are summarised. Lastly, recommendations with regard to avenues for further research are provided.

1.7 SYNOPSIS

This chapter encompasses the problem statement, the objectives of the study, research design and methodology, ethical considerations as well as the chapter classifications. Given that individual investors, financial planners and financial institutions are challenged with difficulties relating to how individual investors recognise and behave towards risk, it has become imperative to achieve the primary objective by analysing individual investors' risk tolerance during the investor lifecycle and subsequently, the theoretical and empirical objectives. By achieving these objectives as stipulated in Chapter 1, strategies can be established to assist individual investors, financial planners and financial institutions in gauging effective manners to convey financial knowledge with relation to providing a more comprehensive understanding and in-depth analysis of risk tolerance and factors that needs to be taken into consideration by individual investors when making investment decisions.

The following chapter consists of a literature review pertaining to the theory of risk tolerance.

CHAPTER 2: THEORY OF RISK TOLERANCE

"Risk comes from not knowing what you are doing."

- Warren Buffet -

2.1 INTRODUCTION

The future is unpredictable and uncertain. Risk is created from the uncertainty and inability to accurately predict market prices. However, risk that results from uncertainty can be managed (Crouhy *et al.,* 2014:1). Each individual encounters risk on a daily basis. In general investment terms, risk can be explained as the uncertainty of future returns or potential losses (Van den Berg, 2004:238). Even though risk is a theoretical term, an individual's innate perception and understanding of the relationship between risk and return is to some extent cultured by their life experiences (Crouhy *et al.,* 2014:5).

Due to the fact that risk and uncertainty are used in conjunction, there have been numerous debates and discussions on similar and different elements of risk and uncertainty. Risk and uncertainty are related but they do not concur (Rachev *et al.*, 2011:5). Vaughan (2008:3) stated that the prolongation of risk referred to as a situation or grouping of situations in which there exists a loss probability generates uncertainty on behalf of individuals when risk is identified.

As stated by Rachev *et al.* (2011:5) risk is frequently argued to be a subjective occurrence consisting of two components namely uncertainty and exposure. Uncertainty refers to a mindset characterised by doubt based on a lack of knowledge about not knowing what may or may not come about in the future or whether something is true or false (Vaughan, 2008:2). Similar to uncertainty, exposure is an individual condition; however, it is completely different from uncertainty. The extent to which an individual is uncertain of a postulation does not influence the extent to which an individual is exposed to a postulation. Risk, in that case, is an exposure to a postulation of which an individual is uncertain of (Holton, 2004:22).

The amount of risk individual investors are willing to take or able to accept will be different for each individual investor and will vary across the investor lifecycle in accordance with their investment goals and objectives (Old Mutual, 2015:7). Therefore, numerous financial institutions' main objective is to identify the causes of risk and thereafter to manage and control the risks. Hence, this is only possible if risk can be quantified. If the risk of a portfolio can be measured, then the financial assets that represent the primary risk contributors can be identified. Thereafter, the portfolio can be restructured and diversified in order to spread the assets of a portfolio across

various investments, which as a result will reduce the possible loss by reducing the risk in the portfolio (Rachev *et al.*, 2011:5).

For financial planners and financial institutions such as investment companies, understanding individual investors' risk tolerance and determining their willingness and ability to take on risk is a fundamental component in the financial and investment planning process (Larkin *et al*., 2013:1). Consequently, risk tolerance, an individual's attitude towards accepting risk, is an important concept that has consequences for individual investors, financial planners and financial institutions. Risk tolerance is an aspect that can establish the appropriate asset composition in an investment portfolio, which is optimal with regard to the risk and return in relation to the individual's specific needs (Hallahan *et al*., 2004:57). According to Trone *et al*. (1996) it is not an easy process to measure an individual's risk tolerance. This is due to the fact that risk tolerance, which is regarded as a multidimensional attitude, is an obscure concept that is likely to be influenced by numerous predisposing factors (Grable & Joo, 2004:73).

It is important to take into account that there are numerous factors that influence individual investors' willingness and ability to take on risk, which determine their risk tolerance levels and as a result their levels of return to increase or decrease. Individual investors who are willing to take on greater levels of risk are likely to benefit from higher returns and wealth over the long-term. Individual investors' willingness to take on risks entails tolerating a higher likelihood of probable losses (Finke & Huston, 2003:233). When individual investors favour less risk to more risk in an efficient market, those individual investors who are willing to take on greater levels of risk will achieve higher levels of return. This is the reward that individual investors who are willing to take on more risks with the probability of higher losses will receive (Finke & Huston, 2003:233).

This chapter aims to explain the theory of risk tolerance. The literature is reviewed by defining and explaining risk tolerance. Individual investor's financial needs should match the risk/return portfolio of the investment in different portfolios. In order to explain these relationships, various aspects are highlighted. The relationship between risk and return is explained. Previous studies conducted on risk tolerance and the factors influencing individual investors' risk tolerance are also reviewed. This chapter encloses the first section of the theoretical framework of the study.

2.2 THE RELATIONSHIP BETWEEN RISK AND RETURN

A great degree of uncertainty exists when the decision-making period in terms of future forecasting is prolonged. Vaughan (2008:2) stated that when risk occurs in a particular situation it is intended that there exists uncertainty about the outcome in the particular situation and the possibility exist that the outcome will be unfavourable. Uncertainty arises when there is a lack of knowledge about

a future event that may occur and as a result, the conclusions made from the available data about the event reduce confidence (Project Management Professionals, 2016:1).

The concept of risk and uncertainty has long been discussed in an attempt to construct a single definition of risk. Risk is a concept that has different meanings for different individuals and for this reason a single definition of risk has not yet been established. Vaughan (2008:2) defined risk as a situation in which there is a likelihood of an unfavourable deviation from a desired outcome that is expected or hoped for. Risk can be divided into two categories, namely non-financial and financial risk. Individuals are exposed to non-financial risk on a regular basis. Marx (2009:7) defines non-financial risk (pure risk) as "an exposure to uncertainty that has non-monetary outcome or implication". Non-financial risk differs from financial risk in the sense that no financial benefit can be obtained from a higher exposure to risk. According to Marx (2009:7) financial risk is the likelihood of an event occurring that results in negative financial implications, therefore a loss. Accordingly, there exists a specific degree of risk in all investments caused by the irregularity in the direction of the market (Vaughan, 2008:3).

Risk can either be negative, neutral or positive (Finke & Huston, 2003:232). When risk is viewed as negative, it is tantamount with the hazard of loss. For the individual investors that view risk negatively, an investment is risky if there exists a possibility that the initial value of the investment will decline (Finke & Huston, 2003:233). These individual investors view risk as the prospect of complete loss. When risk is viewed as neutral, it is associated with being unpredictable. For the individual investors that view risk as neutral, an investment is risky when the outcome is uncertain, but not essentially negative. When risk is viewed as positive, it brings to mind excitement and opportunity to some individual investors (Coronation Fund Managers, 2016:97).

According to Marx *et al*. (2009:104) return is associated with the profit or loss that an investment generates over a given time period of the capital invested. Return is usually expressed as a percentage, such as the rate of return, which refers to the annual return earned on an investment relative to its cost (Marx *et al*., 2009:104). When individual investors purchase an asset, they anticipate that the return earned will be greater than that of other assets with similar risk (Mayo, 2000:9). The realised return will differ from the anticipated rate of return, which is referred to as the element of risk.

Individual investors face a trade-off between risk and return when making investment decisions. The relationship between risk and return is known as the risk/return trade-off. The risk/return trade-off holds that one should be willing to take on greater risk in order to earn greater potential returns. On the other hand, lower risk is associated with the probability of lower returns (The Economic Times, 2014:1).

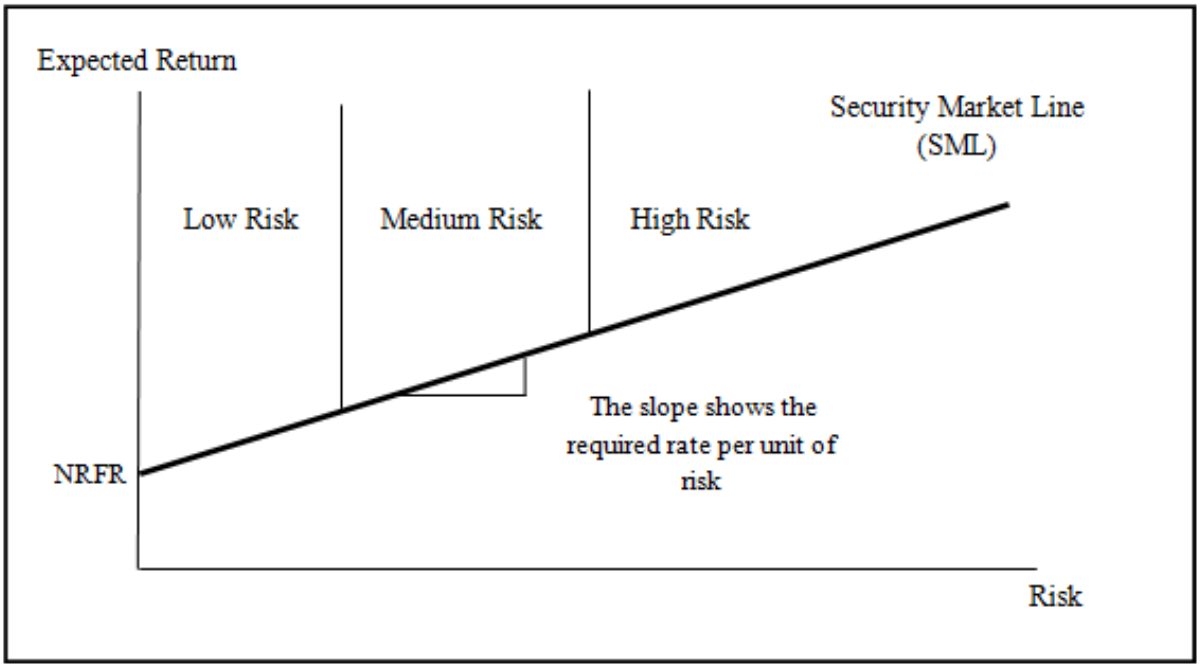


Figure 2-1: The relationship between risk and return

Source: Reilly and Brown (2012:21)

Figure 2-1 depicts the relationship between risk and return. This figure is indicative that investors increase their required rate of return as perceived risk increases (Reilly & Brown, 2012:21). The security market line (SML) illustrates the combination of risk and return that is available on alternative investments. Investors will select investments that best suit their risk preferences; some investors would consider high-risk investments to earn a higher return, whereas others would consider low-risk investments, therefore earning lower returns (Reilly & Brown, 2012:21).

If an asset is plotted above the SML, it is considered to be undervalued. The reason for this is that individual investors are anticipating better returns for the same level of risk. If an asset is plotted below the SML, it is considered to be overvalued due to the fact that individual investors are willing to accept lower rates of return for the same level of risk (Valuation Academy, 2017:1).

There are three changes that can transpire in the SML, namely a change in the position of the SML, i.e. movement along the SML, change in the slope of the SML or a parallel shift in the SML, as depicted in Figure 2-2, Figure 2-3 and Figure 2-4 (Reilly, 1989:23; Marx *et al*., 2009:10).

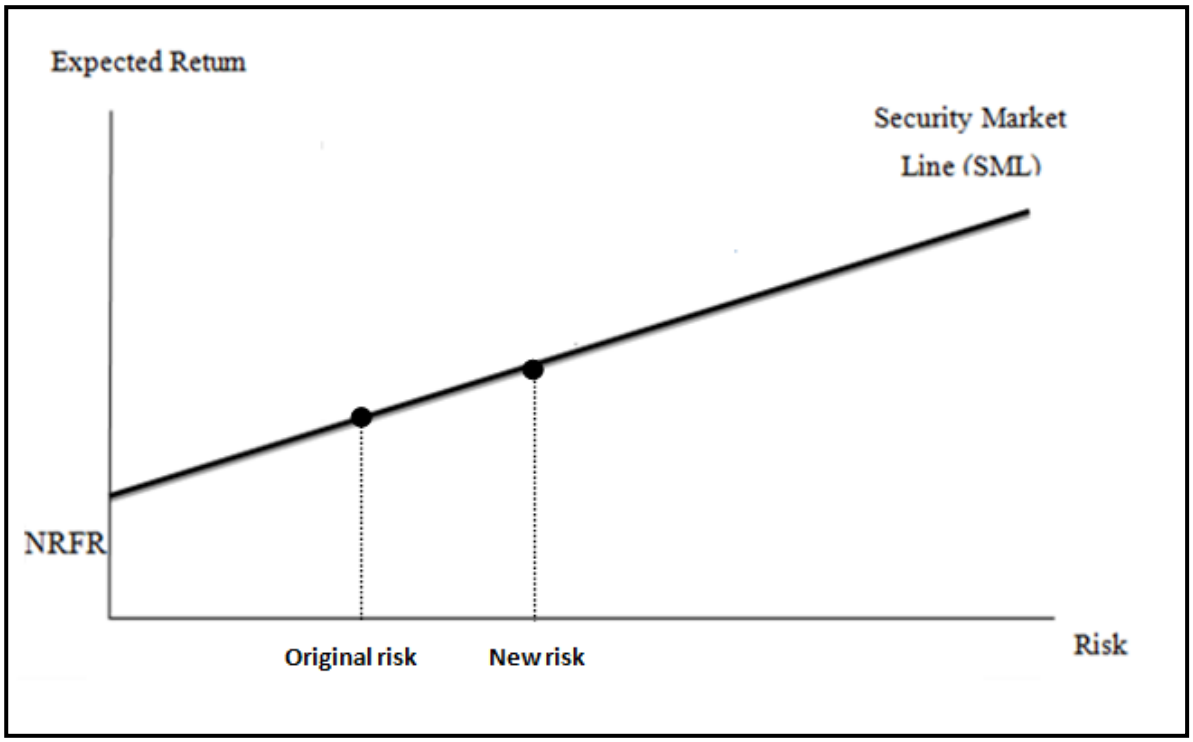


Figure 2-2: Movement along the SML

Source: Marx (2009:36)

Firstly, as depicted in Figure 2-2, the individual investors can change positions on the SML, for example, a movement along the SML, as a result of alterations in the perceived risk of the investments (Goodall, 2005:14). As a result, in order to continue to be a favourable investment, the investment should produce a higher rate of return (Marx *et al*., 2009:105).

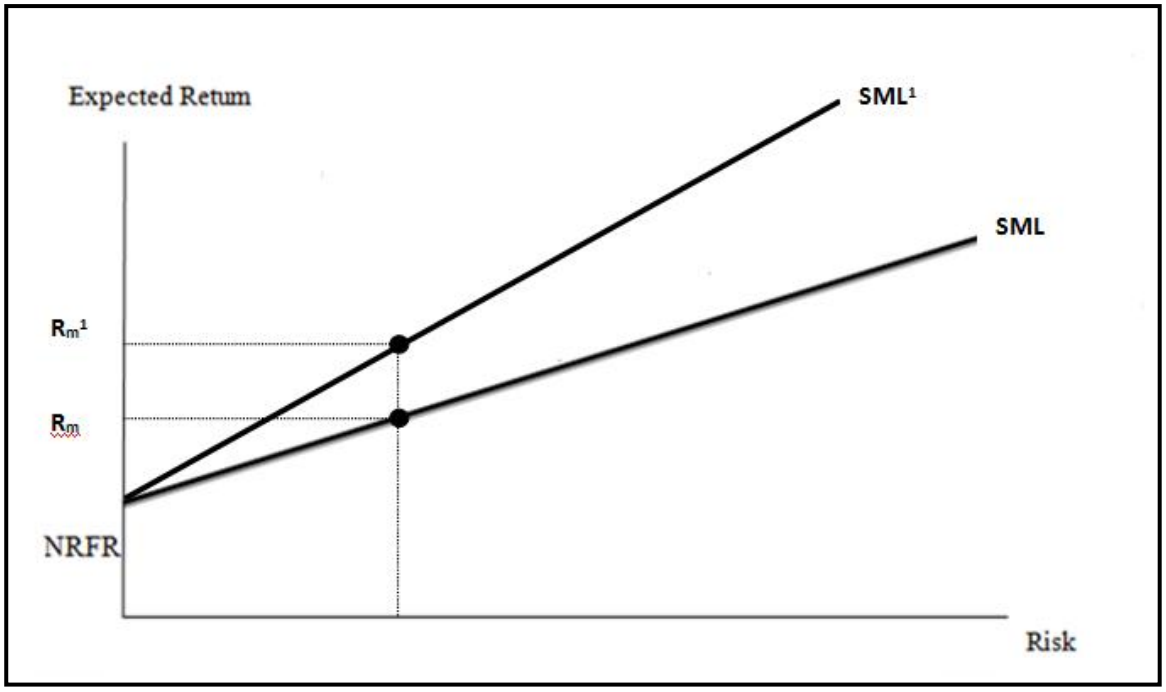


Figure 2-3: Change in the slope of the SML

Source: Marx (2009:36)

Secondly, as depicted in Figure 2-3, there can be changes in the slope of the SML as a result of alterations in the individual investors' attitudes towards risk. In terms of accuracy, individual investors can change the rate of return they require per unit of risk. This is due to the fact that over time, the market risk premium is not stable (Reilly & Brown, 2012:24). The intercept represents the nominal risk-free rate (NRFR) and the slope represents the market risk premium (Valuation Academy, 2017:1). If there is a change in the market risk premium, the required return for each risky asset will be influenced; even if no change occurs in the risk profile of each asset (Marx, 2009:36).

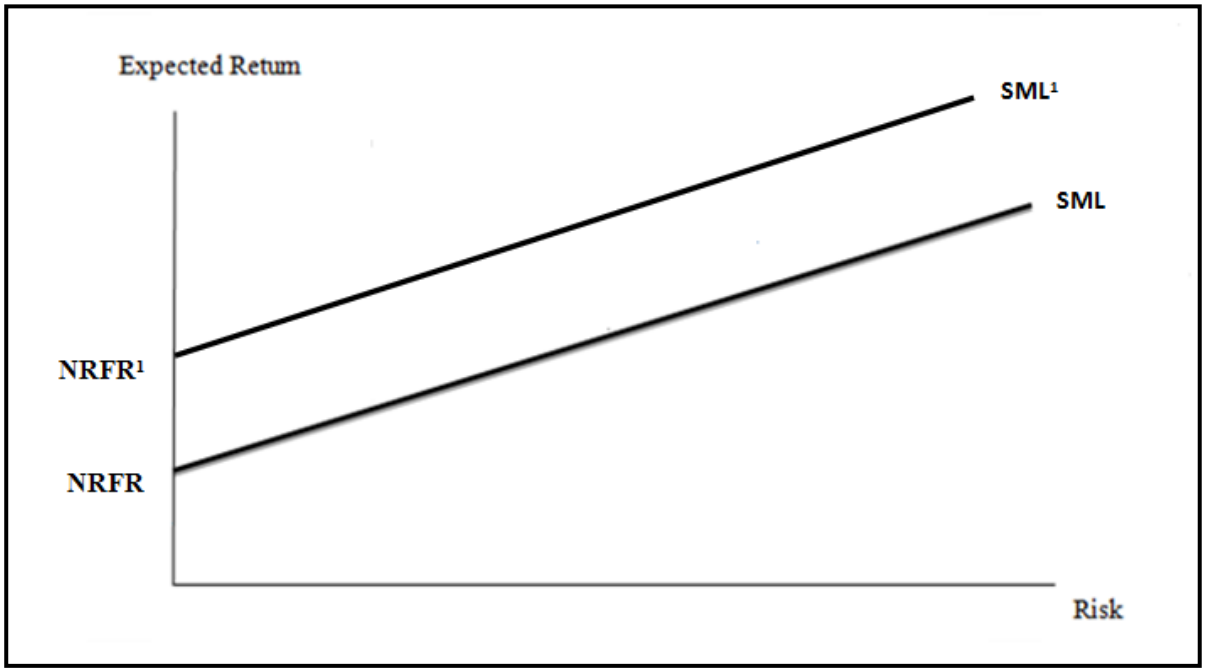


Figure 2-4: Parallel shift in the SML

Source: Marx (2009:36)

Thirdly, as depicted in Figure 2-4, a parallel shift in the SML can occur as a result of a change in the real risk-free rate (RRFR) or the expected inflation rate, which is anything that can change the nominal return on a risk-free asset. The RRFR is the primary interest rate, presuming no inflation and no uncertainty about future cash flows (Goodall, 2005:15). Factors such as a rise in expected real growth in the economy, momentary strengthening in the capital market conditions as well as a rise in expected inflation will cause the SML to shift parallel upwards, from SML to SML^1, as shown in Figure 2-4. This parallel shift is the result of these factors influencing the economy's NRFR, which have an impact on all investments, regardless of their level of risk (Reilly & Brown, 2012:25).

Every investor is faced with the challenge of balancing risk and return in their portfolios. Investors can maximise their portfolio return at a given level of risk by making use of appropriate knowledge, quantitative tools and data. Accordingly, a notable economist, Harry Markowitz, developed the Modern Portfolio Theory (MPT) that provides investors with a framework in order to make rational asset allocation decisions with regard to the selection and development of investment portfolios.

2.2.1 Modern portfolio theory

According to Shipway (2009:66), portfolio theory in its modest form aims to find a sense of balance between maximising the individual investors' return and minimising the individual investors' risk. The goal is to choose the individual investors' investments in such a manner that the individual investors' risk is diversified, without reducing the individual investors' expected rates of return. An advantage of the portfolio theory is that it is simple to apply and effective (Kierkegaard *et al*., 2006:1).

If individual investors understand how the portfolio theory works it will allow them to make more knowledgeable decisions about which assets to include in their investment portfolios. The mix of assets included in the individual investors' investment portfolios and how the individual investors' portfolios are allocated will determine the portfolio's performance (Shipway, 2009:66).

Traditional portfolio management is regarded as a non-quantitative approach (Spaulding, 2016:1). This approach aims to balance a portfolio consisting of different assets, for example, bonds and stocks, from different companies and sectors as a manner to reduce the portfolio's overall level of risk. The traditional portfolio theory's primary goal is to choose assets that consist of few or negative correlation with each other, with the intention that the portfolio's overall diversifiable risk is minimised (Spaulding, 2016:1).

The MPT that was established by Harry Markowitz in 1952 anticipated that the majority of individual investors want to be cautious when investing and that they seek to tolerate minimum possible levels of risk with the intention of attaining the maximum possible rates of return (Kierkegaard *et al*., 2006:1). The MPT anticipates that by investing in more than one asset class, individual investors can attain the benefits of diversification and lessen the risk conveyed in the individual investors' entire portfolios. As a result, the expected risk and return of all assets classes should be taken into consideration, and not only that of one asset class (Goodall, 2005:3). The modern portfolio management approach differs from the traditional portfolio management approach by means of the quantitative methods used to lessen the amount of risk (Spaulding, 2016:1).

Spaulding (2016:1) stated that the MPT lessens the risk of a portfolio by choosing complementary assets derived from statistical techniques that measure the degree of diversification. This is

executed by means of calculating the expected rates of returns, standard deviations of individual securities to evaluate their risk and by selecting assets that have undesirable or no correlation with other assets in the portfolio. The MPT's primary goal is to create an efficient portfolio, which is a portfolio that generates the maximum rate of return for a particular risk, or the minimum risk for a particular level of return. The optimal portfolio should deliver the highest return for individual investors based on their ability to tolerate risk (Goodall, 2005:4).

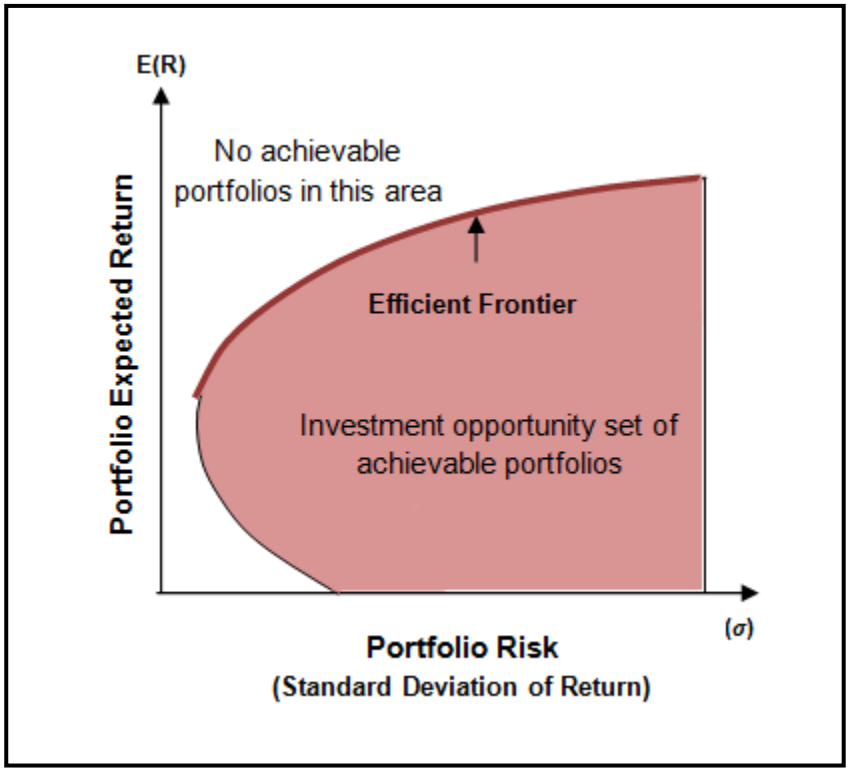


Figure 2-5: Efficient frontier

Source: Spaulding (2016:2)

There is a broad series of risk-return ratios due to the fact that investment portfolios can entail any amount of assets with different portions of each asset. As depicted in Figure 2-5, if these set of investment opportunities were indicated as an area of the figure with the portfolios' expected return on the vertical axis and portfolio risk on the horizontal axis, the total area would comprise all possible portfolios that are achievable. In this set of achievable investment portfolios, some portfolios will have the maximum return for each level of risk, or, for each level of risk, portfolios will have the maximum return (Spaulding, 2016:3). As stated by Reilly and Brown (2012:188) the efficient frontier signifies the set of portfolios that has a maximum return rate for each specified level of risk or the minimum risk for each level of return.

In order to find the individual investor's optimal portfolio, the efficient frontier can be used in combination with an individual investor's utility function. An individual investor's optimal portfolio is the portfolio with the level of risk that the individual investor is willing to accept in order to achieve the maximum return (Levišauskait, 2010:51). The minimum variance portfolio is indicated on the efficient frontier as the portfolio with the minimum risk, which is measured by the variance of the portfolios' returns and in addition, has a minimum return (Mangram, 2013:66). This portfolio on the efficient frontier also has a maximum return portfolio with an associated maximum level of risk. Portfolios that lay below the efficient frontier present lower returns for the same given level of risk and are not preferable portfolios for individual investors (Spaulding, 2016:2).

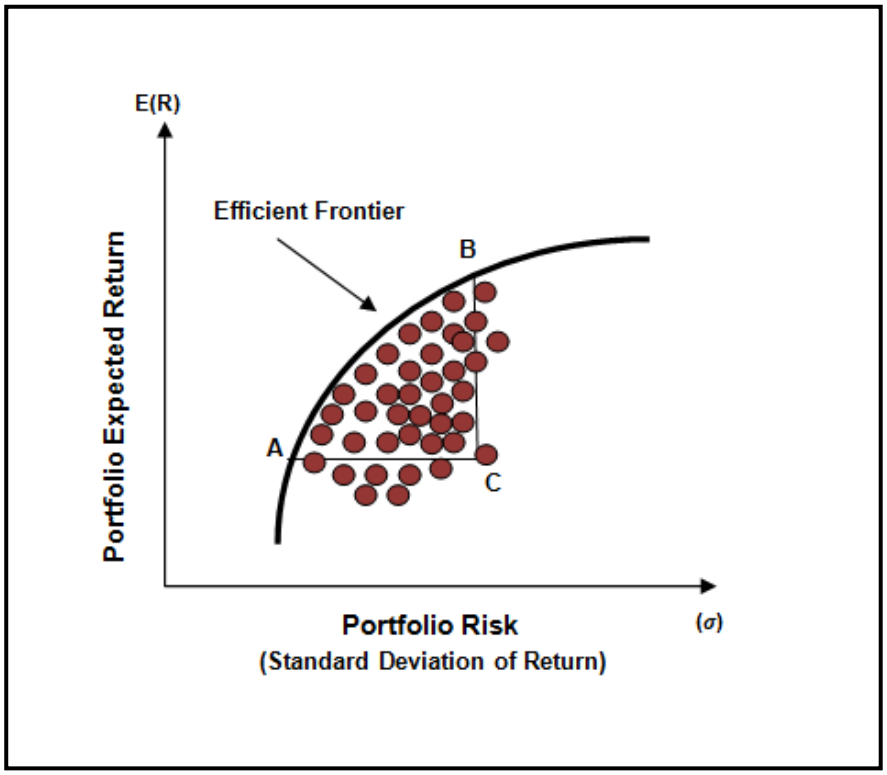


Figure 2-6: Efficient frontier for alternative portfolios
Source: Reilly and Brown (2012:189)

As previously mentioned, the efficient frontier consists of the set of all efficient portfolios that generates the maximum return for each given level of risk or the minimum risk for each level of return. In Figure 2-6, an example of such an efficient frontier is depicted. Each portfolio that lies on the efficient frontier either has a higher return rate for an equal level of risk or lower risk level for an equivalent rate of return than various portfolios that lay below the frontier (Reilly & Brown, 2012:188).

Hence, it can be said that Portfolio C is dominated by Portfolio A due to the fact that it has an equivalent rate of return, however, Portfolio A has a level of risk that is significantly lower than that of Portfolio C. Correspondingly, Portfolio C is dominated by Portfolio B, due to the fact that it has an equivalent level of risk, but Portfolio B consists of a higher rate of return than Portfolio C for the same given level of risk (Reilly & Brown, 2012:189). It is expected that the efficient frontier comprises investment portfolios rather than individual securities due to the benefits of diversification among imperfectly correlated assets (Mayo, 2000:182). At the two finish points of the efficient frontier, the two likely expectations that come to pass signify the asset with the maximum rate of return and the asset with the minimum level of risk. Individual investors will aim to achieve a point alongside the efficient frontier derived from the utility function, which represents the individual investor's attitude towards risk. There is no portfolio on the efficient frontier that can be dominated by another portfolio on the efficient frontier. Every portfolio on the efficient frontier consists of different measures of risk and return with anticipated rates of return that increase with higher levels of risk (Mangram, 2013:67).

Kierkegaard *et al*. (2006:1) stated that the MPT consists of a structure where any anticipated return consists of numerous future results and is in that way considered to be risky. This relationship between risk and return can be optimised by means of diversification. Each portfolio that fulfils these two conditions is referred to as an efficient portfolio. There is no other investment portfolio that will generate a higher rate of return at the same level of risk. An investment portfolio is considered to be inefficient if it is likely that higher expected rates of return can be achieved without taking on more risk, or to lessen risk with the same level of expected return (Mangram, 2013:65).

In financial institutions, efficient frontier strategies have been widely used to determine the optimal risk-return ratios for securities and investments (Risk and Insurance Management Society, 2012:6). Mayo (2000:182) stated that despite the fact that the efficient frontier gives all the best possible combinations of risk and return, it does not state which of the possible combinations individual investors will choose. The choice will depend on the individual investors' ability to tolerate risk. The individual investors' optimal portfolios are determined by combining the efficient frontier and the individual investors' ability to tolerate risk.

2.3 RISK TOLERANCE

Risk tolerance is one of the most comprehensive concepts used in the financial industry and a fundamental factor that needs to be taken into consideration when planning an individual investor's investment strategy (Rutgers, 2014:1). Since the GFC in 2007, financial markets have been overwhelmed by extreme volatility worldwide and investors were devoted to acquire a better

understanding of the concept of risk tolerance (Ryack, 2011:190). Du Plessis (2015:1) stated that volatility is an omnipresent risk. However, there is more to risk than just volatility.

In the financial industry, risk tolerance is referred to as an investor's attitude towards risk (Sahin & Yilmaz, 2009:2). According to Grable (2000:625) risk tolerance is defined as the greatest degree of uncertainty or volatility in investment returns that an individual is willing to accept when making a financial decision. Nevertheless, Davey and Resnik (2008:2) defined risk tolerance as the degree to which an individual is willing to risk exploring an unfavourable outcome with the objective of resulting in a favourable outcome. Individual investors' ability to tolerate risk will depend on the individual investor's objectives and constraints such as the time horizon, income, available capital, liquidity requirements, knowledge about investments, emotional resilience as well as their attitude towards fluctuations in prices (Fredman, 1996:25; Hanna & Chen, 1997:17).

Lucarelli and Brighetti (2010:2) contended that financial risk tolerance consist of a combination of two components, namely risk attitude and risk capacity. Risk appetite is the amount of risk an individual investor wants to take, whereas risk capacity is the amount of risk an individual investor can afford to take (Lucarelli & Brighetti, 2010:2). Essentially, these two components of risk tolerance are fundamentally diverse. According to Weber *et al.* (2002:222) risk appetite is referred to as a psychological and personality characteristic. On the other hand, risk capacity is referred to as a financial characteristic (Lucarelli & Brighetti, 2010:2).

Hanna and Chen (1997:17) proposed that there are two aspects of risk tolerance namely subjective and objective risk tolerance. Subjective risk tolerance is based on the economic theory of risk aversion, whereas objective risk tolerance is based on Malkiel's notion of the objective financial situation of the household, including each goal's investment horizon. Malkiel (1996:401) asserted that the risk an individual is able to take is dependent on the individual's entire financial condition, which includes all categories and sources of income, excluding income received from investments. A subjective measure of both emotional and financial ability of an individual investor to endure losses is mostly used (Hanna *et al.,* 2001:53).

Hanna *et al.* (2001:53) specified that there are at least four methods for measuring risk tolerance namely:

- Determining the individual investors' investment choices.
- Asking a combination of investment and subjective questions.
- Evaluating actual behaviour.
- Assessing specific scenarios by means of asking hypothetical questions.

Individual investors' willingness to take on risk is influenced by daily challenges and financial choices. When it comes to making investment decisions, risk tolerance is a fundamental factor not only for individual investors and financial planners but also for financial and investment companies (Gilliam *et al.,* 2010:30). However, for individual investors and financial planners, risk tolerance is a fundamental factor in order to determine the optimal composition of assets in an investment portfolio relating to the desired level of risk and return. Due to the fact that every asset class performs differently in terms of risk and return, a good balance should be kept in order for an investment portfolio to generate the individual investor's desired return in relation to the individual investor's ability to tolerate risk (InvestorGuide, 2013:1). It is important for financial planners to understand what drives risk tolerance as it mainly influences individual investors' portfolio allocation and causes deviations in individual investors' risk tolerance. Financial planners will be able to identify the economic situations that will be likely to influence the individual investors' preference for risky assets if they have the knowledge and the ability to identify such factors (Guillemette & Nanigian, 2014:207).

On the other hand, Massol and Molines (2015:2) explained that for investment managers the inability to effectively determine the risk of individual investors can result in similarity between investment funds. With that being said, the definition of risk for an investment manager can be described as the degree to which an investment is expected to deviate from its expected return (Goodall, 2005:7). Investment companies may be prepared to take on the maximum level of risk to accomplish its strategy, goals and objectives, while operating in an extensive risk appetite (Koller, 2011:65). However, individual investors may incur fund manager risk. Fund manager risk is explained by Old Mutual (2014:85) as the possible loss that individual investors may possibly sustain due to the lack of success of a fund manager to achieve its mandate. Individual investor's willingness to tolerate risk differs from individual to individual and also to that of investment companies and is reliant on and influenced by various factors. As a result, the inability to effectively determine individual investors' willingness to tolerate risk can lead to implications with regard to risk tolerance (Koller, 2011:65). Therefore, if there exists a discrepancy between the success of a fund manager to achieve its mandate and individual investors' targeted return in accordance with their willingness to tolerate risk, the individual investors' risk profile is not necessarily the cause of the discrepancy if the fund manager does not achieve its mandate (Massol & Molines, 2015:2).

Sahin and Yilmaz (2009:2) stated that the most essential factor that endorses successful decision-making in situations that is risky and uncertain is to understand and determine the risk attitude of individual investors. With that being said, to determine risk tolerance accurately is important in order to make successful investment decisions as well as for the researchers investigating the factors that influence risk tolerance.

An individual investor's degree of risk tolerance can be assessed by means of a risk assessment form. Financial planners use these forms to evaluate their clients' risk tolerance, in order to match the client's risk profile with a variety of appropriate investments (Coronation Fund Managers, 2013:83). Despite the fact that risk assessment forms are of assistance to establish individual investors' risk tolerance, it is not comprehensive enough to take factors such as the availability of cash, relative income and responsibilities towards dependency into account. Other factors that also need to be considered are not only what market risk individual investors can tolerate, but also what market risk they cannot tolerate, for example recognising savings funds in the form of investments that individual investors cannot afford to sell at a loss (Coronation Fund Managers, 2014:89).

Furthermore, an individual investor with more disposable income and alternative liquid assets will be able to take on higher levels of investment risk. Risk profiling does not always assist the individual investors in choosing the most appropriate funds in relation to the individual investors' goals and objectives, mainly because the riskiness of funds differs extremely within sectors and volatility changes over time (Coronation Fund Managers, 2016:99). According to Goodall (2005:9) it is of essential importance to realise that an investor's ability or willingness to tolerate risk can be affected dramatically by an investor's time horizon. A risk assessment form also assumes that all investment goals are long-term, which is not always the case. Individual investors have different goals during different stages of the lifecycle. As a result, no individual investor can have a savings plan based upon the single assumption of risk level. For this reason, investments should be structured in such a way to meet several targets with different assessments for each goal (Coronation Fund Managers, 2013:84).

Risk tolerance influences both short- and long-term goals of individual investors. The manner in which individual investors' invest their resources for short- and long-term goals, for example saving for a specific short-term goal or a long-term goal such as retirement, are affected by risk tolerance (Grable, 2016:19). Hanna and Chen (1997:17) further stated that it is expected that many individual investors put too much focus on short-term volatility, especially when investing for retirement. The main determinant of risk tolerance is the individual investors' attitude towards risk and investment. Each individual investor's tolerance towards risk is different and is faced with the possibility of an unforeseen loss. It is of essential importance that individual investors, financial planners as well as financial and investment companies understand that there exist gaps between perceived risk and actual risk.

2.3.1 Overview of research conducted on risk tolerance

Table 2-1 provides an overview of research studies previously conducted on risk tolerance and also signifies the purpose of every study.

Table 2-1: Research on risk

Research studies	Purpose of each study	Findings
Sung and Hanna (1996)	To investigate the effect of financial and demographic factors.	Female-headed households are found to be less risk tolerant than male-headed households or married couples. Variations in risk tolerance by means of demographic factors could be the result of different understandings of the nature of risk.
Wang and Hanna (1997)	To investigate the effect of age on risk tolerance.	Risk tolerance increases with age when all other factors are managed.
Grable (2000)	To investigate demographic, socio-economic and attitudinal factors as determinants of financial risk tolerance.	Factors such as being male, older, married, professionally employed with higher income, being educated and consisting of financial knowledge and increased economic expectations are related to risk tolerance.
Yip (2000)	To examine the robustness of financial risk tolerance as a psychological trait.	Financial risk tolerance was found to be a stable characteristic across time and event. It also appears to be a psychological trait that is evident and quite robust, which differs from individual to individual. Males were also found to be more risk tolerant than females.
Eckel and Grossman (2002)	To investigate the effect of sex differences and statistical stereotyping in attitudes towards financial risk.	The study found that men are more risk tolerant than women.
Hallahan *et al*. (2003)	To investigate the relationship between subjective financial risk tolerance and a variety of demographic characteristics.	Risk tolerance shows evidence of a concave relationship with income across all age groups, regardless of gender. Marital status and dependents were not found to be significant determinants of individual investors' risk tolerance.
Yao *et al.* (2004)	To investigate changes in financial risk tolerance levels over time.	Risk tolerance levels are affected by recent events and stock market changes. The bias of overweighting recent events needs to be overcome by financially educating investors.
Yao *et al.* (2005)	To investigate the effect of race and ethnicity on financial risk tolerance.	Africans and Hispanics are less likely to take a little financial risk but more risk tolerant than Whites, after taking into account and controlling other factors.
Hanna and Lindamood (2007)	To examine patterns of risk tolerance from 1992 to 2007 by making use of Survey of Consumer Finance (SCF) measures.	Changes in individual risk tolerance could not have resulted in the stock market gains in 2007 or real estate bubble. The risk tolerance levels of households remained lower in 2004 and 2007 than in 1998. To conclude, the SCF risk tolerance measures are not a stable measure associated with risk aversion. However, it is an attitude

Research studies	Purpose of each study	Findings
		reflecting expectations.
Grable *et al*. (2009)	To examine how correctly working adults at different ages in their lifetime approximate their risk-taking propensity.	Younger working adults are likely to over-estimate their risk tolerance compared to older working adults. Thus, middle-aged working adults are likely to underestimate their risk tolerance compared to the youngest working adults, the results were insignificant.
Strydom *et al.* (2009)	To investigate risk tolerance within the South African context by studying the effects of demographic factors.	Gender, race and religion were found to be significantly related to risk tolerance. Income was found to be insignificantly related to risk tolerance but this may be due to the lack of data. The similarity in the samples of age, marital status and educational levels embodied significant restrictions to the study.
Yao *et al*. (2011)	To investigate the effect of age on individual investors' risk tolerance levels.	Ageing and period effects were found to be statistically significant in financial risk tolerance. Age has a negative effect on individuals' willingness to tolerate risk.
Van de Venter *et al*. (2012)	To investigate financial risk tolerance as a personality trait.	Financial risk tolerance is found to be a constant personality trait and is not likely to vary considerably over an individual's lifetime.
Larkin *et al*. (2013)	To investigate the effect of demographic variables on the risk tolerance of Irish adults.	The research study found that Irish adults show similar patterns found elsewhere in literature. Age is not a main factor, although gender is a key factor. Risk tolerance declines with homeownership and increases with household earnings and education levels. Thus, Irish adults have indicated considerable decreases among all demographic categories during economic recessions.
Gerrans *et al.* (2015)	To investigate individual investors' tolerance towards financial risk by focusing on the changes with regard to the 2007-2009 GFC. Furthermore, the examination of changes in financial risk tolerance levels and a variety of demographic/socio-economic and regional background variables with a specific focus on the transitory stability of the	Changes in financial risk tolerance are small and are in contrast with the main view that risk tolerance is an elastic psychological condition exceedingly influenced by the prevailing market conditions. Even in the existence of major financial events, financial risk tolerance is likely to be relatively stable in the short-term but probably influenced and reshaped by events more regularly in due course.

Research studies	Purpose of each study	Findings
	tolerance measures across the GFC.	

Source: Author compilation

2.4 FACTORS INFLUENCING INVESTOR RISK TOLERANCE

Risk tolerance is a fundamental factor that mainly influences individuals' personal financial decisions (Snelbecker *et al.,* 1990:378). For that reason, it is highly important for individual investors, financial planners, researchers and policymakers to understand the factors associated with risk tolerance (Grable, 2016:25). There are a number of demographic, socio-economic, psychological and other factors that influence financial risk tolerance (Van de Venter *et al.,* 2012:794; Grable. 2016:25).

Table 2-2 indicates the consensus findings from literature about the influence certain individual characteristics have on risk tolerance and which factors are believed to be more risk tolerant.

Table 2-2: Factors associated with financial risk tolerance

Individual characteristics	Assumed to be more risk tolerant
Age	Younger individuals
Gender	Males
Marital status	Single individuals
Marital/Gender interaction	Single males
Ethnicity	Non-hispanic whites
Income	High
Net worth	High
Financial satisfaction	High
Financial knowledge	High
Education	Bachelor's degree or higher
Employment status	Employed full-time
Occupation	Professional
Income source	Business owner
Income variability	Stable and predictable
Household size	Large
Homeownership	Owner
Religiosity	Less religious
Self-esteem	High
Locus of control	Internal
Personality	Type A
Sensation seeking	High
Mood	Happy

Source: Irwin (1993)

Irwin (1993) was among the first to demonstrate the relationship between risk tolerance and risk-taking behaviours. Research proved that numerous factors, namely demographic, socio-economic, attitudinal and psychological factors, as indicated in Table 2-2, can assist to better understand and describe the risk tolerance of individual investors (Grable, 2016:25).

Figure 2-7 demonstrates a conceptual model of the primary factors namely bio-psychosocial, environmental and precipitating factors affecting financial risk tolerance. This model is an amendment of the intervention model that was originally developed by Irwin (1993). This conceptual model is based on the lifecycle and adolescent development theory (Grable & Joo, 2004:73).

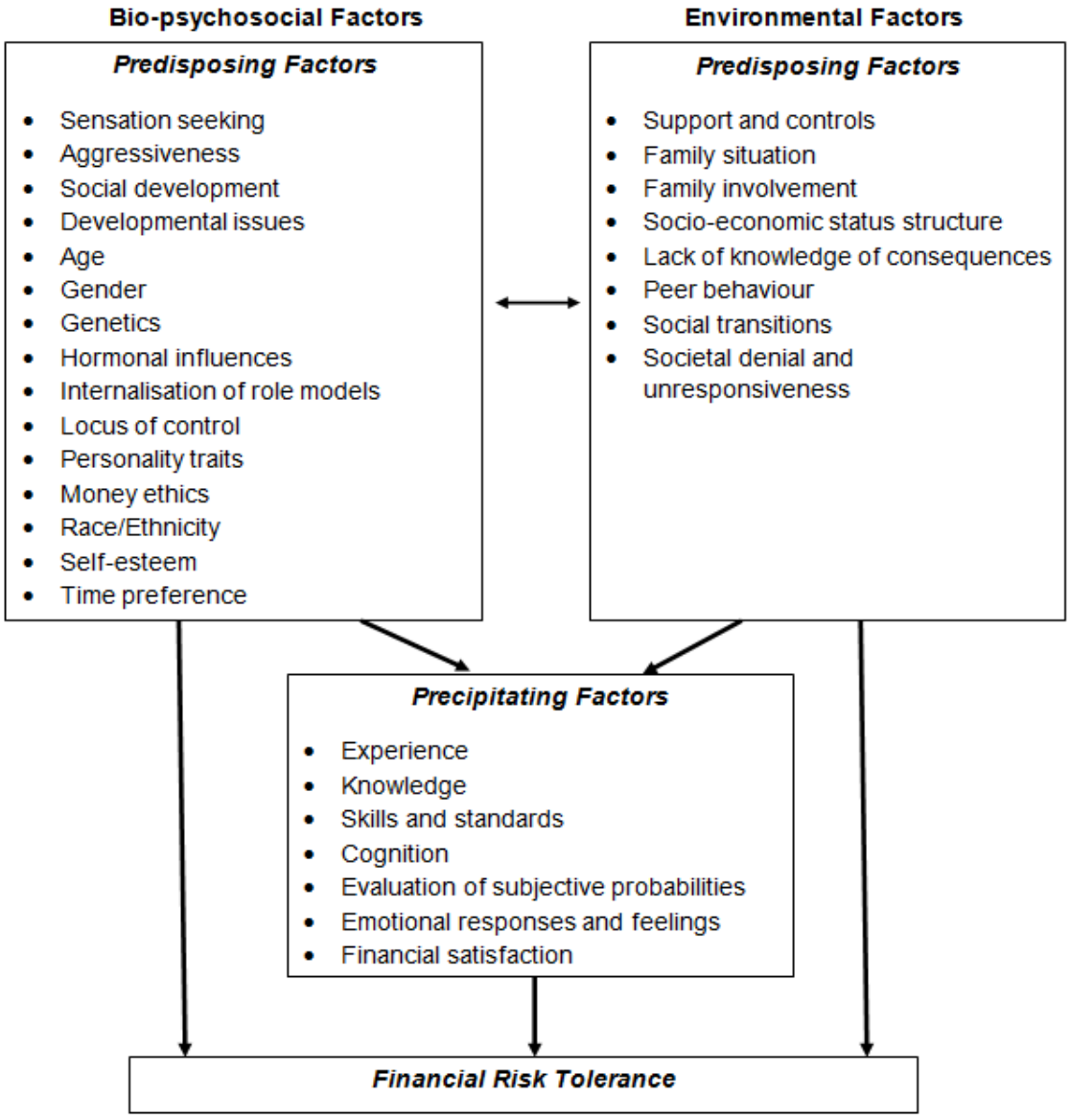


Figure 2-7: Conceptual model of factors affecting financial risk tolerance
Source: Grable (2016:26)

Irwin (1993) established that there are a number of predisposing factors that affect both risk tolerance and risk-taking behaviours. These predisposing factors are classified into two categories namely bio-psychosocial and environmental factors. Bio-psychosocial factors include characteristics such as age, gender, personality traits, ethnicity, beliefs, sensation-seeking qualities, aggressiveness, social development, developmental issues, genetics, hormonal influences, internalisation of role models, locus of control, money ethics, self-esteem and time preference (Grable & Joo, 2004:73; Grable, 2016:27). As stated by Irwin (1993:1), attitudes, intentions, motivations and perceptions forecast the initiation of behaviour.

Environmental factors, for example, include family situation and involvement, socio-economic status structure, peer behaviour and social transitions to only name a few. Predisposing environmental factors differ from predisposing bio-psychosocial factors by means that these factors rise from influences in social environment, rather than being inherent characteristics exceptional to an individual (Grable & Joo, 2004:82; Grable, 2016:28).

Similar to Irwin's (1993) model, Figure 2-7 makes use of similar terminology and also emphasises the significance of bio-psychosocial factors, which are regarded mainly endogenous and environmental factors, which are regarded mainly exogenous (Grable, 2016:26). As seen in Figure 2-7, the bio-psychosocial factors are predisposing characteristics, signifying that they are endogenous, for example, inherent characteristic or personality elements over which an individual has little or no control (Grable & Joo, 2004:82). The environmental factors interrelate with the bio-psychosocial factors and collectively these predisposing factors assist in shaping the precipitating factors and financial risk tolerance (Grable, 2016:27).

Predisposing factors influence an individual's risk tolerance. However, individuals are frequently subjective to precipitating factors prior to evaluation and taking on risky behaviours. These factors are regarded as features of individuals' lives that influence individuals' risk assessment by means of influencing the decision-making process or resulting in individuals to modify their risk tolerance levels before participating in risky behaviours. Examples of factors influencing risk tolerance are a lack of experience, knowledge or skills (Grable, 2016:27).

The predisposing and precipitating factors can cause risk tolerance levels to increase or decrease. As a result, it can cause an individual to instigate, modify or end a risky behaviour (Grable & Joo, 2004:82; Grable, 2016:26). The application of predisposing and precipitating factors within a single structure presents an exceptional theoretical indication to have an enhanced understanding of

financial risk tolerance. Even though numerous of the factors indicated in Figure 2-7 can be measured directly or by means of scaling methods, little research attempts have been conducted in order to determine individuals' financial risk tolerance by making simultaneously use of predisposing and precipitating factors (Grable, 2016:27). Researchers namely Grable and Joo (2004: 81) as well as Grable *et al.* (2008:17) that did analyse the model found the conceptual model to be valuable by testing broad features of the model.

2.4.1 Demographic factors

Each individual investor has their own risk tolerance level that depends on various demographic factors such as age, gender, race, marital status, education, employment status as well as income and wealth, which are explained in the next section. In this study, the primary focus is based on the demographic factors associated with individual investors' level of risk tolerance.

2.4.1.1 Age

Age is the demographic factor that is investigated the most frequently and mainly assumed to be related to financial risk tolerance (Grable *et al*., 2009:4). The age factor is used by investment managers to determine the remaining time until individuals' financial assets are required to meet goals and objectives and to determine individuals' abilities to recover from financial losses (Grable, 1997:14). It is acknowledged in the financial industry that financial risk tolerance differs among individuals based on age. It is generally believed that younger individuals are more risk tolerant than older individuals (Halek & Eisenhauer, 2001:20; Coleman, 2003: 45, Grable *et al*., 2009:1). This is due to the fact that older individuals have a lesser amount of time to meet their goals and objectives and recover from financial losses, whereas younger individuals have more time to accrue and preserve their wealth and recover from financial losses (Grable, 1997:38; Grable & Lytton, 1999:86; Kannadhasan, 2015:177).

Wallach and Kogan (1961) were the first researchers to examine the relationship between risk tolerance and age. Their research made use of choice dilemmas that specified that younger individuals were more risk tolerant than older individuals (Grable, 1997:27). The majority of published research studies that examined the relationship between age and risk tolerance found that risk tolerance decreases with age (Wallach & Kogan, 1961:26; McInish, 1982:125; Morin & Suarez, 1983:1211; Hawley & Fujji, 1993:1; Palsson, 1996:772; Grable, 1997:38; Hallahan *et.al.,* 2003:495; Yao *et al*., 2004:259; Yao *et al*., 2011:883).

Contrary to the above-mentioned, some researchers found that there is a positive relationship between age and risk tolerance. Researchers such as Wang and Hanna (1997:30); Grable (2000:628) and Van de Venter *et al*. (2012:799) found that risk tolerance increases with age.

Conversely, researchers such as Grable and Joo (1999:55) indicated that age is not a significant indicator of financial risk tolerance when all other factors are held constant. Sung and Hanna (1996) also found that there is not a significant relationship between age and risk tolerance, however, there was a relationship between the number of years until retirement and risk tolerance.

Even though it is not evident that numerous studies with regard to the influence of demographic factors on risk tolerance have been conducted within a South African context, van Schalkwyk (2012:283) found that individuals are more risk tolerant at a younger age. The similarity in the sample of age conducted in the study by Strydom *et al.* (2009:19) embodied significant restrictions to the study. In addition, Dickason (2017) found no significant relationship between age and risk tolerance.

2.4.1.2 Gender

The second demographic factor is gender, which is assumed to influence risk tolerance. Males are found to be more risk tolerant than females in general when making financial decisions (Grable *et al*., 2009:4). According to Roszkowski *et al.* (1993:225) this is due to a personality characteristic that males are referred to as adventure or sensation seekers. Slovic (1966:176) stated that the established belief of cultures across countries is that males are required to and do undertake more risk than females.

Various researchers indicated that males are considered to be more risk tolerant than females (Irwin, 1993; Hawley & Fujji, 1993:199; Bajtelsmit & Bernasek, 1996:7; Powell & Ansic, 1997:776; Bajtelsmit *et al*.,1999:8; Grable, 2000:629; Halek & Eisenhauer, 2001:21; Eckel & Grossman, 2002: 290; Yao *et al*., 2004:259; Ardehali *et al.,* 2005:500; Nairn, 2005:384; Anbar & Eker, 2010:514; Faff *et al.,* 2011:115; Dohmen *et al.,* 2011:549; Hallahan *et al.,* 2011:497).

Grable and Lytton (1999:64) established that females are more conservative and less risk tolerant than males when making financial decisions. Furthermore, Grable and Roszkowzki (2007:801) not only found that males are more risk tolerant than females, but also that they are likely to overestimate their tendency for taking on risks. In addition, Strydom *et al.* (2009:15); Van Schalkwyk (2012:285) as well as Dickason (2017) found that females are less risk tolerant than males within a South African context. On the other hand, Hanna *et al*. (1998:11) as well as Grable and Joo (1999:54) reported that gender is not a significant factor to determine financial risk tolerance.

2.4.1.3 Race and ethnicity

According to Yao *et al.* (2005:53) race and ethnicity can be illustrative of both cultural influences and barriers to enter financial markets. The risk tolerance of Whites and non-whites may be influenced by diverse cultural principles, preferences and experiences (Zhong & Xiao, 1995:107; Sung & Hanna, 1996:12).

The general consensus among researches is that Whites are assumed to be more risk tolerant than non-whites. The reasons for this entails that Whites have more and better access to financial institutions, tend to focus more on the future than non-whites, have better investment opportunities and consist of higher confidence levels in their analytical and decision-making skills (Grable, 1997:15).

Previous research studies found that Whites are considered to be more risk tolerant than non-whites. Haliassos and Bertaut (1995:1119) indicated that Whites are more likely to own stocks than non-whites. Furthermore, Zhong and Xiao (1995:109); Bajtelsmith *et al.* (1999:4); Gutter *et al.* (1999:161); Plath and Stevenson (2000:344) and Brown (2007:16) also found that Whites have higher holdings of stocks and bonds than non-whites. Plath and Stevenson (2000:345) found that non-whites hold a lower quantity of stocks and bonds and a higher quantity of low-yield financial assets. Furthermore, studies such as Irwin (1993); Sung and Hanna (1996:14) and Coleman (2003:43) that made use of subjective measures of financial risk tolerance found that Whites have higher risk tolerance levels than non-whites.

According to Yao *et al.* (2005:53) it is less expected that non-whites such as Africans and Hispanics are willing to take on some financial risk; however, they are considered to be more willing to take on more considerable financial risks than Whites after managing for the effects of other variables. On the other hand, Coleman (2003:51) found that Africans and Hispanics are less likely to be willing to take substantial financial risks and more likely to prefer to take no financial risks compared to Whites. However, researchers such as Barsky *et al.* (1997:550); Grable and Joo (1999:58) as well as Halek and Eisenhauer (2001:13) found that non-whites were assumed to be significantly more risk tolerant than Whites.

Strydom *et al.* (2009:17) found within a South African context, race to be significantly related to risk tolerance. Van Schalkwyk (2012:286) found that African individuals' willingness to tolerate risk is significantly higher than that of Whites and Coloured individuals. African individuals are also found to be more risk tolerant than Indian individuals, however, not as significantly high as with Whites and Coloured individuals. Furthermore, Dickason (2017) found that African individuals are more risk tolerant than White, Coloured and Asian individuals.

2.4.1.4 Marital status

According to Grable (2000:14) marital status (i.e. never married, married, separated, divorced and widowed) is regarded as a valuable factor to determine investors' risk tolerance levels. Marital status consists of moderate support in literature as a factor influencing risk tolerance. The general consensus among researchers is that single individuals are considered to be more risk tolerant than married individuals due to the fact that they have fewer responsibilities, especially with relation to dependants, and have less social risk when undertaking risky investments (Roszkowski *et al.,* 1993:225; Sung & Hanna, 1996:15; Grable, 2000:38; Grable & Lytton, 2001:44; Grable & Joo, 2004:74; Yao *et al*., 2004:259; Yao & Hanna, 2005:85; Grable & Roszkowski, 2007:797).

Faff *et al.* (2011:116) also found that married couples are less risk tolerant than single individuals and came to the conclusion that gender has no influence on this relationship. Ardehali *et al.* (2005:501) found in their study that single individuals are more risk tolerant than married individuals due to the fact that married individuals are more likely to be negatively impacted by a monetary loss resulting from financial decisions and therefore tend to be less willing to take on risks. It is theorised by Chaulk *et al*. (2003:279) that married individuals' risk tolerance declines as a result of a greater need to protect and preserve wealth for the future as responsibilities with regard to financial commitments and dependants increase. According to Grable *et al.* (2005:9) married individuals tend to underestimate their financial risk tolerance compared to single individuals. As a result, married individuals may miscalculate household and macro-economic events that can result in financial losses for the household. On the other hand, it has also been implied that married individuals have greater risk-taking abilities as a result of their better capability to recover from negative outcomes.

In contrast to Ardehali *et al.* (2005:501), Grable (2000:627) found that married individuals were more risk tolerant than single individuals. Furthermore, a number of researchers have not found any significant relationship between marital status and risk tolerance (McInish, 1982:127; Masters, 1989:153; Haliassos & Bertaut, 1995:1121; Grable & Joo, 1999:58; Hallahan *et al.,* 2003:499; Antonites & Wordsworth, 2009:78; Anbar & Eker, 2010:515). Strydom *et al.* (2009:19) and Dickason (2017) have not found any significant relationship between marital status and risk tolerance within the South African context.

Further studies investigated the impact of marital status on gender. Yao *et al*. (2005:70) also found that risk tolerance is lower for single females than for married females, married males and lastly single males. Correspondingly, Van Schalkwyk (2012:289) found that within a South African context, divorced or widowed females, married females, single females and divorced or widowed males are less risk tolerant than single males.

2.4.1.5 Education

Education is another factor that is regarded to influence risk tolerance and similar to marital status has moderate support in literature. Masters (1989:153) defined education in financial literature as the formal level of education that has been completed by an individual.

In general, education is perceived to be positively related to risk tolerance. Several research studies indicated that individuals with higher educational levels are considered to be more risk tolerant and have better skills to analyse investment risks and returns than individuals with less education (Baker & Haslem, 1974:476; Hawley & Fujji, 1993:197; Haliassos & Bertaut, 1995:1110; Sung & Hanna, 1996:15; Grable, 1997: 38; Grable & Joo, 1999:58; Grable, 2000:627; Grable & Joo, 2004:81; Hallahan *et al.,* 2004:59, Ardehali *et al.,* 2005:501; Grable *et al*., 2009:5).

Individuals who obtained a bachelor's degree or higher are believed to be the most risk tolerant, whereas individuals consisting of a high school diploma or less are considered to be the least risk tolerant (Halek & Eisenhauer, 2001:22; Grable, 2016:25). Van Schalkwyk (2012:294) found that individuals with bachelor's, honours, master's and doctoral degrees are more risk tolerant than individuals with lower levels of education namely Grade 12 or diplomas within the South African context.

Furthermore, Cole and Shastry (2009:2) proved that individuals who have an educational background in finance are not considered to be more risk tolerant than individuals with an educational background in other fields. To conclude, literature indicates that there exists a positive relationship between educational levels and risk tolerance.

2.4.1.6 Employment status

Employment status is another factor that is regarded to have an influence on individuals' risk tolerance. A general hypothesis is that individuals who are employed are regarded to have higher risk tolerance levels than those who are unemployed. This may be due to the fact that they have a higher disposable income and have the funds to take on additional risk compared to unemployed individuals who have less disposable income and may be limited to take on certain desired levels of risk tolerance (Larkin *et al*., 2013:5).

Anbar and Eker (2010:515) found a noteworthy difference between the risk tolerance levels of employed and unemployed individuals. They found that employed individuals have higher risk tolerance levels than unemployed individuals. Researchers such as Masters (1989:153); Haliassos and Bertaut (1995:1121); Sung and Hanna (1996:15); Grable (1997:38); Stewart and Roth (2001:149); Yao *et al*. (2004:259); Antonites and Wordsworth (2009:78) found that self-employed

individuals or entrepreneurs are more risk tolerant than salaried employed individuals. According to Grable (1997:14) respondents were described as self-employed if they earned income directly from their own businesses, trades or professions instead of earning salaries from employers. On the contrary, Masters (1989:153) found that non-professional individuals tend to be more conservative and less willing to take on financial risk than professional and retired individuals. Hence, he pointed out that it does not mean that non-professional individuals have fewer funds to invest, although they as a whole may make use of different strategies when it comes to investing. Faff *et al.* (2011:116) found that the relationship between risk tolerance and employment status could also relate to a potential non-linear relationship between risk tolerance and wealth. It is not evident that any studies with regard to the influence of employment status on risk tolerance have been conducted within a South African context.

2.4.1.7 Income and wealth

Kannadhasan (2015:178) stated that in general individuals attempt to invest some of their income with the purpose of increasing their wealth. Individuals with higher income levels are likely to have higher risk tolerance levels than individuals with lower levels of income. O'Neil (1996:4) stated that individuals with higher levels of income have access to instant resources in order to meet required obligations. They have greater capabilities to take on risk as they invest their additional capital. Furthermore, Cohn *et al.* (1975:614) stated that the number of individuals' assets invested in risky securities also increases, when individuals' wealth increases.

For that reason, income and wealth are regarded as two interrelated components that are considered to have a positive relationship on risk tolerance where individuals with higher levels of income and wealth are considered to have higher risk tolerance levels (Friedman, 1974:210; Cohn *et al.,* 1975:614; Blume, 1978; Riley & Chow, 1992:33; Sung & Hanna, 1996:15; Shaw, 1996: 627; Grable, 1997:38; Grable & Lytton, 2001:50).

However, the relationship between income and wealth and risk tolerance is not definite. Individuals with high levels of income are more likely to experience losses caused by higher levels of risk in investments. Hawley and Fujji (1993:197) found that income has a positive effect on individuals' willingness to take on risk, whereas they found that wealth has a negative effect on individual's willingness to take on risk. Furthermore, Hallahan *et al.* (2003:485) found that income and net wealth are significant determinants of individuals' risk tolerance levels. They found that there exists a concave relationship between income and risk tolerance, where risk tolerance tends to increase up to the highest level of income and thereafter decreases.

If the influence of income on risk tolerance is considered within a South African context, Dickason (2017) found that individuals earning a higher annual income also tend to be more risk tolerant. Van Schalkwyk (2012:290) found that the risk tolerance for high-income earners was significantly higher than that of low-income earners. Lastly, Strydom *et al.* (2009:19) found income to be insignificantly related to risk tolerance, however, it may be due to the lack of data.

2.4.2 External factors influencing risk tolerance

Investing is a great manner in which individuals can increase their capital growth and establish a foundation for the life they want to create for themselves. Investing is not a risk-free strategy and there exists a specific degree of risk in all investments, which is the result of factors affecting the market such as inflation, tax, economic recessions and downturns in certain markets (Commonwealth Bank, 2014:1).

2.4.2.1 The impact of stock market and economic events on investment decisions

Individual investors' risk tolerance levels are likely to be influenced by stock market and economic events (Miller & Campbell, 1959:8; Plous, 1993:1; Yao *et al*., 2004:251). For example, the stock market crash on 19 October 1987 is regarded as the biggest one-day market crash in history when the Dow Jones Industrial Average declined by 22,6 percent (Bernhardt & Eckblad, 2013:1). Markets in approximately every country were affected causing individual investors to sell their stocks when they noticed that the immense stock market crash was taking place (Colombo, 2012:1). Yao *et al*. (2004:251) stated that this event may have had a negative effect for many years thereafter on individual investors' risk tolerance levels. The high stock market returns in the years before 1998 could have increased individual investors' willingness to take on higher risks in order to achieve higher returns. Individual investors' willingness to take on risk was also influenced by the negative returns that occurred in 2000 and 2001, together with the negative three-year moving average of real returns on large stock markets for the first time since 1979 (Yao *et al*., 2004:252).

The 2007 GFC led to a pandemonium in the financial markets. Although it is relatively likely that individual investors' willingness to take on financial risk tolerance declined after the GFC, it is not definite to which extent risk tolerance declined. Grable *et al.* (2004:143) found that financial risk tolerance is a flexible and variable attitude and is not influenced by stock market price statistics. However, Gerrans *et al.* (2013:1) found that the changes with relation to the GFC on individual investors' risk tolerance are small and are contrary to the general perception that risk tolerance is a flexible attitude, which is strongly influenced by pervading market circumstances. In the event of considerably negative financial events, financial risk tolerance is regarded as a rationally constant

element that does not result in large short-term fluctuations but is more likely to be influenced over the long-term. Furthermore, Roszkowski and Davey (2010:51) studied the effect of the 2008 GFC on individuals' perception of risk and risk tolerance and found that the change before and after the GFC was relatively small and there was only a small decline in risk tolerance. Yip (2000:22) concluded that financial risk tolerance remains stable in due course and is not affected by major stock market crashes.

In addition, Malmendier and Nagel (2011:415) found in their research that the risky returns on assets and macro-economic shocks individual investors' experience across their lifetime, influences individual investors' willingness to take on financial risk. They also found that individuals who experienced a stock market boom during their lifetime were considered to be more risk tolerant than individuals who had not experienced a stock market boom. Moreover, individuals who experienced a constant bull market were more likely to own stocks and a greater proportion of wealth in the form of stocks.

2.5 SYNOPSIS

This chapter introduced the theory of risk tolerance. The concept of risk and return, the relationship between risk and return, and risk tolerance have been analysed in this chapter. Risk is something that investors must consider in order to achieve an appropriate balance between risk and return. Different types of investments carry different levels of investment risk and also different returns. For this reason, it is important that investors understand the relationship between risk and return as they are required to estimate and evaluate the expected risk-return trade-offs for alternative investments available when making investment decisions.

Defining risk is a highly subjective exercise and for that reason, it is important to have an in-depth understanding of what influences individual investors' decisions to invest. Individual investors' willingness to take on risk is influenced by daily challenges and financial choices. Risk tolerance is a fundamental factor that largely influences individuals' personal financial decisions. Consequently, it is crucial for individual investors, financial planners, financial institutions, researchers and policymakers to understand the various factors associated with risk tolerance.

Individual investors' level of risk tolerance is imperative to determine optimal portfolio allocations. It should be fundamental for financial planners to measure individual investors' risk tolerance correctly and accurately and to understand the influence this aspect has on their optimal investment strategy. The classification of individual investors' risk tolerance determines their asset allocation decision-making. Financial planners should have an understanding of the individual investors' psychological contentment and risk tolerance towards investments with risky outcomes.

In the following chapter, the individual investors' investment decisions are analysed.

CHAPTER 3: INDIVIDUAL INVESTORS' INVESTMENT DECISIONS

"Know what you own, and know why you own it."

– Peter Lynch –

3.1 INTRODUCTION

Chapter 3 focuses on the investment decisions of individual investors when constructing an investment portfolio. It is important that individual investors understand where they are in the investor lifecycle. Individual investors' decisions differ across the phases of the investor lifecycle as personal circumstances and needs make individual investors unique at each phase. Due to the fact that individual investors are faced with personal circumstances and have personal goals, the individual investor's objectives and constraints should be determined in order for the financial planner to construct an effective investment policy (Coronation Fund Managers, 2017:105). Individual investors' investment portfolios are mainly influenced by their level of risk tolerance. For this reason, it is of utmost importance that the risk tolerance (risk profile) of the individual investors should be determined in order to choose the most suitable asset allocation for the investor's portfolio (Goodall, 2005:4).

In this chapter attention is given to the investment decisions that individual investors have to make when investing. The individual investor lifecycle theory, as well as the individual investors' objectives and constraints are explained. The five risk tolerance categories (risk profiles) of individual investors are also discussed in detail. Furthermore, this chapter also looks at the traditional and non-traditional asset classes in South Africa. The advantages and disadvantages, as well as risk and return of investing in each of the asset classes are explained. Holistically, the theoretical aspects relating to individual investors' investment decisions are examined by explaining the individual investors' lifecycle theory, the individual investor risk tolerance categories and the traditional and non-traditional asset classes.

3.2 INDIVIDUAL INVESTOR LIFECYCLE THEORY

Bodie *et al*. (2010:698) stated that the main factor that influences an individual investor's objectives arises from the phase at which the individual investor is in the lifecycle. Therefore, it is important that individual investors understand where they are in the individual investor lifecycle, as it is an essential component for the management of an effective investment portfolio. Harty (2014:1) defined the individual investor lifecycle as the various phases of investment ownership, from the initial acquisition to the sale of an investment.

The investment needs of each individual investor are different at each phase of the investor lifecycle. As changes occur in the net worth and risk tolerance of individual investors, their investment strategies also change over time to ensure that the decisions made regarding the management of their investment portfolios meet their goals and objectives (Reilly & Brown, 2012:33). At the various phases of the investor lifecycle, the asset allocation decisions vary. Age, as well as health, also play an important role in the investor lifecycle, as the investors' circumstances and resources change over time (Goodall, 2005:3; Harty, 2014:1). As stated by Marx (2010:266) a heuristic belief in accordance with the lifecycle theory is that individual investors are believed to become less willing to tolerate risk as they age. This can be attributed to the fact that they have less disposable time to recover from potential losses.

Investors can be classified into one of the four phases of the lifecycle namely the accumulation phase, consolidation phase, spending phase and gifting phase, as shown in Figure 3-1.

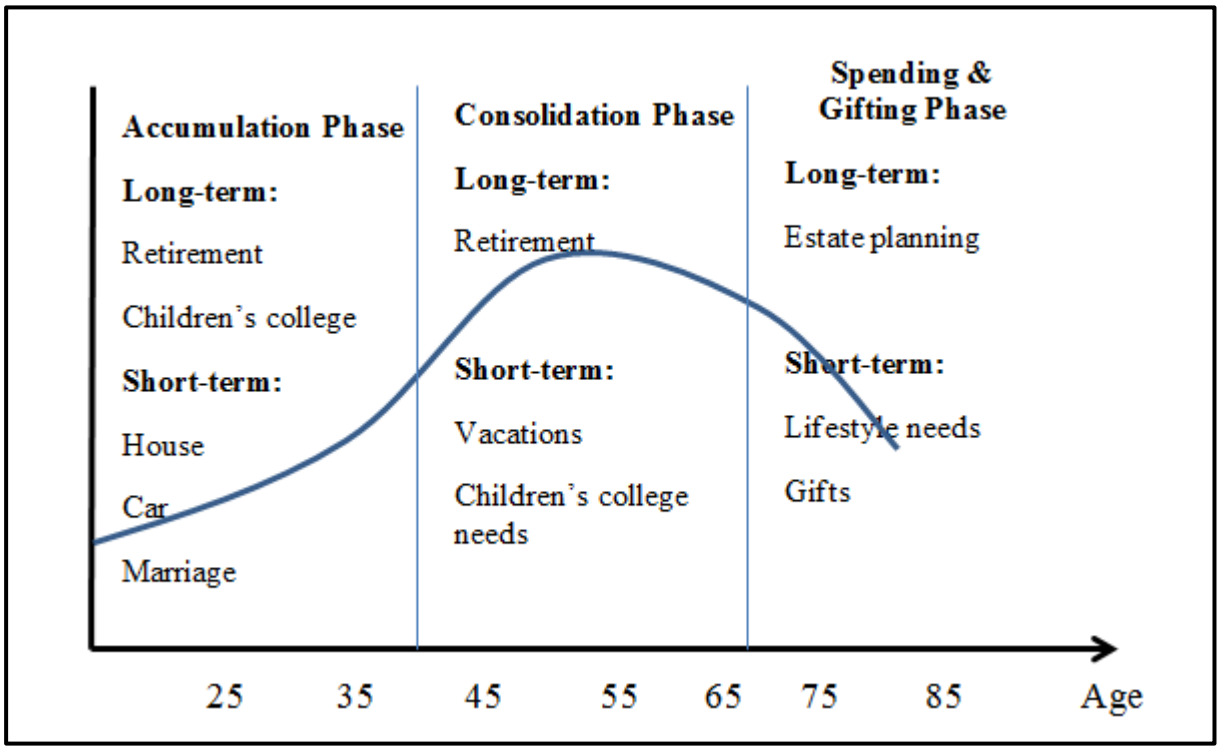


Figure 3-1: Individual investor lifecycle

Source: Reilly and Brown (2012:33)

3.2.1 Accumulation phase

Individuals that find themselves in the early-to-middle years of their working careers are in the accumulation phase of the investor lifecycle (Reilly & Brown, 2012:33). Individuals at this phase

of the lifecycle are accumulating assets to satisfy their immediate needs and longer-term goals, which include houses, cars, furniture, children's college needs and retirement (Harty, 2014:1). Reilly and Brown (2012:33) stated that individual investors in the accumulation phase have a small net worth and a large amount of debt from car loans, house down payments or past college loans. Therefore, debt management plays an essential role during this phase since the debt on the long-term assets acquired is large in relation to the individual's net worth. Harty (2014:1) believes that it is of essential importance that individuals start investing and saving money on a regular basis at the accumulation phase.

Marx (2009:266) stated that individuals in the accumulation phase are willing to take on a high degree of risk and make high-risk investments in order to make above-average returns. This is due to the fact that individual investors in the accumulation phase have a very long investment horizon and greater future earning ability.

3.2.2 Consolidation phase

Reilly and Brown (2012:34), as well as Marx (2009:267), stated that individuals in the consolidation phase of the investor lifecycle are past the midpoint of their working careers, most or all of their outstanding debt has been paid off and their income earned is greater than their expenses. According to Harty (2014:1), individual investors are able to save a larger portion of their earnings to provide for future retirement or estate planning. Reilly and Brown (2012:34) further stated that individual investors in the consolidation phase still have a relatively long time horizon (20 to 30 years), but these investors are willing to take on less risk as moderately high-risk investments are more appealing to these investors. The consolidation phase is categorised by the growth of a retirement investment portfolio, due to the fact that the time to retirement declines risk control and the preservation of capital becomes essential (Marx, 2009:267). Capital preservation is of essential importance in the consolidation phase as the individual investors are less willing to tolerate a high degree of risk (Harty, 2014:1).

3.2.3 Spending phase and gifting phase

Marx (2009:267) stated that individuals in the spending or gifting phase of the investor lifecycle are those who have reached retirement age and have a shorter time horizon. Individuals in this phase are financially independent and their living expenses are covered by fixed income received from investments and retirement plans. There is a great emphasis on capital protection in the spending phase and investors are willing to make low-risk investments that earn interest

or dividends. Hence, individual investors should take on some degree of risk in order to protect themselves against a downturn in the real value of their savings caused by inflation.

Harty (2014:1) stated that in the spending phase, investors obtain the benefit of sufficient asset allocation and an effective investment portfolio over their lifetime. The gifting phase is similar to and concurrent with the spending phase. Individual investors in the gifting phase believe that they have adequate income and assets to cover their expenses and are able to provide financial support to families, friends, or charities. Individual investors can also implement trusts as an estate planning tool with the purpose of reducing estate taxes (Reilly & Brown, 2012:34).

It is crucial that individual investors know at which phase they are in the investor lifecycle as it is considered to be the main factor influencing investment goals and objectives and accordingly, the effective management of an investment portfolio (Bodie *et al*., 2010:697). The principal aspect of the investor lifecycle is that as the individual investors' passes through the different phases, the asset allocation must be modified to meet the different needs and goals of the individual investors in each phase (Bodie *et al*., 2010:698). Harty (2014:1) further stated that the asset allocation decisions should not mainly be determined by the age of the individual investors. The needs and goals of individual investors differ across the different phases of the investor lifecycle. Each individual investor is regarded as unique in their own manner at the different phases of the lifecycle according to their personal circumstances such as family situations, career challenges and health issues. This is an essential aspect that should be considered and taken into account by financial planners and fund managers at financial institutions when investment and asset allocation decisions are made.

The individual investor and financial planner need to establish the individual investors' risk and return predilection in relation to the phase the individual investors are in the lifecycle. Subsequently, the individual investor's investment objectives that will attribute to the correct composition and asset allocation of the investment portfolio need to be established. However, although the investment objectives will give an indication of the portfolio construction and asset allocation, there also exist investment constraints that limit the inclusion of certain assets in the investment portfolio (Marx, 2010:268).

3.3 INVESTORS' OBJECTIVES AND CONSTRAINTS

Despite the fact that individual investors may have similar attitudes towards risk in certain situations, they will have different investment portfolios due to the fact that they find themselves in different circumstances (Bodie *et al.*, 2010:698). In order for a financial planner to construct

an individual investor's policy statement, the individual investor's objectives and constraints should be determined. In this section, the investment objectives and constraints of individual investors that should be taken into consideration when constructing investment portfolios are discussed.

3.3.1 Investment objectives

According to Reilly and Brown (2012:39), the investment objectives of individual investors are regarded as his or her investment goals stated in terms of both risk and return. Alexander and Sharpe (1989:9) stated that it is inappropriate for an individual investor to state that his or her objective is to receive a large amount of money. Since there is a positive relationship between risk and return, an appropriate objective for an individual investor can be to earn a great deal of money, but at the same time recognising that large losses may sustain. Therefore, the relationship between risk and return requires the individual investor's objectives to be expressed in terms of both risk and return, and not only in terms of return (Reilly & Brown, 2012:39). Individual investors' objectives are not only stated in terms of an absolute or relative return, but also in terms of investment goals (Reilly & Brown, 2012:40). These goals include capital preservation, capital appreciation, current income and total return, which are discussed below.

3.3.2 Capital preservation

Capital preservation is the objective where an individual investor wants to lessen the risk of loss in real terms (Reilly & Brown, 2012:42). Marx (2009:267) stated that the purpose of this objective is to maintain the purchasing power of the individual investor's investment. In order to achieve this objective, the return should be equal to the inflation rate. This objective is suitable for strongly risk-averse investors or for funds required over a short amount of time, for example education payments or house payments (Reilly & Brown, 2012:42).

Individual investors with a long time horizon, who seek to only spend their investment income, should have a combination of spendable income but should still maintain potential for moderate growth in income or assets. These investments include lower risk investments such as bonds and fixed-money market instruments (Marx, 2009:267). With capital preservation, an individual investor only wants to preserve his or her existing capital and not grow his or her capital (Reilly & Brown, 2012:42).

3.3.2.1 Capital appreciation

Reilly and Brown (2012:42) regard capital appreciation as the objective that an individual investor wants to grow his or her portfolio in real terms over time in order to fulfil a future need. Growth takes place by means of capital gains. The purpose of this objective is to achieve returns that are greater than the inflation rate. This objective is suitable for more aggressive investors who are willing to take on greater risk to meet their objectives, such as investors with a longer time horizon seeking to construct a retirement fund or university education fund (Marx, 2009:267). In contrast with capital preservation, with this objective an individual investor seeks to grow his or her capital base, rather than simply preserving remaining capital.

3.3.2.2 Current income

According to Marx (2009:267), current income is the objective that an individual investor wants to construct a portfolio focusing on generating income rather than capital gains. With this strategy, individual investors will invest in high coupon bonds in the fixed income market, as the individual investors seek to generate income from their investments. Reilly and Brown (2012:42) stated that this objective is appropriate for retired investors who depend on generating income from their investments to meet their living expenses and other needs as they no longer receive an income from working.

3.3.2.3 Total return

Total return is similar to capital appreciation, in that individual investors want to grow their portfolios in real terms over time in order to satisfy a future need. Total return differs from capital appreciation in the sense that with capital appreciation growth takes place by means of capital gains. On the other hand, with the total return objective the investor seeks to increase the capital base by means of both capital appreciation and reinvestment of that appreciation (Reilly & Brown, 2012:42). Reilly and Brown (2012:43) further stated that the risk exposure of the total return objective lies between that of capital appreciation and current income due to the fact that this objective consists of both income and capital gain components.

3.3.3 Investment constraints

In addition to the investment objectives, individual investors should also take into consideration investment constraints when creating an investment policy statement. The investment constraints impose certain limits on the individual investors' abilities to invest in specific investments (Wilson, 2010:1). Investment constraints comprise five main categories namely

liquidity needs, the time horizon of an investment, tax considerations, legal and regulatory factors as well as unique needs and preferences, which are discussed in the sections to follow.

3.3.3.1 Liquidity needs

Marx (2009:268) defines liquidity as the capability to exchange an asset for cash at its current market price. The liquidity constraints recognise the individual investors' need for cash or liquidity (Bodie *et al*., 2010:698). Liquidity is an investment constraint that most individuals are exposed to and it differs from each individual investor depending on personal factors such as age, employment status, tax status, etc. (Wilson, 2010:1).

Taking liquidity needs into consideration when constructing an investment portfolio is important for the reason that even though an investor has a main long-term, high priority goal, numerous near-term goals may require immediately available funds (Reilly & Brown, 2012:43). This is applicable to investors who have a need for emergency funds due to unanticipated events such as retrenchment, investors with ongoing expenses or tax obligations and also certain retirement plans need funds for shorter-term goals such as the acquisition of a vehicle or house or making university education payments (Marx, 2009:268).

3.3.3.2 Time horizon

Bodie *et al.* (2010:704) referred to the time horizon as the liquidation date of an investment. A time horizon constraint creates a timeline of the different financial needs of an individual investor. Reilly and Brown (2012:43) stated that there exists a near perfect relationship between the individual investor's time horizon, asset allocation, liquidity needs and the ability to tolerate risk. The ability of individual investors to accept risk is influenced by the time horizon.

Individual investors with a longer time horizon have a greater ability to tolerate risk due to the fact that the investor has a longer time period to recover any losses. These individual investors would also require less liquidity because funds are not needed for the short-term, but rather for future needs. Individual investors with a shorter time horizon have a lower ability to tolerate risk due to the fact that it is more difficult to recover losses over the short-term. These individual investors also require more liquidity and less risky investments because funds are needed to meet short-term goals (Reilly & Brown, 2012:43).

Bodie *et al*. (2010:704) specified that an individual investor's investment horizon could include the time to make a college education endowment or the retirement date for an employed

person. Therefore, horizon dates must be taken into consideration when individual investors have to make a choice between assets of various maturities.

3.3.3.3 Tax considerations

When constructing an investment policy, careful consideration should be given to the tax position of an individual investor, as tax concerns are fundamental to make investment decisions (Marx, 2009:268). Individual investors should be concerned with the rate of return after taxes and their investment goals should be to maximise the return after taxes and not the gross returns (Wilson, 2010:1). Individual investors who pay high tax brackets should be geared towards investing in tax-deferred investments to lessen the impact of immediate taxes on the investment returns.

Mayo (2000:885) stated that there are numerous taxes that complicate investment planning, which include personal income taxes relating to capital gains tax, taxes on interest-bearing income, dividend taxes and estate duty implications. According to Marx (2009:268) it is expected that financial planners have advanced financial knowledge of the investment market and individual investors should also have basic knowledge regarding tax implications on investments.

3.3.3.4 Legal and regulatory factors

The legal and regulatory factors may also constrain individual investors' investment decisions. According to Financial Education (2008:1), legal and regulatory factors comprise restrictions on the allocation of particular assets, the right of entry to certain funds and the exclusion of certain investments. The financial markets as well as the investment process are extremely regulated and bound by various laws (Reilly & Brown, 2012:43). However, the legal and regulatory factors should be taken into more consideration by institutional investors than individual investors as they are more affected by numerous laws and regulations (Wilson, 2010:1).

According to Marx (2009:268) individual investors in South Africa are faced with a small number of regulatory controls over investments besides exchange control related to foreign investments. On the other hand, the portfolios of institutional investors are bound by more stringent rules to make sure that the capital is preserved. Bodie *et al*. (2010:704) stated that the investment decisions of a fiduciary are also constrained by the laws and regulations. A fiduciary (or trustee) have to adhere to the prudent investor rule: the professional investors that make investment decisions in accordance with other people's wishes and manages their money, has a fiduciary

responsibility to limit investments to certain assets that would have been accepted by a prudent investor (Bodie *et al*., 2010:704).

3.3.3.5 Unique needs and preferences

The last constraint that should be taken into consideration when constructing an investment portfolio is the unique needs and preferences of individual investors. Some individual investors may want to exclude certain investments from their portfolios due to personal preferences or social concerns. For example, certain individual investors may not want to invest in companies that manufacture tobacco, alcohol or environmentally harmful products by reason of the investor being health conscious or due to social or environmental concerns (Reilly & Brown, 2012:46). Other unique preferences may also include specific family needs or the phase in which the individual investors find themselves in the lifecycle (Financial Education, 2008:1). Reilly and Brown (2012:46) stated that another personal constraint that individual investors are faced with is the time and expertise an investor has to manage his or her portfolio.

It is significantly important that individual investors identify their specific investment objectives and constraints in order to create a well-established investment policy statement. In addition, individual investors and financial planners need to establish the individual investors' willingness to tolerate risk in relation to their desired levels of return in order to select the most suitable asset allocation for the individual investors' investment portfolios.

3.4 INDIVIDUAL INVESTORS' RISK TOLERANCE CATEGORIES (RISK PROFILING)

Investment risk tolerance is the factor that mainly influences the construction of an investment portfolio. Individual investors have differing attitudes towards risk. It is of utmost importance that each individual investor's risk tolerance or profile should be considered carefully, as well as how comfortable individual investors are with experiencing fluctuations in their investment returns, or even with the probability of losing money (2020 DirectInvest, 2014:1). Before investment portfolios are constructed, the individual investors should carefully consider and determine how much risk they are willing to tolerate (Sanlam, 2014:2). The individual investors' personal risk tolerance (risk profile) will enable them to choose the most suitable asset allocation for their portfolios (2020 DirectInvest, 2014:1).

In order for individual investors to choose the most appropriate investments, their financial circumstances, their financial goals, their risk capacity and risk tolerance should be determined (Coronation Fund Managers, 2013:84). Financial planners and fund managers provide

individual investors with risk-profile questionnaires (risk assessment forms) in order to determine what type of investors they are based on their risk tolerance, investing timeframe and investment knowledge (Davidson, 2014:1). These forms are used by financial planners and fund managers to evaluate the risk tolerance of the individual investors, so that the investors' risk profile can be matched with a variety of applicable investments (Coronation Fund Managers, 2013:95). Some risk profile questionnaires focus entirely on risk tolerance and others also attempt to assess the risk capacity.

Coronation Fund Managers (2013:84) further stated that individual investors seek to earn the highest possible returns for a certain level of risk, but risk is perceived differently by each investor. For this reason, each individual investor's risk profile should be determined, in terms of both risk tolerance and risk capacity. Risk profiles consist of three main categories: aggressive, moderate (or balanced) and conservative. It can also be divided into five broad categories which additionally includes moderately aggressive and moderately conservative (or cautious).

The five broad risk profiles and characteristics of individual investors included in these categories are outlined. The five risk categories summarise how individual investors perceive investment risk and how much risk individual investors are willing to tolerate if the market fluctuates. The majority of individual investors can be categorised within these five risk profiles.

3.4.1 Aggressive

An aggressive investor's main goal is capital appreciation. According to Sanlam (2014:2) an aggressive investor is willing to tolerate substantial fluctuations in returns over the short-term with the expectation of earning higher returns over the long-term. As an aggressive investor is willing to accept a greater level of risk with the exception of a minimum level of cash for liquidity purposes, the individual investor's investment portfolio will consist only of growth assets namely, international and domestic equities (AMP, 2014:1). Aggressive investors are mainly young individuals in their early working careers and in the accumulation phase of the investor lifecycle, who are willing to tolerate a high degree of risk and are determined to invest relatively large amounts of money in their investment portfolios periodically over time (Tools for Money, 2014:1). As aggressive investors are younger of age, they are willing to tolerate substantial risk in order to outperform the market. Poole (2014:1) stated that due to the fact that aggressive investors have longer life expectancies, they would be able to recover losses if any occurred.

3.4.2 Moderately aggressive

A moderately aggressive investor's risk profile is similar to that of a moderate (balanced) investor, as the investor's main goal is capital appreciation. The investor is willing to tolerate fluctuations in returns over the short-term with the expectancy of earning higher long-term returns (Sanlam, 2014:2). According to AMP (2014:1) a moderately aggressive investor's investment portfolio will consist of a mix of asset classes, but will mainly consist of more aggressive investments as it has a little higher preference towards equities. Poole (2014:1) stated that moderately aggressive investors are regarded as risk-takers with long-term goals, who can patiently wait for the value of their stocks to increase. In a bearish market, moderately aggressive investors tend to be below average.

3.4.3 Moderate (balanced)

A moderate (balanced) investor's main goal is capital appreciation, as the investor is willing to tolerate fluctuations in returns over the short-term with the expectancy of earning higher long-term returns (Sanlam, 2014:2). A moderate investor has medium to long-term goals and may, therefore, experience negative returns over the short-term (Sanlam, 2014:2). Moderate investors are in the accumulation or consolidation phase of the investor lifecycle. Investors in this risk category are mainly investing in long-term goals such as retirement or college funding (Tools for Money, 2014:1). According to AMP (2014:1) this investor's investment portfolio will consist of a greater share of growth assets by investing in an asset mix of shares and property with some fixed interest investments. If the market is bearish, investors lose less money and are to some extent above-average when the market is bullish (Poole, 2014:1). The majority of investors are likely to fall in this risk category; exactly in the middle.

3.4.4 Moderately conservative (cautious)

A moderately conservative (cautious) investor's main goal is capital protection, which is similar to that of a conservative investor (Sanlam, 2014:2). AMP (2014:1) stated that a moderately conservative investor is willing to tolerate a little more risk than a conservative investor, but is still adverse to substantial downside risks. The moderately conservative investors also differ from the conservative investors in that the investors want to earn a higher return with less income. Therefore, the investor has a preference for relatively constant income and/or capital growth (Sanlam, 2014:2). A moderately conservative investor's portfolio will consist of an equal mix of assets such as equities and properties (AMP, 2014:1). Poole (2014:1) stated that a moderately conservative investor is nearing retirement or is retired as he/she is a little older. A

moderately conservative investor is content with some equity exposure in order to generate higher growth over the long-term and also may have experienced substantial losses in the past.

3.4.5 Conservative

A conservative investor's main goal is capital protection as the investor is less willing to tolerate downside market risks, or unable to tolerate any risk, and are willing to accept lower returns in order to protect the value of his/her capital (AMP, 2014:1). A conservative investor's portfolio will consist of less risky assets such as cash, bonds, fixed interest investments and unlisted property (Sanlam, 2014:2). A conservative investor has a short-term goal such as retirement and is in the spending and gifting phase of the investor lifecycle. If the individual investor has reached retirement, can no longer work and has a low life expectancy, the individual investor does not have time to recover any losses (AMP, 2014:1). The majority of conservative investors want their portfolios to generate an inflation-adjusted income stream in order to cover their living expenses (Tools for Money, 2014:1).

An individual investor's risk profile is not stationary and can change over the lifetime of the investor. The individual investor and financial planner should review the investor's risk profile regularly, as several circumstances and the phase in which the investor is in the lifecycle can change the investor's risk profile.

3.5 TRADITIONAL ASSET CLASSES IN SOUTH AFRICA

Once individual investors have an understanding of their investment objectives and constraints, time horizon and risk tolerance, individual investors together with their financial planners should begin to create an asset allocation for their investment portfolio. Vanguard (2013:14) stated that asset allocation refers to making decisions regarding how the individual investors' money will be spread across different asset classes and how much the individual investors want to hold in each asset class. Vanguard (2013:14) further stated that it means that a mix of asset classes are selected that reflect the individual investors' investment objectives, time horizon and risk tolerance.

One of the most vital questions for individual investors and financial planners is deciding on a set of asset classes that will be considered for the inclusion in an investment portfolio. Investments are distributed into five asset classes namely cash, bonds, equities, property and exotics (Discovery, 2012:4). Exotics, which is a non-traditional asset class consist of collectables for example arts, antiques, jewellery, gold, diamonds and exceptional stamps. Each

of these asset classes consists of different characteristics that make them applicable for different investment objectives (Coronation Fund Managers, 2013:98). When individual investors and financial planners make decisions regarding the asset mix in an investment portfolio, it is important that the volatility, liquidity, risk and return, as well as advantages and disadvantages of the asset classes are understood. This section looks at the traditional asset classes in South Africa. The non-traditional asset classes are also taken into account. Some of the advantages and disadvantages, as well as risk and return of investing in each of the asset classes are explained.

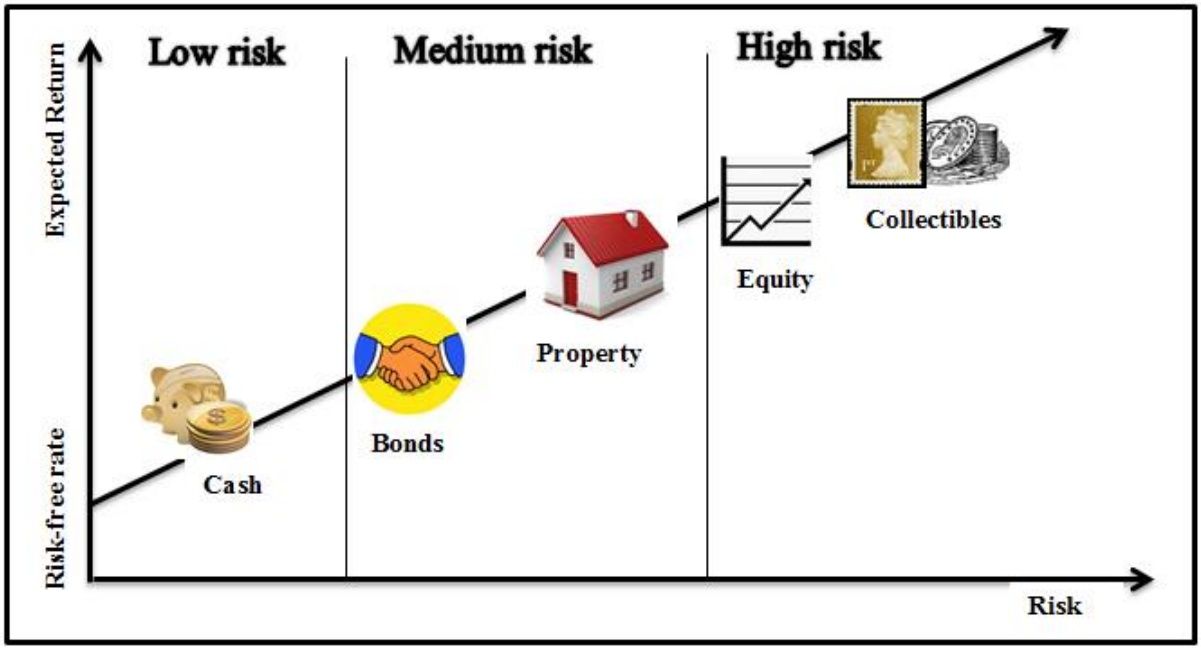


Figure 3-2: The risk and reward trade-off of the main asset classes
Source: Discovery (2012:4)

3.5.1 Cash

Cash is regarded as a fundamental part of constructing an investment portfolio. Liberty (2009:1) stated that cash-based investments consist of interest-bearing instruments (such as money market funds, call deposits, notice deposits, fixed deposits and negotiable certificates of deposits) and discount instruments (such as treasury bills and promissory notes). Cash is considered to be a short-term investment with a low degree of risk (Coronation Fund Managers, 2013:98). The money market fund is the most liquid, risk-free investment offered to individual investors. Therefore, the return on cash-based investments may outperform other investments

over the short-term, but not over the long-term. These cash-based investments offer liquidity, therefore making it objectively easier to withdraw cash (Vanguard, 2013:19).

If individual investors are less willing to tolerate risk as they do not want to lose too much money, a large portion of the individual investors' portfolios can be invested in cash-based investments and then diversified into more risky asset classes. As seen in Figure 3-2, individual investors who invest in cash-based investments tolerate a lower degree of risk and as a result, lower rates of returns may be earned on their investments (Coronation Fund Managers, 2017:105).

Due to the fact that cash is regarded as the safest investment, it is used to set the benchmark for other investments. When the rates of return on cash-based investments are low, other investments become more attractive and are likely to increase in price. As a result, there exists a low degree of correlation between cash and other asset classes (Savings Institute, 2014:1).

Vanguard (2013:19) stated that although cash-based investments are likely to offer the lower rate of return, these investments are likely to be the least volatile of the main asset classes. For that reason, cash-based investments are used to set funds aside for emergencies and to save for investments over the short-term, such as car and house purchases.

3.5.1.1 Advantages and disadvantages of investing in cash

The following section provides an overview of the advantages and disadvantages of investing in cash.

3.5.1.1.1 Advantages of investing in cash

- Cash is the only asset class that does not impose individual investors to capital risk and therefore helps individual investors to protect their money (Coronation Fund Managers, 2017:124).
- Cash is the most liquid, risk-free investment offered to individual investors (Coronation Fund Managers, 2013:98).
- Liberty (2009:3) stated that cash-based investments have a foreseeable income stream.
- Excess funds can be held in cash when individual investors make decisions regarding where these excess funds should be invested over the long-term (Liberty, 2009:3).
- Cash-based investments are regarded as a safe place to invest during periods of economic recessions (Liberty, 2009:3).

- Over the short-term, cash may outperform other asset classes such as bonds and equities (Liberty, 2009:3).

3.5.1.1.2 Disadvantages of investing in cash

- The downside to investing in cash is that individual investors earn a lower rate of return since they are exposed to a lower degree of risk (Coronation Fund Managers, 2017:124).
- The returns on cash-based investments may outperform other investments over the short-term, but not over the long-term (Coronation Fund Managers, 2013:98).
- Cash-based investments offer a very low or negative real rate of return. For example, the rate of return can be below the inflation rate (Coronation Fund Managers, 2013:98).
- If the interest rate cannot keep track with the inflation rate, cash-based investments can lose value (Investment Management Association, 2014:1).
- There is no hedge for cash-based investments against inflation (Liberty, 2009:3).

3.5.2 Bonds

According to Marx (2010:207) bonds as a traditional asset class in South Africa are traded on the Bond Exchange of South Africa and are issued by the government or an entity, for example Eskom and is known as government or corporate bonds. Bonds are used to increase finance over the long-term for the government, semi-government organisation or corporate organisations. The bond amount and interest rate are agreed at a particular date, which is when the bond reaches maturity and can be redeemed (Marx, 2010:207; Mazzucato *et al*., 2010:78). A notable characteristic of bonds is that it can be traded on the stock market. As a result, individual investors can sell the bond at any time before the maturity date at the price that occurs on the stock market at that time and do not need to hold it until maturity date (Mazzucato *et al*., 2010:78). Although bonds are traded before the maturity date, they can only be redeemed on the maturity date (Marx, 2010:207). Volatilities in the bond market exist due to the fact that there is an inverse relationship between the price of a bond and interest rates. If the interest rate declines, the value of the bond increases and conversely, if the interest rate increases, the value of the bond decreases (Mayo, 1988:212; Liberty, 2009:1).

As noted by Bodie *et al*. (2008:30) and The Savings Institute (2014:1) bonds are also considered to be interest-bearing investments, however, they involve a longer time period than cash. Individual investors that hold bonds in their investment portfolios are authorised to a yearly cash interest-payment that is fixed at the purchase date (Mayo, 1988:177; Bodie *et al*., 2008:30). Even though the fixed interest rate may appear to be safer, the individual investors

are exposed to a greater degree of risk. If inflation or interest rates over the short-term increases during the time to maturity, the investor loses money (Mayo, 1988:177). Bonds are considered to be low to medium risk investments and as a result low to medium rates of returns are earned over time (The Savings Institute, 2014:1). As seen in Figure 3-2, bonds have a higher risk than cash, but lower risk than equities, real estate and exotics. As a result, the return is higher than that of cash, but lower than that of equities, real estate and exotics.

M&G Investments (2014:1) regard bonds as an attractive investment for the reason that they have a lower degree of risk than equities given that the coupon the bondholder receives is generally fixed and the bond prices are likely to be less volatile than that of equities. Since bond and equity prices move in opposite directions, individual investors can include bonds in their investment portfolio to help counterbalance some of the volatility of equities. However, the prices of bonds are likely to be less volatile than equity prices. When equity prices decline, the fixed interest payments that are generated by bonds can be comforting (Vanguard, 2013:16).

According to Vanguard (2013:14) bonds can offer a steady and consistent stream of income with a possibility for capital growth and it generally offers a higher interest rate, or rate of return, than cash-based investments. Bonds are considered appropriate for individual investors with short, medium or long-term horizons.

3.5.2.1 Advantages and disadvantages of investing in bonds

The following section provides an overview of the advantages and disadvantages of investing in bonds.

3.5.2.1.1 Advantages of investing in bonds

- Investing in bonds consents individual investors for the diversification of their investment portfolios (Liberty, 2009:3).
- Bonds offer a fixed stream of income (Liberty, 2009:3).
- Bonds, as an interest-bearing investment, offer a higher rate of return than cash (Monevator, 2012:1).
- Bonds are considered to be less risky and volatile than equities (Liberty, 2009:3).
- Investing in bonds is an effective manner in which individual investors can protect themselves from stock market crashes, as a result of the absence of correlation with equities (Monevator, 2012:1).

- As with cash, bonds are regarded as a safe place to invest during economic recessions (Liberty, 2009:3).
- Individual investors can compare their bond holdings to any time horizon and precisely determine what their returns will be if the bonds are held until maturity (Monevator, 2012:1).

3.5.2.1.2 Disadvantages of investing in bonds

- Due to the inverse relationship between the price of a bond and interest rates, bond investments are riskier than other interest-bearing investments such as cash (Coronation Fund Managers, 2013:98).
- Bonds are susceptible to inflation and interest rate changes (Monevator, 2012:1).
- There is no hedge for bonds against inflation, except if the bond is related to inflation (Liberty, 2009:3).
- Although bonds consist of lower risk than equities, bonds also offer lower rates of return than equities (Liberty, 2009:3).
- There may exist some degree of volatility in the bonds prices (Liberty, 2009:3).
- Another disadvantage of investing in bonds is that the issuer of the bond may in some cases not be able to pay off the bond in full (Investment Management Association, 2014:1).

3.5.3 Equities

Mayo (1988:228); Alexander and Sharpe (1990:403) as well as Bodie *et al*. (2008:38) stated that equity refers to stocks and shares that signify a portion of the finance and company ownership. As noted by Coronation Fund Managers (2016:129) equity-based investments dominate the South African Collective Investment Scheme industry. When individual investors invest in equity-based investments they are given part ownership in companies listed on the Johannesburg Stock Exchange and in some cases to unlisted companies to a very limited degree.

Mazzucato *et al*. (2010:85) and Vanguard (2013:14) stated that equities provide the possibility for capital growth and may also provide revenue by means of dividend payments. Equity-based investments are most applicable for medium- to long-term investors, a period of five years or more. When investing in equities, the investors require great potential returns, since there is no certainty that the equities will provide high rates of return. There is no guarantee that equities provide fixed income streams or capital, since they offer a part of the company's ownership and a right on the future earnings of the company (Monevator, 2012:1).

As seen in Figure 3-2, equity-based investments are considered to be the riskiest of the four traditional asset classes, excluding exotics. Although equities (stocks or shares) are the riskiest, they also provide individual investors with the best rates of return between the four traditional asset classes (Monevator, 2012:1). Equities convey higher risk and higher returns than cash, bonds or property. The value of equity-based investments increases and decreases consistent with the prevalent market conditions. Historically, the rates of return of equity-based investments have outperformed all the other asset classes over the long-term (Bodie *et al*., 2008:4; Coronation Fund Managers, 2017:129).

Individual investors are rewarded in two manners when investing in equity: firstly, capital gains are offered when the price of shares increases, and secondly, dividends are offered (Mazzucato *et al*., 2010:85; Coronation Fund Managers, 2013:140). Liberty (2009:2) stated that equity risk can be minimised by keeping to a long-standing plan, investing frequently, investing in companies in different sectors and of different sizes, as well as investing both domestically and internationally.

3.5.3.1 Advantages and disadvantages of investing in equities

The following section provides an overview of the advantages and disadvantages of investing in equities.

3.5.3.1.1 Advantages of investing in equities

- Equities are the most dominant asset class in individual investors' investment portfolios (Monevator, 2012:1).
- Equities provide the best rates of returns over the medium- to long-term (Liberty, 2009:3).
- The rates of return on equities have historically outperformed all the other asset classes over the long-term (Coronation Fund Managers, 2017:129).
- Equities are proficient enough to outperform inflation (Monevator, 2012:1).
- Equities held for longer time periods are more likely to result in the achievement of financial objectives (Monevator, 2012:1).

3.5.3.1.2 Disadvantages of investing in equities

- Equities are bound by large irregular changes in prices and without doubt convey a risk of negative rates of returns (Coronation Fund Managers, 2013:40).

- Equities are considered volatile and necessitate a medium- to long-term horizon (Vanguard, 2013:15).
- Large losses occur frequently and at no particular time, and can also occur for long periods (Monevator, 2012:1).
- Frequent changes in equity ownership can result in illogical behaviour when fear and greed starts playing a role (Monevator, 2012:1).

3.5.4 Property (Real estate)

According to Hirt and Block (1986:500) property investments consist of, for example, home ownership, apartment or office buildings, shopping centres, hotel and motels, as well as raw land. Investors can partake as an individual, as part of a limited partnership real estate association or by means of Real Estate Investment Trusts (REITs). Property or real estate, as a traditional asset class refers to commercial property that provides rates of returns in the form of rent and the appreciation in the value of buildings. Investors can gain exposure to commercial property by means of REITs or Exchange Traded Funds (Monevator, 2012:1).

As stated by Mayo (1988:580) investments in property provide a resolution to individual investors who require high-income returns and protection from the stock market's volatility. The Savings Institute (2014:1) stated that property is a medium to high-risk class, with returns in proportion to its risk. Due to the fact that the property market is adversely affected by increasing interest rates, it is likely to have low correlation with interest-bearing investments, specifically cash-based investments. Property has a medium- to long-term investment horizon, usually three to five years (Financial Security, 2010:3).

Liberty (2009:2) stated that property consists of physical property and listed property. Physical property refers to property that is registered in the individual investor's name and return is received in the form of rental income and when there is a rise in the property value. Listed property is when the property rights are seized in an investment product, for example, property loan stocks and property unit trusts (PUTs).

Coronation Fund Managers (2013:106) stated that investing in PUTs and REITs are examples of two options in which individual investors can invest in. With PUTs buildings are owned, whereas REITs have ownership in shares in property companies (Mayo, 1988:592; Alexander & Sharpe, 1990:645). There are arguments in favour of and against investing in property. Traditionally, analysts believe that an investment portfolio should comprise cash that has almost no risk, equities for capital growth and property that consist of lower risk than equities and

potential for capital growth. It is maintained by supporters of property investments that property, and specifically PUTs, offer a safe, low-risk investment that still has the potential of delivering high rates of return (Coronation Fund Managers, 2017:132).

As seen in Figure 3-2, there is higher risk in property than in cash and bonds, but lower than that of equities. As a result, property is able to deliver higher returns than cash or bonds, but lower returns than that of equities. Property investments generate higher returns than cash or fixed interest over the medium- to long-term (Financial Security, 2010:3). Property investments are believed to be the best investment by many individuals. The appreciation of the property value serves as a hedge against inflation (Mayo, 2000:832). Property is therefore regarded as an applicable investment for particular individual investors.

3.5.4.1 Advantages and disadvantages of investing in property

The following section provides an overview of the advantages and disadvantages of investing in property.

3.5.4.1.1 Advantages of investing in property

- Property investments provide an excellent hedge against inflation and the unknown or fear of the future (Coronation Fund Managers, 2013:106).
- Has the tendency to keep up with the inflation rate (Monevator, 2012:1).
- Significant tax benefits are provided by means of enhanced depreciation and interest payments (Hirt & Block, 1986:501).
- Provide diversification of an investment portfolio (Monevator, 2012:1).
- Physical property investments are less volatile in capital due to the fact that property is re-evaluated yearly (Liberty, 2009:3).
- Physical property investments are unaffected by the sentimentality of the market (Liberty, 2009:3).
- Physical property investments guarantee more certainty with delivering returns (Liberty, 2009:3).
- Physical property investments are regarded as a more traditional investment than collectables (Liberty, 2009:3).
- Listed property investments provide steady cash flows and a hedge against inflation over the long-term (Liberty, 2009:3).

- Listed property investments are connected to the equity market through capital growth and the bond market through income revenues (Liberty, 2009:3).
- The risk and return of property have been the midpoint between bonds and equities (Monevator, 2012:1).

3.5.4.1.2 Disadvantages of investing in property

- Historically, property has lagged behind equities (Monevator, 2012:1).
- Property bubbles can occur and result in significant fund losses (Monevator, 2012:1).
- Physical property investments require commitment over the long-term (Liberty, 2009:3).
- As with listed property, investments prices can be relatively volatile and are influenced by negative global equity markets, decline in global growth, effect on the commodity cycle, unexpected changes in currencies and the effect on inflation and interest rates, particularly bond yields (Liberty, 2009:3).
- Property is regarded as illiquid and as a result, it can lead to investors being unable to sell their buildings quickly if people want their money back (Monevator, 2012:1).

3.6 NON-TRADITIONAL ASSET CLASSES IN SOUTH AFRICA

All aforementioned traditional asset classes consist of good liquidity and are traded on the securities market. According to Reilly (1989:43) non-traditional asset classes such as art, antiques, jewellery, gold, diamonds and exceptional stamps have poor liquidity. Due to the fact that these assets are highly illiquid and have high transaction costs compared to bonds and equities, financial institutions are unlikely to acquire them. Transaction costs are high by reason of that there does not exist a national market for these investments. The dealers must be remunerated for the cost of finding buyers or sellers, as well as the additional carrying cost. Most of the non-traditional assets are sold at auctions and there is a great degree of uncertainty regarding the expected prices, since they vary significantly. Although some of these low-liquidity investments have earned significant returns, they are in some cases viewed more as hobbies than investments (Reilly, 1989:44).

Mayo (1988:562) and Campbell *et al.* (2008:5) stated that the return earned on these collectable assets results from the potential appreciation in the value of these assets. Substantial returns are generated from collectable assets such as arts, antiques or oriental rugs when both the movement of services and price appreciation are taken into account. The individual investors who invest in collectable assets derive pleasure from these assets, which is one of the reasons they acquire them. Due to the fact that it is impossible to quantify the pleasure that individual

investors derive from these assets, it is not possible to determine the true rates of returns on these collectable assets (Campbell *et al.,* 2008:5).

As stated by Mayo (2000:818) the value of these collectable assets is determined by their scarceness relative to demand. Scarcity is not the only factor that determines the value of these collectables. Many other factors such as the artist's status, superiority of the artist's work and qualities of the work itself as well as exogenous factors determine the value of collectables. Indigenous factors to the work itself include the medium used and themes, for example, oil paintings are more costly than watercolours by the same artists, landscapes are more expensive than portraits, and coloured and joyful scenes are more expensive than dark and shady scenes. External factors include the condition of the work, the sellers and previous owners of the collectables, as well as museums or shows where the work was formerly displayed (Mayo, 2000:819).

Alexander and Sharpe (1989:636) stated that collectable assets will be priced when the markets are efficient so that those investors who substantially enjoy these assets will find it appropriate to hold them in greater-than-market-value shares. Investors who do not enjoy these assets much find it appropriate to hold them in less-than-market-value shares. As seen in Figure 3-2, non-traditional asset classes that include collectables entail higher risk than all traditional asset classes namely, cash, bonds, equities and property. Since these collectables have a high degree of risk, individual investors who invest in these collectables earn substantial high rates of return when these assets increase in value. As a result, these individual investors should be willing to tolerate substantial risks when investing in collectable assets.

3.6.1 Collectables assets

Antiques, arts, coins and stamps, as well as diamonds, which are regarded as collectable assets, are discussed in the following section.

3.6.1.1 Antiques

Reilly (1989:43) stated that the dealers who acquire antiques at estate auctions or auctions to renew them earn substantial rates of return from antiques. If the value of these antiques is determined based on prices established at large public auctions, it appears that serious collectors earn substantial rates of return. However, liquidity problems may arise from the normal antiques owned by individuals (Maxwell & Locke Ritter, 2018:1). Reilly and Brown (2012:76) noted that average investors who have a few antiques for home decoration find such

returns obscure. Any profit individuals expect to earn from selling their antiques can be eroded by the high transaction costs and high illiquidity of antiques.

3.6.1.2 Arts

According to Campbell (2008:64) and Reilly (1989:44) certain paintings have significantly increased in value and as a result, delivered substantial rates of returns to the investors. However, investors who use art as an investment vehicle should have considerable knowledge, sufficient capital to acquire the arts of famous artists and the capacity to afford high transaction costs (Campbell, 2008:64). Reilly and Brown (2012:76) stated that arts can be satisfying investments for investors who enjoy arts and have sufficient capital to purchase them. On the other hand, small investors find it difficult to earn returns that reward them for the uncertainty, high illiquidity and high transaction costs.

3.6.1.3 Coins and stamps

Many investors collect coins and stamps for the pleasure of it, as well as for investment purposes. According to Reilly (1989:44) the coins and stamps market is fragmented compared to the stock market. However, the market for coins and stamps are considered more liquid than the market for arts and antiques. Once a coin or stamp has been rated, an investor can get an extensively recognised rating specification and the coin or stamp can be sold quickly through a dealer (Mayo, 1988:566). Compared to the spread on stocks and bonds, the bid-offer spread will be fairly large for coins and stamps (Reilly, 1989:44).

3.6.1.4 Diamonds

Reilly and Brown (2012:77) and Point Jewellery Exchange (2016:1) stated that for various periods diamonds have been regarded as good investments. Reilly (1989:44) further stated that it is important that investors who acquire diamonds realise that diamonds are considered to be very illiquid, the rating process is relatively subjective, requires large amounts of capital and no positive cash flow is generated during the period the diamonds are held until they are sold. However, during the holding period, the investor will be required to cover insurance and storage costs and their evaluation cost before diamonds are sold.

3.6.2 Advantages and disadvantages of investing in collectable assets

The following section provides an overview of the advantages and disadvantages of investing in collectable assets.

3.6.2.1 Advantages of investing in collectable assets

- Individual investors who invest in collectable assets as a hobby and have great sentimental value to these investments are able to derive pleasure from these assets (Mayo, 2000:817).
- Substantial returns are generated from collectable assets when both the flow of services and price appreciation are taken into account (Mayo, 2000:817).
- Collectable assets will be priced when the markets are efficient so that those investors who substantially enjoy these assets will find it appropriate to hold them in greater-than-market-value shares (Alexander & Sharpe, 1989:636).

3.6.2.2 Disadvantages of investing in collectable assets

- Non-traditional assets are regarded as low-liquidity investments since they are highly illiquid (Reilly, 1989:43).
- Non-traditional assets have high transaction costs compared to bonds and equities (Reilly, 1989:43).
- Any profit individuals expect to earn from selling their antiques can be eroded by the high transaction costs and high illiquidity of antiques (Reilly & Brown, 2012:76).
- Investors are largely exposed to bid-ask spread risk (Alexander & Sharpe, 1989:636).
- Small investors find it difficult to earn returns that reward them for the uncertainty, high illiquidity and high transaction costs (Reilly, 1989:44).
- As a result of the sentimentality of collectable assets and the pleasure that individuals derive from owning these assets, income is provided to the investors of collectable assets in the form of consumption. Also, as a result of the sentimentality of these collectable assets, these assets are attractive to those investors in high tax brackets (Alexander & Sharpe, 1990:787).

3.7 SYNOPSIS

The main factor influencing individual investors' objectives arises from the phase in which the investors are in the lifecycle. Therefore, it is important that individual investors and financial planners understand where they are in the individual investor lifecycle, as it is an essential component to manage an effective investment portfolio. Investors can be classified into four phases of the lifecycle, which consists of the accumulation phase, consolidation phase, spending phase and gifting phase. Individual investors' investment portfolios differ as they find themselves having different circumstances. In order for a financial planner to construct an

individual investor's investment portfolio, the individual investor's objectives and constraints should be determined.

The investment portfolios of individual investors are strongly affected by the level of risk tolerance. It is of utmost importance that individual investors' risk tolerance should be considered carefully before selecting appropriate investments. In order for financial planners to determine individual investors' risk tolerance, risk-profile questionnaires (risk assessment forms) should be completed. Individual investors can be categorised into five broad risk profiles namely aggressive, moderately aggressive, moderate (or balanced), moderately conservative (or cautious) and conservative. Due to the fact that individual investors' risk profiles are not stationary and can change over the lifetime of the investor, it should be reviewed on a regular basis by the individual investors and financial planners. The individual investors' personal risk tolerance profiles will enable them to choose the most suitable asset allocation for their portfolios.

Traditional and non-traditional asset classes in South Africa were also analysed. Assets can be categorised into traditional asset classes and non-traditional asset classes. Traditional asset classes include cash, bonds, equities and property (real estate). Non-traditional asset classes include collectable assets such as arts, antiques, jewellery, gold, diamonds and exceptional stamps. Each of these asset classes consists of different characteristics that make them applicable for different investment objectives.

Choosing the most appropriate asset mix for individual investors' investment portfolios is largely dependent on the level of risk that the individual investors are willing to tolerate. Individual investors who are willing to tolerate a larger degree of risk would invest more in equities, which is a more risky investment than cash or bonds. Individual investors who are willing to tolerate less risk will invest more in cash or bonds, which is a less risky investment than equities, property or collectable assets. Although interest-bearing investment such as cash and bonds provide safety, these investments do not generate capital growth over the long-term. On the other hand, when investors are exposed to substantial risk at inappropriate times when the volatility of equities is high, large losses or loss of capital growth will result. Due to the fact that no asset class is risk-free, a combination of bonds, equities and property should be held in individual investors' investment portfolios to reduce the overall risk.

In order for individual investors to invest successfully, they should understand their investment objectives and constraints, time horizon and risk tolerance. The individual investors together

with their financial planners should then begin to create an asset allocation for their investment portfolio. When individual investors and financial planners make decisions regarding the asset mix in an investment portfolio, it is important that the volatility, liquidity, risk and return, as well as the advantages and disadvantages of the asset classes, are understood. The individual investors' investment plans should be reviewed on a regular basis and rebalanced when required. The theoretical background of investing and the construction of investment portfolios should be understood by both individual investors and financial planners to invest successfully.

In the following chapter, the research design and methodology with regard to this study are discussed.

CHAPTER 4: RESEARCH DESIGN AND METHODOLOGY

"Research is creating new knowledge."

– Neil Armstrong –

4.1 INTRODUCTION

Research is the process of gathering, analysing and interpreting data with the objective of understanding a phenomenon (Leedy & Omrod, 2001). Williams (2007:65) further stated that the research process is methodical given that describing the objective, managing the data and corresponding the findings or results transpire within established frameworks and in line with prevailing guidelines. Therefore, research initiates with at least one question about one phenomenon or interest. The primary objective of this study is to analyse risk tolerance during the investor lifecycle.

An inclusive research design and methodological approach had to be planned in order to achieve the ultimate primary objective together with the empirical objectives. This chapter is focused on explaining the research design and methodology that were implemented throughout this study.

The following sections of research design and methodology are addressed:

- Section 4.2 provides a description of the research design followed by an overview of the four research paradigms (worldviews). The different research approaches describing the data collection methods are also examined in Section 4.3. Lastly, in Section 4.4 the chosen research design and approach applied to this study are discussed.
- The sampling procedure, which consists of the target population, sampling frame, sampling method and sample size is attended to in Section 4.5. The probability and non-probability sampling methods are also discussed with the objective of selecting the most appropriate method for this study.
- In Section 4.6, attention is given to the measuring instrument and data collection method. Moreover, this section focuses on the format, design and administration of the questionnaire.
- Section 4.7 stipulates the data collection procedure, which entails the ethical considerations, pilot study and management of information.
- Lastly, the data analysis is discussed in Section 4.8. The statistical analysis together with its subsections namely reliability and validity analysis, descriptive and inferential statistics are explained in Section 4.9.

4.2 RESEARCH DESIGN

Research design is defined by Conrad and Serlin (2011:147) as a comprehensive research method, which includes the recognition of the research problem, the literature review, research methodology as well as the conclusion. According to Creswell (2014:31) research designs are strategies and procedures that research studies pursue to collect, analyse and interpret data in order to fulfil analytical objectives. Creswell (1998:2) further stated that research design is not only referred to as research methods, for example data collection, analysing and writing a report, but it entails the complete research process from conceptualising a problem to writing a narrative. Furthermore, Kothari (2004:32) stated that research design entails the advance planning of methods to be implemented for the collection of applicable data and techniques to be applied in a study's analysis, in line with the objective of the study and availability of resources.

The necessity for research design arises from its ability to assists with the successful development of the research process within a study. Furthermore, it also ensures effective and reliable results and assists researchers to systematise ideas in a manner in which errors and inadequacies can be identified (Kothari, 2004:32).

The first step of a research design involves the adoption of a worldview (Creswell, 2009:5). A discussion with relation to the different research paradigms is provided in the following section.

4.2.1 Research paradigms

According to Barker (2003:312) a research paradigm can be defined as a pattern consisting of a series of valid and reasonable assumptions and design for the collection and interpretation of data. A research paradigm can further be explained as a framework, viewpoint or worldview based on individuals' beliefs and hypothesis about the social world and the nature of knowledge (Welman *et al*., 2005:13). In addition, it is also based on the manner in which researchers observe and understand information about reality and direct the subsequent action to be executed (Babbie, 2007:43). When referring to research paradigms, Creswell (2007:6) make use of the term "worldview" and views it as a general orientation the researcher holds regarding the world and the nature of research. In Section 4.2.2 numerous research paradigms are discussed.

4.2.2 Different types of research paradigms

Generally, there are many research paradigms that exist. However, research paradigms can be classified into four main categories namely the positivist paradigm, the constructivist paradigm, the participatory paradigm and the pragmatic paradigm (Frels & Onwuegbuzie, 2013; Creswell, 2014:6). Attention is given to these research paradigms in Table 4-1, which provides a summary of the main characteristics of the four research paradigms.

Table 4-1: Main characteristics of the four research paradigms

Positivism	Constructivism	Participatory	Pragmatism
• Determination • Reductionism • Empirical observation and measurement • Theory confirmation	• Understanding • Multiple participant meanings • Social and historical construction • Theory generation	• Political • Empowerment issue-oriented • Collaborative • Change-oriented	• Consequences of actions • Problem-oriented • Multiple realisms • Real-world practice oriented

Source: Creswell (2009:6)

4.2.2.1 The positivist paradigm

According to Denscombe (2008:12) the positivist paradigm aims to apply research's natural science model to the examination of a social phenomenon and the descriptions of the social world. The positivist paradigm is also referred to as the scientific paradigm (Creswell, 2009:6; de Vos *et al.,* 2011:6). According to Mack (2010) the positivist paradigm represents proof of scientific procedures, statistical investigations and the capability to simplify results. This paradigm represents the true value of an experiment and examination, together with a single objective reality that is measurable and quantifiable (McGregor & Murnane, 2010).

Babbie and Mouton (2001:23), as well as Neuman (2003:75), advocated that the positivist paradigm holds the belief that an objective reality is present outside of individual experiences. Quinlan (2011:99) further stated that the positivist paradigm holds that there is only a single objective reality and that reality is singular and not connected to perception. The positivist paradigm consists of comprehensible and binding laws and methods that disclose cause and effect relationships (Babbie & Mouton, 2001:23; Creswell, 2014:7). The positivist paradigm entails that the researcher starts the process with theory, collects data that supports or rejects the theory and thereafter makes the essential modifications before further tests are done (Creswell, 2014:7). Positivists also prefer the analysis or outside

observer interpretations of data (Druckman, 2005:5). The utilisation of the positivist paradigm for quantitative research studies is recommended by numerous researchers (Mack, 2010; de Vos *et al.,* 2011:6; Creswell, 2014:7).

4.2.2.2 The constructivist paradigm

Patel (2015:1) advocated that the constructivist paradigm is based on the notion of no single objective reality or truth. Creswell (2009:8) referred to this paradigm as similar to perspective and reality is developed by individuals and groups. For that reason, reality needs to be interpreted and it is employed to determine the underlying phenomena (Patel, 2015:1). The constructivist paradigm also requires enhanced explanations compared to the other paradigms to facilitate the establishment of numerous perspectives from the variety of realisms (Guba & Lincoln, 1994). Participants in the study search for understanding of the world in which they live and work with the constructivist paradigm (Creswell, 2009:8). They develop subjective meanings of their experiences. However, these meanings are numerous and diverse, which as a result causes the researcher to search for the complexity of perceptions instead of the narrow meanings of a small number of categories or ideas (Creswell, 2014:8).

In contrast to the positivist paradigm, this paradigm is adaptable and so are the realities (Guba & Lincoln, 1994). The participants in the study also have full control over the entire process and this approach aims to find an open relationship between the participants and the researchers (Glicken, 2003:31). De Vos *et al.* (2011:8) stated that it is believed that when the participants are involved throughout the process, the outcome is superior and more precise. This research paradigm is seen as an approach to qualitative research in preference to quantitative research (Creswell, 2003:8; de Vos *et al.,* 2011:7).

4.2.2.3 The participatory paradigm

Creswell (2009:9), as well as Frels and Onwuegbuzie (2013), stated that the participatory paradigm is based on the notion that research needs to be associated with politics and political agendas. Creswell (2014:9) also refers to this paradigm as the transformative paradigm. Accordingly, this paradigm is variable and subject to change, which consequently can be explained in accordance with the underlying assumption (Heron & Reason, 1997:278). This paradigm includes the views and perceptions of participants involved in a research study. This paradigm entails an action plan that may transform the researchers' and participants' lives.

In addition, particular issues of essential importance, for example social, economic or political issues should be attended to (Babbie, 2007:301; Creswell, 2009:9). Therefore, participants in a study co-operate with the researcher with the purpose of creating meaning for the study (Frels & Onwuegbuzie, 2013; Creswell, 2014:9). Numerous researchers advocate the use of this paradigm for mixed method research studies dependent on the objectives of the study (Guba & Lincoln, 1994; Creswell, 2009:9; Strydom, 2011c:496; Frels & Onwuegbuzie, 2013). However, Creswell (2009:9) and Strydom (2011c:496) mentioned that although this paradigm can be used for quantitative research studies, it is more effective in qualitative research studies.

4.2.2.4 The pragmatic paradigm

Creswell (2014:10) stated that the pragmatic paradigm stems from actions, circumstances and consequences instead of former circumstances. According to Johnson and Onwuegbuzie (2004) the pragmatic paradigm supports the employment of multiple realisms and not a single objective realism. Patel (2015:1) emphasised that within this paradigm, reality is frequently re-established, deliberated and interpreted taking into consideration its effectiveness in new variable circumstances.

The pragmatic paradigm is focused on the application and solving of problems (Patton, 1990). The researchers highlight the research problem and utilise all approaches to their disposal in order to gain an understanding of the problem, rather than focusing on methods (Rossman & Wilson, 1985:630). The pragmatic research paradigm is supported by numerous researchers for the use of the mixed method research studies (Patton, 1990; Tashakkori & Teddlie, 1998; Johnson & Onwuegbuzie, 2004; Creswell, 2009:10; Patel, 2015:1).

4.3 RESEARCH APPROACH

The second step entails choosing a research approach. Research methodologies with reference to research approaches can be classified into three main categories namely quantitative, qualitative and mixed methods approaches (Kothari, 2004:33; Conrad & Serlin, 2011:147; Creswell & Plano Clark, 2011; Creswell, 2014: 32). Table 4-2 depicts the differences between the research approaches.

Table 4-2: Different research approaches

	Quantitative approach	Qualitative approach	Mixed-method approach

Methods used	Established methods.	Emerging methods.	Both established and emerging methods.
Questions	Questions are based on instruments.	Open-ended questions where participants need to elaborate on answers.	Questions are both open-and closed-ended.
Data measure	Measurable (numeric) data.	Data is in die form of interviews, observations or audio.	Two forms of data namely both quantitative and qualitative data.
Analysis	Entails statistical analysis.	Text and image analysis.	Entails statistical and text analysis.
Interpretation	Entails statistical interpretation.	Data is interpreted through themes or patterns.	Data is interpreted from both data sets.

Source: Creswell (2009:15)

4.3.1 The quantitative research approach

Quantitative research is defined by Creswell (2014:4) as a research method with the objective to test the hypothesis by investigating the relationship between variables. Quantitative research data are referred to as numerical data that can readily be converted into numerical form (Quinlan, 2011:380). Variables can be calculated by means of instruments so that the numerical data can be analysed using statistical methods (Quinlan, 2011:380; Creswell; 2014:4). In addition, the quantitative research approach aims to collect numerical data and simplifying it across a group of individuals or to describe a specific occurrence (Muijs, 2010:1).

Furthermore, Babbie (2010:1), as well as Muijs (2010:1), stated that the quantitative research approach place emphasis on the objective measurement and the statistical analysis of data collected by means of questionnaires, polls or surveys. This is executed by influencing previous statistical data by making use of computer techniques. Quantitative research can be analysed by, for example, making use of the computer software package, SPSS (Quinlan, 2011:380).

Leedy and Omrod (2001) stated that quantitative research is precise in its analysis and testing due to its reliance on existing theories. The quantitative research approach aims to determine the relationship between an independent variable and a dependent variable within a group or population (Creswell, 2009:132). Quantitative research can be applied by responding to relative questions of variables in research (Williams, 2007:66). Quantitative

research approach questions can be divided into three categories namely descriptive, comparative and relationship, with reference to Table 4-3.

Table 4-3: Quantitative research design questions

Type of quantitative research design question	Description	Source
Descriptive	The descriptive category only establishes the relationship between the variables and attempts to measure responses on one or more variables.	Hopkins (2000:1); Onwuegnbuzie and Leech (2006:480)
Comparative	The comparative category attempts to make comparisons between two or more groups pertaining to the same variable, for example the dependent variable.	Onwuegnbuzie and Leech (2006:480)
Relationship	The relationship category attempts to determine the trend between two or more variables.	Onwuegnbuzie and Leech (2006:480)

Source: Author compilation

4.3.1.1 Different quantitative research approaches

Quantitative research consists of four main research approaches, namely descriptive, correlational, quasi-experimental and experimental (Welman *et al.,* 2005:77; Maree & Pietersen, 2007:149; Creswell, 2009:12; de Vos *et al.,* 2011:144*;* CIRT, 2018:1). The four quantitative research approaches differ to the extent that the researcher intends to manage the variables in the experiment (CIRT, 2018:1). Table 4-4 depicts the main characteristics of the four quantitative research approaches.

Table 4-4: Different quantitative research approaches

Quantitative research approaches	Main characteristics	Source
Descriptive	• Investigates the phenomenon or variable under investigation in its present state of existence. • Phenomenon or variables under investigation are normally measured once and the aim is to find relationships between variables. • Entails the classification of features of a particular phenomenon or variable which is established on an observational foundation or the examination of the correlation between two or more variables.	Hopkins (2000:1); Maree and Pietersen (2007:152)**;** CIRT (2018:1)

Quantitative research approaches	Main characteristics	Source
	• Data collection is mainly observational and the hypothesis is only developed after the data are collected. • May require a very large sample population in order to verify that a valid approximation of the relationship between variables has been attained. • Non-experimental approach due to the fact that no manipulation of variables is applied and it does not entail an experimental group.	
Correlational	• Establish and explain the relationship between two or more variables using statistical analysis. • Is in certain cases categorised under and comparable to descriptive research design. • The data collection method is mainly observational as it will identify data patterns and trends. However, it does not investigate cause and effect. Simply the data, relationships as well as distributions are investigated and analysed. • Non-experimental approach. The variables are only classified and investigated in their natural occurrence as no manipulation is applied.	Leedy and Omrod (2001); Williams (2007:67); Creswell (2014:12); BCPS (2017:1); CIRT (2018:1)
Casual Comparative	• Non-experimental research approach in which the researcher compares two or more independent variables that has already occurred. • The manner in which the independent variables are influenced by the dependent variables is investigated. • Entails cause and effect relationships between the variables, for example determine the relationship between the independent variables and their effect on the dependent variables.	Williams (2007:66); Creswell (2014:12)
Experimental	• Investigates the particular treatment in the study and thereafter measures the outcome of the treatment. • The impact of a particular treatment on an outcome is measured by making available a particular treatment to one group and withholding it from another. Accordingly, the performance of both groups is established based on an outcome.	Williams (2007:66); Creswell (2009:12)

Source: Author compilation

4.3.2 The qualitative research approach

Qualitative research is a comprehensive approach that entails discovery (Williams, 2007:67). As defined by Creswell (1998:14), qualitative research is an inquiry method of understanding derived from distinct methodological traditions of inquest that discovers a social or human problem. It enables the researcher to create a multifaceted, comprehensive depiction, examine words, reports participants' comprehensive viewpoints and perform the study in a natural setting (Creswell, 1994:2; Creswell, 1998:15; Creswell, 2009:5).

The objective of qualitative research is to understand the phenomenon under investigation through individuals' viewpoints by means of providing an understanding of individuals' experiences (Flick, 2011:12). Qualitative research is individualised by means of its determined and effective use for identifying, explaining and interpreting the data collected (Williams, 2007:67). Qualitative research is based on an inductive style, with a focal point on understanding individual meaning to a social or human problem and the significance of administering the difficulty of circumstances (Williams, 2007:67; Creswell, 2014:4).

Onwuegnbuzie and Leech (2006:482), as well as Flick (2011:12), stated that qualitative research questions and data collection methods are open-ended. In addition, the main objective of qualitative research is to explain the phenomenon under investigation instead of executing statistical comparisons between variables. The researcher who collects open-ended data has the main objective to establish themes from the data collected. The themes established from the research data collected are intended to answer the "what", "how" or "why" questions of the phenomenon under investigation (Creswell, 2003:18; Flick, 2011:12).

As indicated by Flick (2011:12) as well as Fouché and Schurink (2011:308), employing qualitative research focuses on understanding instead of explaining and natural examination instead of controlled measurement. Furthermore, it also focuses on the subjective examination of reality from an insider's viewpoint rather than an outsider's viewpoint that is predominant in the quantitative paradigm. Qualitative research necessitates strong commitment to study a problem as well as time and resources (Creswell, 1998:15). Leedy and Omrod (2001) stated that qualitative research is less controlled in description due to the fact that it generates and establishes new theories.

4.3.2.1 Different qualitative research approach

As indicated by Creswell (1998:15), Leedy and Omrod (2001), Creswell (2009:12), Fouché and Schurink (2011:312) as well as Creswell (2014:13), qualitative research comprises five

main research approaches namely ethnography, narrative, phenomenology, grounded theory and case study. Table 4-5 describes the main characteristics of the five qualitative research approaches.

Table 4-5: Different qualitative research approaches

Qualitative research approaches	Main characteristics	Source
Ethnographic	• Comprehensive examination of a culture. • Examines collective patterns of behaviour and language of an integrated cultural group in a natural setting over an extended time period. • Observational data are collected by means of observations and interviews. • Focuses on detail and precise description instead of explanation. • The researcher must become familiarised and involved in the participants' daily lives with the aim of observing their behaviour followed by interpreting the cultural group.	Creswell (2003:14); Williams (2007:68); Babbie (2010:304); Quinlan (2011:183); Creswell (2014:14)
Narrative	• Gather and analyse stories (narratives). • Examines individuals' lives and requests some individuals to share stories of their lives. • The narrative analysis can be applied to analyse textual data, which can be written or in visual texts. • Combine the participants' stories and the life of the researcher with the intention of creating a collaborative narrative.	Clandinin and Conelly (2000); Creswell (2009:13); Quinlan (2011:181); Creswell (2014:14)
Phenomenology	• Attempts to understand individuals' perceptions, perspectives and specific situations. • Associated with the study of experience or consciousness. • Entails a small sample by means of comprehensive and lengthened involvement in order to develop meaningful patterns and associations. • Data are collected by means of lengthened interviews with the intention of understanding the individuals' perception. • Make preferably use of descriptive and not explanatory science.	Osborne (1990:79); Leedy and Omrod (2001:157); Creswell (2003:15); Williams (2007:69); de Vos *et al.* (2011:305); Quinlan (2011:184)

Qualitative research approaches	Main characteristics	Source
Grounded theory	• Investigation in which the researcher obtains a common, theoretical theory of a process, action or relations found in individuals' perceptions participating in the study. • Obtain theories from the analysis of patterns, subjects and general categories found in observational data. • The objective is to create a theory. Therefore, no theoretical framework can be presented. • Data are collected and analysed before making use of any theory. • Theoretical sampling of diverse groups with the aim of capitalising on similarities acquired from each group. • Data collection entails a comprehensive instrument where data is collected over numerous stages. • Data can be attained by means of sources, for example, interviews, re-evaluating historical records and online observations. • Constant data evaluation with a comparison to developing categories.	Strauss and Corbin (1990:5); Leedy and Omrod (2001); Creswell (2003:14); Williams (2007:69); Creswell (2009:13); Babbie (2010:307); de Vos *et al.* (2011:305); Creswell (2014:14)
Case study	• The in-depth investigation of a single phenomenon or a series of phenomena. • Either a single case or a case dependent on time and place. • Provide an accurate depiction or reform of cases. • Dependent on time and action and the researchers employ multiple data collection methods over a continuous period of time. • The data can be collected from various sources such as direct or individual observations, interviews, historical records or documents, physical antiques and audio-visual materials. • The researcher must invest time interacting with individuals in the field participating in the study. The report would entail lessons learned or patterns obtained that relate to theories.	Stake (1995); Creswell (1998:36); Williams (2007:68); Yin (2009); Babbie (2010:307); Flick (2011:69); Quinlan (2011:184)

Source: Author compilation

4.3.3 The mixed methods approach

The mixed method approach became known as the third research paradigm for social research, together with quantitative and qualitative research (Johnson & Omwuegbuzie, 2004:14; Jonhnson *et al*., 2007:128; Denscombe, 2008:270). It can be defined as an approach that comprises the fundamentals of both quantitative and qualitative research (Creswell & Plano Clark, 2007:6; Johnson *et al*., 2007:128; Leech & Onwuegbuzie, 2007:265; Onwuegbuzie & Collins, 2007:281; Creswell, 2009:216). These combined approaches are consolidated into a single research study, or into a sequence of research studies that examines the same fundamental phenomenon (Creswell, 2003:208; Leech & Onwuegbuzie, 2007:265). Its logic of inquiry entails the use of induction (discovery of patterns), deduction (theory testing and hypothesis) and abduction (revealing and relying on the best set of explanations in order to understand the results of the study) (Onwuegbuzie & Leech, 2006: 474). Furthermore, the data collection entails both numeric and text data, which could occur simultaneously or sequentially (Creswell, 2003:210; Creswell & Plano Clark, 2007:6).

The mixed method approach identifies the importance of both quantitative and qualitative research. However, it also presents a significant third research paradigm that provides researchers with the most helpful, comprehensive, objective and valuable research results (Johnson *et al*., 2007:129). Because of its rational and insightful appeal, it assists to bridge the gap between quantitative and qualitative research. The mixed method approach also attempts to legitimate the utilisation of numerous approaches to answer research questions, instead of limiting the researchers' options (Johnson & Omwuegbuzie, 2004:17; Onwuegbuzie & Leech, 2004:375). Johnson and Omwuegbuzie (2004:18) also stated that numerous research questions are answered most comprehensively by means of mixed method solutions. The objective for researchers applying the mixed method approach in their studies is to understand and gain from the strengths and weaknesses of quantitative and qualitative research. This will place the researchers in the best position to combine the strategies (Johnson & Omwuegbuzie, 2004:18). Evidently, the strengths and weaknesses of quantitative and qualitative research are not absolute; however, it is rather relative to the context and the way in which the researchers aim to attend to the fundamental phenomenon being investigated (Williams, 2007:70).

4.3.3.1 Different mixed method approaches

Creswell and Plano Clark (2007:59), Creswell (2009:14) as well as Delport and Fouché (2011:443) advocated that there are four main mixed methods research approaches, namely

exploratory, explanatory, triangulation and embedded. The main characteristics of these mixed method approaches are described in Table 4-6.

Table 4-6: Different mixed method research approaches

Mixed method research approaches	Main characteristics	Source
Exploratory	• Two-phase design consisting of a qualitative phase and quantitative phase. • A design in which the underlying phenomenon under investigation is firstly investigated by means of qualitative data before trying to measure it quantitatively. • Especially valuable when the researchers need to create or test a new instrument, variables are indefinite, there does not exist a guiding theoretical framework or the researcher aims to investigate the underlying phenomenon in detail and thereafter calculate its occurrence. • Advantages: It is easy to explain, apply and report. • Disadvantage: Necessitates a significant amount of time to put into practice.	Creswell *et al.* (2003:209); Creswell and Plano Clark (2007:75); Delport and Fouché (2011:441).

Mixed method research approaches	Main characteristics	Source
Explanatory (Explanatory sequential)	• Two-phase mixed method design begins with the collection and analysis of quantitative data. After the first phase is executed, the qualitative data are collected and analysed. • Valuable when researchers desire to form groups based on quantitative results and follow up with the groups by means of consequential qualitative research. • Advantages: Easy to explain, apply and report as a result of its two-phase design and only one set of data are collected at a time. • Disadvantage: Necessitates a significant amount of time to put into practice.	Morse (1991:120); Tashakkori and Teddlie (1998); Creswell and Plano Clark (2007:76); Creswell (2009:211); Delport and Fouché (2011:442)
Triangulation	• The most familiar mixed method design. • One-phase design in which the researchers employ both quantitative and qualitative methods for the same time period and with the same weight in order to gain the best understanding of the underlying phenomenon being investigated. • Entails the concurrent, however separate, collection and analysis of quantitative and qualitative data. • Valuable to directly compare and differentiate quantitative results with qualitative findings or to confirm or elaborate on quantitative results with qualitative data. • Advantages: More efficient and less time consuming to implement, which is attributable to the fact that both quantitative and qualitative data are collected during one phase and at the same time in a research study. Each type of data can be collected and analysed separately using traditional techniques associated with quantitative and qualitative data. • Disadvantages: Most challenging of the four mixed method approaches, necessitates a lot of effort and skills to collect and analyse two comprehensive but individual data sets simultaneously. Researchers may also face the problem of what action to take if quantitative and qualitative data do not concur. As a result, it may be difficult to resolve and the collection of additional data may be required.	Morse (1991:122); Creswell and Plano Clark (2007:62); Ivankova *et al.* (2007:266); Delport and Fouché (2011:442)

Mixed method research approaches	Main characteristics	Source
Embedded	• A single set of data supports and provides a secondary role to another data type in a research study. • Entails the convergent or sequential utilisation of data. • Quantitative data are embedded into qualitative data, or qualitative data are embedded into quantitative data, in a greater design. • Both data sets are employed in the description of the same underlying phenomenon. For that reason, both data sets are considered to be equally important. • Valuable when researchers need to embed a qualitative element within a quantitative design, for example in an experimental or correlational design. • Advantages: It is a popular and recognised design in research studies and two types of data can be collected simultaneously. When less disposable time or resources are available to perform broad quantitative and qualitative data collection due to the fact that one data type is less of a priority than the other, this design is effective to be used. • Disadvantages: Researchers are faced with the challenge to stipulate the reason for collecting a second set of data as part of a greater study.	Creswell and Plano Clark (2007:67); Ivankova *et al*. (2007:268); Delport and Fouché (2011:443); Klassen *et al.* (2012:379); Creswell (2014:16)

Source: Author compilation

4.4 Chosen research design and approach

As recommended by numerous researchers such as Mack (2010); de Vos *et al. (*2011:6) and Creswell (2014:7) this study comprises a descriptive quantitative research approach whereby a positivist research paradigm is applied. The descriptive quantitative research approach makes provision for systematic and objective collection of information from a representative sample by means of questionnaires (Creswell & Plano Clark, 2011:31). The descriptive quantitative research approach is an essential research method that investigates the phenomenon or variable under investigation in its present state of existence (Williams, 2007:66). It also entails the classification of features of a particular phenomenon or variable, which is established on an observational foundation or the examination of the correlation

between two or more variables (Williams, 2007:66). The purpose of the research with the positivist paradigm is to predict results, test theories and determine the relationships between variables or the cause and effect relationship (Creswell, 2014:6; Patel, 2015:1).

4.5 SAMPLING PROCEDURE

A sample can be defined as a fragment of the entire population (Quinlan, 2012:482). Sampling is studied with the intention of understanding the population from which the sample is drawn (Strydom, 2011b:222). This concept is of essential importance in the entire research process, therefore researchers need to have a comprehensible understanding prior to choosing a sampling plan and conducting the main research (Strydom, 2011b:223).

Marais (2013:52) stated that a sampling strategy refers to the utilisation of the population, sampling frame, sampling methods and sample size. The sampling strategy advocate that a small number of observations can provide an indication of what can be expected in the entire population of the underlying study (Royse, 2004:190). The sampling strategy consisting of the target population, sampling frame, sampling method and sample size is discussed in the following section.

4.5.1 Target population

The target population can be defined as all the individuals or total groups of items applicable to the study (Lavrakas, 2008:1; Quinlan, 2012:206; Brooks, 2014:62). Furthermore, Strydom (2011b:222) refers to the target population as individuals who have particular characteristics. The target population should be selected carefully and correctly because if done incorrectly, it will lead to skewed results. Consequently, it will not reflect the true characteristics of the population (Lavrakas, 2008:1; Stagnor, 2015:112). Quinlan (2012:206) stated that when beginning with the selection of the target population, the parameters of the population of the study need to be determined. The target population for this study is individual investors from an investment company within the South African context.

4.5.2 Sampling frame

A sample frame entails a complete list or graph of each individual, unit or case within the target population (Quinlan, 2012:210). A convenience sampling frame that is regarded as a non-probability sampling method was applied to this study with the intention of obtaining an unbiased sample. Convenience sampling as a non-probability sampling method depends on the collection of data from individuals of the population who are easily accessible to partake in the study (Dudovskiy, 2016b:1). The participants, individual investors within the South

African context, were selected by the investment company primarily based on the ease and convenience of obtaining the sample. As a result, in order to attain an unbiased sample, the participants were selected randomly.

4.5.3 Sampling method

A sampling method can be defined as a process that is followed with the intention of identifying a sample from a population (Cant *et al.*, 2005: 165; Maree & Pietersen. 2007:172). As seen in Figure 4-1, sampling methods can be divided into two main categories namely probability sampling and non-probability sampling. These two categories comprise of several subcategories (Strydom, 2011b:228; Quinlan, 2012:209).

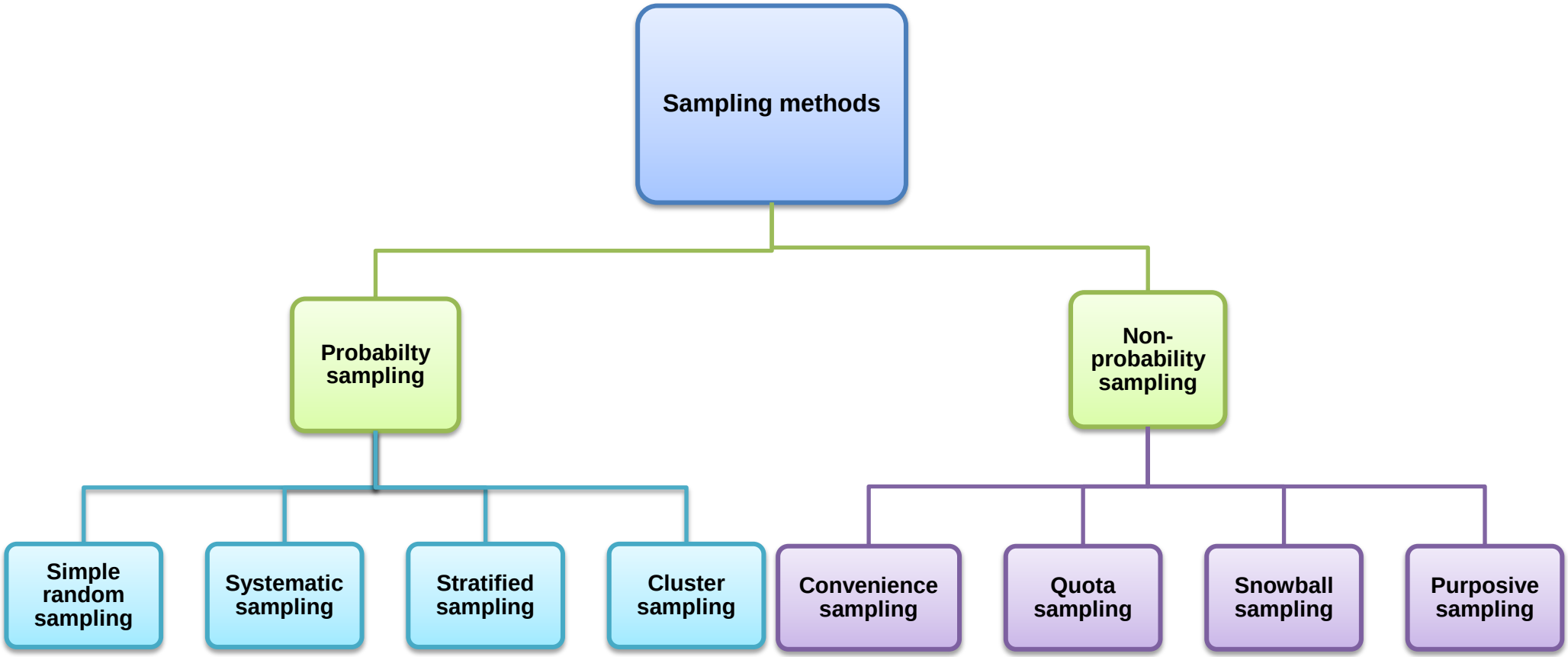


Figure 4-1: Sampling methods

Source: Strydom (2011b:228); Quinlan (2012:20)

4.5.3.1 Probability sampling methods

Probability sampling is a sampling method where each individual in the population has an equal chance to be selected for a sample (Kirk, 1999:367; DePoy & Gilson, 2008:234; Quinlan, 2011:209). As stated by Gravetter and Forzano (2003:118) the probability of selecting a certain individual is acknowledged and can be calculated. Furthermore, probability sampling is based on the concept of randomisation (Strydom, 2011b:228). Probability sampling is more effective and applicable to quantitative research (Strydom, 2011b:228). As seen in Figure 4-1, probability sampling methods comprise four sampling methods, namely simple random sampling, systematic sampling, stratified sampling and cluster sampling (Quinlan, 2011:209; Strydom, 2011b:228).

4.5.3.1.1 Simple random sampling

According to Quinlan (2011:210) simple random sampling entails the random selection of a sample from a sampling frame. In addition, Barreiro and Albandoz (2001:5) indicated that simple random sampling entails a complete list of members from a population in which the sample is selected randomly and each individual has an equal chance of being selected for the study. Marlow (2005:139) advocates that simple random sampling is the simplest sampling method. Grinnell and Unrau (2005:210) further stated that each individual participating in the study should be assigned a number. Furthermore, when an individual can be selected again it is referred to as random sampling with replacement. However, when an individual cannot be selected again, it is referred to as random sampling without replacement (Barreiro & Albandoz, 2001:5; Quinlan, 2011:210).

4.5.3.1.2 Systematic sampling

Barreiro and Albandoz (2001:10) stated that systematic sampling is correspondent with simple random sampling if the elements are numbered in a random manner. According to Quinlan (2011:210) systematic sampling entails the selection of items at systematic or regular intervals from the sampling frame. Only the first case is selected randomly with systematic sampling. The following cases are selected from a specific interval (Strydom, 2011b:230). Each participant is selected randomly from a list by selecting the k^{th} participant every time (Onwuegbuzie & Collins, 2007:285; Zimund *et al*., 2013:396).

4.5.3.1.3 Stratified sampling

Quinlan (2011:210) defines stratified sampling as a sample that is chosen based on a well-known trait of the population that will have an influence on the research. Flick (2011:72)

stated that the purpose of using stratified sampling is to be able to analyse the data in the sample separately for specific groups. The sample frame is divided or stratified into subcategories where these categories are considered to be homogeneous according to a list of characteristics such as age, language, gender, income or educational levels (Singleton *et al*., 1988:145; Mitchell & Jolley, 2001:497; Glicken, 2003:108; Onwuegbuzie & Collins, 2007:285; Flick, 2011:72). Thereafter, a random sample is selected from each of the subcategories to form a sample (Strydom, 2011b: 230). Grinnell and Unrau (2005:160) stated that with stratified sampling the researchers make use of recognised information about the population before the sample is conducted with the intention of making the sampling process more effective.

4.5.3.1.4 Cluster sampling

Cluster sampling can be defined as a probability sampling method in which the population is divided into different clusters or groups based on a specific characteristic (Quinlan, 2011:211). It is also referred to as area or multistage sampling (Monette *et al.,* 2005:137). Cluster sampling is used when no set list of participants is available, however, only a geographical map is available (Strydom, 2011b:230). Therefore, it is particularly efficient with populations that are geographically spread in clusters (Quinlan, 2011:211). Cluster sampling is at least a two-stage procedure (Grinnell and Unrau, 2005:162). Instead of randomly selecting members from the population, the researchers classify the clusters of individuals within the population and thereafter randomly select the clusters from all the clusters to include in the study (Quinlan, 2011:212). Jackson (2003:60) stated that cluster sampling is used by researchers in studies where the population is too large for random sampling.

4.5.3.2 Non-probability sampling

Zikmund *et al*. (2013:392) stated that non-probability sampling is a sampling method in which the sample is selected based on the sample's convenience or the researcher's judgement. Unrau *et al*. (2007:280) further stated that each individual in the sampling frame does not have an equal probability of being selected for the participation in a specific study. In addition, the likelihood of selecting a specific individual is also not known in advance due to the fact that the researcher does not know the size or members of the population (Salkind, 2000:87; Gravetter & Forzano, 2003:118). Non-probability sampling can be used for both quantitative and qualitative research (Creswell and Plano Clark, 2011:174; Quinlan, 2011:213; Strydom, 2011b:228). As seen in Figure 4-1, non-probability sampling methods comprise four sampling methods, namely convenience sampling, quota sampling, snowball sampling and purposive sampling (Quinlan, 2011:213; Strydom, 2011b:231).

4.5.3.2.1 Convenience sampling

Convenience sampling can be defined as a non-probability sampling method where the researcher selects the sample based on the convenience for the researcher, individuals' willingness to partake in the study or individuals whom are the easiest to include in the sample (Anderson, 2010:4; Quinlan, 2011:214). Marshall (1996:523) further stated that it entails individuals who are the most accessible in order to save time and expenses. The researcher is acquainted with how many individuals to include in the sample and subsequently continues to engage individuals in the research until the total sample has been reached (Quinlan, 2011:214).

4.5.3.2.2 Quota sampling

Babbie (2010:194) defined quota sampling as a non-probability sampling method in which units are selected into a sample based on predetermined characteristics. Consequently, the intention is that the total sample should consist of the same distribution of characteristics believed to exist in the population being studied. Quinlan (2011:214) stated that quota sampling is a sampling method in which the researcher creates a sample by means of using different quota criteria. Quota sampling is mainly used by marketing researchers. Firstly, it is used to obtain a sample as close as possible to a duplication of the population. Secondly, to classify diverse subcategories that closely bear a resemblance to the characteristics of a population (Royse, 2004:198; Cant *et al*., 2005:166).

4.5.3.2.3 Snowball sampling

Snowball sampling is defined as a non-probability sampling method in which the researcher obtains a suitable individual to participate in the study and thereafter asks them to recommend additional individuals to participate in the study. (Royse, 2004:197; Grinnell & Unrau, 2008:153; Babbie, 2010:193; Quinlan, 2011:214). In this manner, the sampling frame is selected based on individuals who could assist in reaching the targeted sample (Sarankotas, 2000:153; Strydom, 2011b:233). However, the participants must meet the inclusion criteria for the study (Quinlan, 2011:214). Snowball sampling is mainly used when there is no knowledge of the sampling frame and access is limited to suitable participants for the study (Alston & Bowles, 2003:90).

4.5.3.2.4 Judgemental or purposive sampling

Judgemental, also known as purposive sampling is a non-probability sampling method that is exclusively based on the researcher's judgement (Monette *et al*., 2005:148). The sample

consists of units that comprise the most characteristic and representative features of the population that is most useful for the purpose of the study (Grinnell & Unrau, 2008:153; Babbie, 2010:193). Quinlan (2011:213) stated that the inclusion criteria for the study are that each individual selected to participate in the study should make a valuable contribution. Therefore, the individuals selected for the participation in the study is selected with a purpose (Babbie, 2010:193).

4.5.4 Sample size

The sample size for the study was 800 participants, who are individual investors from an investment company within the South African context. However, the investment company through which the questionnaire was distributed determined the sample size. A sample size of 683 respondents was reached and analysed given response rates and time constraints.

4.6 MEASURING INSTRUMENT AND DATA COLLECTION METHOD

The main objective of a measuring instrument and data collection method is to effectively gather adequate primary data with the objective of answering the research question (Creswell & Plano Clark, 2011:205). By making use of a quantitative data approach, the data collection involves the distribution of questionnaires, collection of data as well as the analysis of data. In this study, questionnaires were used to gather data and analyse the risk tolerance of individual investors during the investor lifecycle.

4.6.1 Format and design of the data collection instrument

Questionnaires are regarded as accurate data collection instruments and are widely used in survey research (Flick, 2011:106; Quinlan *et al*., 2015:272). A questionnaire is a document that comprises questions and/or other types of items designed with the purpose to request information that is suitable for analysis (Babbie, 2007:246). However, Babbie and Mouton (2001:233) further stated that a general questionnaire will consist of as many statements as questions, particularly if the researcher needs to determine the degree to which participants hold a specific attitude or viewpoint. The primary objective of a questionnaire is to acquire facts and opinions regarding a particular phenomenon from individuals who are conversant on the particular matter (Delport & Roestenburg, 2011:186). Quinlan *et al*. (2015:272) revealed that questionnaires are mainly used in quantitative research to generate quantitative data. However, it can also be used for qualitative research in which qualitative data can be produced by means of open-ended questions. If a questionnaire is inadequately constructed and presented it may lead to a poor image and remove the significance of the

research (Quinlan *et al*., 2015:272). Therefore, the format and design of a questionnaire need to be constructed in accordance with certain basic principles to ensure the criteria of reliability and validity.

4.6.1.1 Principles of the format and design of the questionnaire

A number of basic principles were taken into consideration and adhered to with the development of the questionnaire which is as follows:

4.6.1.1.1 Objective and justification for the utilisation of the questionnaire

The researcher sought to acquire an accurate representative sample of a population, which is individual investors of a designated South African investment company, in order to gather quantitative data in relation to the empirical objectives of the study. This was executed by submitting a questionnaire to the South African investment company whereby it was distributed to their client base consisting of individual investors. The questionnaires were distributed electronically to the participants to complete in an online format.

4.6.1.1.2 Length of the questionnaire

Before a decision can be made by the researcher regarding the nature of the questionnaire, there needs to be a clear indication on what information is acquired (Delport & Roestenburg, 2011:190). Delport and Roestenburg (2011:193) stated that careful consideration needs to be given to the length of questions, giving preference to shorter questions. Questions and statements should be kept as short as possible with a maximum number of sixteen to twenty words per sentence whereby questions can consist of more than one sentence (Brislin, 1986; Oppenheim, 1992; Fink, 2003).

Furthermore, the questionnaire should be brief, only comprising the question that is completely essential to collect all the relevant information. On the other hand, the questions should be long enough to include all the questions in order to avoid the pitfall of missing information (Delport & Roestenburg, 2011:193). However, participants are more likely to complete the research questions even if it is quite lengthy when they find the research topic interesting (Oppenheim, 1966:35). In addition, the questions need to be well-structured in order to gain the maximum amount of information with the minimum number of questions. This will ensure that participants correspond as much information as possible in the shortest amount of time when completing the questionnaire (Delport & Roestenburg, 2011:193; Quinlan *et al*., 2015:272).

4.6.1.1.3 Instructions and language of the questionnaire

Leedy and Omrod (2005:190) stated that the researcher should clearly indicate the instructions to be followed on the questionnaire. In this study, the instructions were indicated clearly and precisely on the questionnaire in order for the participants to complete it correctly.

Delport and Roestenburg (2011:192) advocated that the questions should be formulated in the language of the participants. Failure to do so may lead to a lack of validity. Furthermore, jargon, slang, abbreviations and emotional language should be avoided (Leedy & Omrod, 2005:191). In this study, the questionnaire was presented in English to the participants. This was done by reason of that the established questionnaires, on analysing risk tolerance during the investor lifecycle, were only available in English as well as the diversity of languages of the client base at the designated investment company.

4.6.1.1.4 Formulation of questions

It is important to formulate questions correctly as it will ensure that the questionnaire has enhanced face validity before the study commence. When the researcher designs the questionnaire, it is highly important that the researcher engages with the words, concepts and language used in the questions in the questionnaire (Quinlan *et al*., 2015:277). The questions should collect the participants' motive for a particular behaviour or attitude and indicate their state of information regarding the underlying phenomena being studied (Flick, 2011:107).

In this study, the questions were constructed in accordance with certain principles and the researcher established that the questions were suitable for this study (Delport & Roestenburg, 2011:192; Flick, 2011:110):

- The sentences were precise, brief and clear.
- Questions were kept short; long and complex questions were avoided.
- The vocabulary, style and concepts were formulated to make it understandable for all participants.
- Every question contained only one thought or item.
- Negative questions were avoided.
- Every question was relevant to the purpose of the study.
- Abstract and hypothetical questions were avoided.

- Potential leading and biased questions that could lead to a particular response were omitted.
- Questions were presented in general, non-threatening terms.
- Double-barrelled questions were avoided; each question focused on only one topic.

4.6.1.1.5 Types of questions

Questions in a questionnaire can either be open-ended or close-ended. Open-ended questions allow the participants to provide an unrestricted number of potential answers, sufficient answers to difficult matters and to communicate a viewpoint without the researchers' influences (Neuman, 2006:287). On the other hand, close-ended questions provide a set of responses from which the participant has to select one or in certain cases more than one response (Maree & Pietersen, 2007:161).

In this study, the questionnaire comprised close-ended questions in which the participants needed to select one response out of a set of responses as provided by the researcher. Close-ended questions are advantageous when a somewhat larger sample is used. Responses can also be compared better with one another and responses are easier to code and analyse statistically (Delport & Roestenburg, 2011:192).

4.6.1.2 Design and administration of the questionnaire

The questionnaire (Annexure C) was distributed to individual investors in the designated investment company. All the participants received the same questionnaire consisting of the same format and number of questions. Table 4-7 demonstrates the different categories of the questionnaire. The different categories will also be discussed accordingly.

Table 4-7: Different categories of the questionnaire

Category	Nature of category	Objective	Question format
Category A	Demographic information	To obtain background information of the individual investors such as age, gender, race, marital status, nationality, language and income. Determine the demographic factors that influence individual investors' risk tolerance when making investment decisions.	Close-ended question where participants needed to select the most relevant answer.
Category B	Investment instruments	To determine the instruments in which individual investors invest in and how long they had invested in those investments. To determine the individual investors' phase in the investors' lifecycle.	Close-ended question where participants needed to select the most relevant answers.
Category C	Self-report on lifecycle	To determine and analyse where individual investors subjectively think they are in the investor lifecycle. To determine how accurately individual investors subjectively estimate their risk tolerance at different phases of the investor lifecycle.	Close-ended question where participants needed to select the most relevant answer.
	Survey of Consumer Finances (SCF)	To measure individual investors' financial risk tolerance aimed at investment choices attitudes and experience. To determine how accurately individual investors subjectively estimate their risk tolerance.	Close-ended questions where participants needed to select the most relevant answer.
Category D	Grable and Lytton risk tolerance scale (GL-RTS)	To measure and assess individual investors' level of financial risk tolerance.	Close-ended questions where participants needed to select the most relevant answers.

Source: Author compilation

Firstly, before discussing the numerous categories of the questionnaire, consideration needs to be given to the measurement and scales involved in the design of a questionnaire. Measurement can be defined as the assignment of numerical values to objects in accordance with a particular set of rules (Stevens, 1946:677). The level of scale measurement is regarded as important for the reason that it establishes the mathematical comparison that is allowed (Quinlan *et al*., 2015:105). The measurement scales comprises four main scales, namely nominal scales, ordinal scales, interval scales and ratio scales (Stevens, 1946:677; Delport & Roestenburg, 2011:208; Quinlan *et al*., 2015:105).

Nominal scales

Nominal scales signify the most fundamental level of measurement. A nominal scale allocates a value to an object simply for identification or classification purposes (Quinlan *et al*., 2015:106). With nominal scales, the purpose is to create mutually exclusive and comprehensive groups that are as close as possible to homogenous, for example age, gender, etc. Nominal scaling verifies the occurrence or deficiency of a characteristic (Babbie, 2010:143).

Ordinal scales

Ordinal scales allow objects to be ranked based on criteria and the significance they hold (Quinlan *et al*., 2015:106). Therefore, an ordinal scale is a ranking scale. Ordinal scales give importance to the position that an object lies in, for example ranging from most preferred or least preferred or most to least formal educated (Stevens, 1946:680; Babbie, 2010:144).

Interval scales

Interval scales is a level of measurement consisting of both nominal and ordinal properties, however, the distance between the values can still be captured (Babbie, 2010:144; Quinlan *et al*., 2015:108).

Ratio scales

Ratio scales signifies the greatest form of measurement. Ratio scales is defined as a level of measurement explaining a variable with characteristics that consist of all the properties of nominal, ordinal and interval scales (Babbie, 2010:145). It is also based on an absolute zero value (or “true zero” point) that indicates the absence of a concept (Babbie, 2010:145; Quinlan *et al*., 2015:108).

4.6.1.2.1 Category A: Demographic information

Category A of the questionnaire comprised demographic questions in order to obtain the necessary background information and socio-economic characteristics of the participants. The demographic questions included age, gender, ethnicity, marital status, nationality, home province, home language and annual income. The information was used to obtain background knowledge about the participants and to determine if demographic factors can influence individual investors' risk tolerance when making investment decisions. The main initiative is, for example to determine the risk tolerance levels of individual investors, if they are categorised in a certain age category or to determine if individual investors' risk tolerance can be influenced by income.

4.6.1.2.2 Category B: Investment Instruments

Category B of the questionnaire consisted of questions where the participants were asked to indicate the instruments they have invested in and how long they had invested in these investment instruments.

4.6.1.2.3 Category C: Self-report on lifecycle and SCF

The first section of Category C of the questionnaire is the self-report on lifecycle in which participants are asked to indicate based on a set of statements where they would describe themselves to be in the investor lifecycle. Self-report measures are measures in which participants are requested to give feedback on their personal behaviour, beliefs, attitudes or intentions (Lavrakas, 2008:1). The main aim is to determine and analyse where individual investors subjectively think they are in the investor lifecycle and how accurately they subjectively estimate their risk tolerance at different phases of the investor lifecycle.

The second section of Category C included the SCF. Self-reported risk tolerance is a measurement of an individual's willingness to accept risk (Hanna *et. al*., 2001:53). The SCF is used to determine individual investors' perceptions of financial risk tolerance and is a single-question measure. It is one of the most widely used measurement instruments of financial risk tolerance (Gilliam *et al.,* 2010:30). It is only a direct measure for investment choice attitudes and experiences, as it does not include all the variables of financial risk tolerance (Grable & Lytton, 2001:43). Grable and Lytton (2001:43) stated that the SCF is used to obtain data on individuals' or households' assets and liabilities, financial attitudes and behaviours. Various researchers employing the SCF incorporates the following statements in the questionnaires, where participants are asked to select the closest option

with regard to the quantity of financial risk they are willing to take (Grable & Lytton, 2001:43; Yao *et al.,* 2004: 250; Gilliam *et al.,* 2010:31):

1. Take substantial financial risk expecting to earn substantial returns.
2. Take above-average financial risk expecting to earn above-average returns.
3. Take average financial risk expecting to earn average returns.
4. Not willing to take any financial risk.

Grable and Lytton (2001:43) stated that this is the only subjective financial risk tolerance measure used in the SCF. It is important to take into account that the response patterns to the question over various time periods have remained reasonably stable indicating that the SCF is to some extent reliable.

However, the SCF measure has not gone without criticism as researchers are concerned with the validity and accuracy of the SCF measure towards financial risk tolerance. Grable and Lytton (2001) carried out a study to test the concurrent validity of the SCF scale in order to determine if it is a reliable measure of financial risk tolerance. The reliability test specified a Cronbach's alpha value ranging from 0.52 to 0.59, indicating that the reliability level is relatively low (Gilliam *et al.,* 2010:31).

Instead of criticising the utilisation of the SCF, Grable and Lytton (2001) advocated that this measure can be used as an alternative for the narrower portion of investment risk tolerance within the wider concept of financial risk tolerance. Furthermore, despite the SCF's relatively low Cronbach's alpha value, it is continuously used by researchers, practitioners and policymakers as it is the only direct measure of risk attitude (Gilliam *et al.,* 2010:32). In this study, the SCF was used to obtain individual investors' perceptions and attitude towards financial risk tolerance.

4.6.1.2.4 Category D: GL-RTS

In 1999, Grable and Lytton developed a measurement that takes into account numerous aspects of financial risk tolerance. The aim of developing a risk tolerance measurement was based on the scale development theory and propositions obtained in the MPT (Kuzniak *et al*., 2015:179).

The GL-RTS initially included 100 risk assessment items from literature. Based on a pilot study and review of the face validity of each item, it was reduced to 50 risk assessment items and thereafter to 20 risk questions. Subsequently, the items were grouped into eight

categories, which are as follows (Grable & Lytton, 2001:47; Gilliam *et al.,* 2010:32; Kuzniak *et al.,* 2015:179):

1. Guaranteed versus probable gambles
2. General risk choice
3. Choice between sure loss and sure gain
4. Risk as experience and knowledge
5. Risk as a level of comfort
6. Speculative risk
7. Prospect theory
8. Investment risk

Grable and Lytton found that by using results from factor analysis, the number of items could be reduced to 13 risk assessment items. The 13-item risk tolerance scale measured financial risk tolerance based on three primary factors, namely (Grable & Lytton, 2001:47; Gilliam *et al.,* 2010:32; Kuzniak *et al.,* 2015:179):

1. Investment risk
2. Risk comfort and experience
3. Speculative risk

Scale reliability was measured by means of Cronbach's alpha and the initial test of reliability indicated a Cronbach's alpha value of 0.75 (Gilliam *et al.,* 2010:32; Kuzniak *et al.,* 2015:179). The GL-RTS's reliability and validity remained robust since the scale was initially developed in 1999 with an estimated Cronbach's alpha value of 0.77 during the period of 2007 to 2013 (Kuzniak *et al*., 2015:181).

The Grable and Lytton 13-item risk tolerance scale is widely used by researchers, practitioners and policymakers throughout the global financial industry (Kuzniak *et al.,* 2015:177). In this study, individual investors' objective risk tolerance, the risk that an individual is able to take, was measured by means of the GL-RTS. It mainly indicated if individual investors are more or less risk tolerant, for example conservative, moderate or aggressive investors, when faced with financial risk. However, the SCF was used to determine and analyse how individual investors subjectively estimate their risk tolerance. The ultimate objective for the utilisation of both the SCF and GL-RTS in this study is to determine the relationship between individual investors (objective) actual risk tolerance and subjective risk tolerance and how it deviates from theory during different phases of the investor lifecycle.

It can be concluded that questionnaires are valuable and comprehensive quantitative data collection instruments that can be employed for efficient and objective collection of information from a representative sample of the population. The data collection procedures are discussed in the following section.

4.7 DATA COLLECTION PROCEDURE

The data collection procedure entailed a consent form whereby the designated investment company notified the participants of the study to be performed by the researcher. The consent form stipulated and ensured that all participants' identity and any given information will remain anonymous and confidential at all times during the research. The questionnaires were completed by the participants after permission was granted. The questionnaire adhered to ethical considerations that are discussed in the following section.

4.7.1 Ethical considerations

This research study with regard to data collection and data management conforms to the ethical standards of academic research as stipulated by the North-West University (NWU, 2016:48). Quinlan (2011:69) advocated that ethical considerations can be defined as moral values and principles that govern the conduct of individuals, groups or organisations. Researchers should make ethically responsible decisions by adhering to ethical principles. The consent forms, whereby the participants were informed about the objectives and procedures of the research study, were signed by the designated investment company (Annexure A). Ethical clearance for this research study was obtained from the Research Committee of the Faculty of Economic Sciences and Information Technology with ethics clearance number ECONIT-2017-038 (Annexure B).

The ethical considerations of this research study entailed the following:

- Voluntary participation
  Participants were informed that participation is strictly voluntary and no participant is obligated to partake in this research study. Participants were also informed that they have the right to withdraw at any time from this research study (Rubin & Babbie. 2005:71).
- Informed consent
  Researchers are ethically obligated to inform participants of the nature of the research study, the nature and degree of their involvement in the research and any potential consequences for them that may come to pass from their participation (Quinlan,

2011:79). It is highly important to have written informed consent (Hakim, 2000:143). The consent letter provided sufficient information about the research study as well as participants' consent to participate in this research study. Permission was obtained from the designated investment company to execute the research study.

- Guaranteed confidentiality and anonymity of participants

  Confidentiality refers to the guarantee that participants' contributions to the research study will remain confidential (Strydom, 2011a:119). Anonymity refers to the guarantee that researchers provide participants with, that they will remain unidentified during the research study at all times and that they will be unidentifiable in any form of writing in the research study (Quinlan, 2011:79). The designated investment company screened the participants as only the investment company have access to their client database. No identifying marks were placed on the responses obtained. The participants' identities and contributions remained confidential and anonymous at all times during the research study as the researcher had no knowledge of the client database of the designated investment company in order to facilitate high ethical standards and ensure anonymity.
- True reflection of information

  The information provided to the participants was a true reflection of information with no deceptions and no deliberate misrepresentation of facts (Struwig & Stead, 2001:69). All the questions on the questionnaire were provided by the researcher in a clear, truthful and definite manner.
- True representation of findings

  Strydom (2011a:126) stated that the findings of a study should be made available to the public domain in written form or else even a highly scientific study will have no purpose and will not be regarded as research. The designated investment company gave permission that the data may be published, given that the investment company remains anonymous at all times and is not mentioned in any manner. The findings of the research study will be published in written form by means of a dissertation in the public domain. The published data and findings will be a true representation of the data collected and analysed.
- Data management

  The data will be kept for no less than five years.

4.7.2 Pilot study

A pilot study, or pre-test, is a test of the design of the data collection instrument created for the research study (Quinlan *et al*., 2015:279). The questionnaires should be pilot tested before being used in the research study in order to guarantee that any errors can be

corrected instantly at no large expenses. Two objectives are mainly achieved with pilot testing, namely to improve face and content validity of the data collection instrument and to determine how long it will take participants to complete the questionnaire (Delport & Roestenburg, 2011:195). In this research study, a pilot study was not conducted by the researcher. This is due to the fact that the designated investment company did not give their consent to perform a pilot study and did not give the researcher permission to access their database more than once. It was also initially agreed to access their database and distribute the questionnaire only once. Approval for this study was obtained without conducting a pilot study.

4.7.3 Management of information

The management of information and data is a fundamental element in the research process (Ingram, 2016:1). In this research study, the management of information refers to how effectively the researcher manages the accessibility of records of the designated investment company. Information was managed by creating backup copies of the information on a memory stick which was secured in a safe place. The protection of participants' anonymity and confidentiality was guaranteed by applying only unidentified numbers on the questionnaire.

The statistical package, SPSS, also provides a tool for the management of data. The data are secured within the software package and can be protected with a password. The data is kept in one folder and should be backed up. In order to load the data into SPSS, it should be coded by the researcher. By coding the data, it ensures anonymity of the data, which also helps to ensure that the participants' identities remain anonymous (Quinlan *et al*., 2015:356). In this study, SPSS was used as a tool to manage the data as it is easily and safely stored. However, backup copies of the data were also made and ensured that it is safely stored on the computer and a memory stick.

All the data obtained for this study will be erased five years after the completion of the research study. This level of data management is required to adhere to high ethical standards (Quinlan *et al*., 2015:356).

4.8 DATA ANALYSIS

Data analysis is the process of discovering and investigating data with the intention of obtaining an understanding of the gathered data. Data is analysed with the purpose of revealing patterns and trends (Quinlan, 2011:6; Zikmund *et al*., 2013:68). The objective of

data analysis is to minimise the data to a logical and interpretable formation with the intention that the relations of research problems can be investigated and conclusions can be drawn (Rubin & Babbie, 2005:552). The researcher conducted a comprehensive analysis of the responses presented by the participants in this study. This was done with the intention of validating the theory created against the responses attained from all the participants.

4.9 STATISTICAL ANALYSIS

Monette *et al.* (2008:364) refer to statistical analysis as procedures for collecting, categorising, tabulating and summarising numerical data with the purpose of obtaining meaning or information. In this study, the quantitative data were analysed by means of the statistical package, SPSS, version 25 for Microsoft Windows. SPSS is a computer software package designed with the purpose of analysing quantitative data (Landau & Everitt, 2004:11). Descriptive statistical procedures were employed to explain and summarise the data attained from the questionnaire with the intention of determining the collection of scores acquired (Leedy & Omrod, 2005:252). The descriptive statistical procedure was appropriate to organise, analyse and interpret the quantitative data.

The statistical measures used in the study are discussed in the following section.

4.9.1 Reliability analysis

Quinlan *et al*. (2015:112) refer to reliability as an indicator of a measure's internal consistency. It indicates the degree of accuracy in the measurement of an instrument (Flick, 2011:200). Reliability transpires when an instrument measures the same item more than once and it produces the same result. The reliability of a measurement method is the consistency or stability of the measurement (Delport & Roestenburg, 2011:177). Reliability in quantitative research is associated with the consistency and stability of results over a period of time and the accuracy level it signifies from the population being studied (Maree & Pietersen, 2007:215).

Reliability tests can be utilised as a measure to determine the degree that variables are free from random error, for example misinterpretation of questions or coding errors (Quinlan, 2011:306). Maree and Pietersen (2007:147) advocate that a high-reliability level can be accomplished when the measuring instrument signifies the same results should the research be executed again on the exact same sample. Therefore, a measure will be reliable when no random error occurs (Cant *et al.,* 2005:235).

Reliability analysis consists of the following three methods namely test re-test reliability, equivalent forms reliability and internal consistency reliability. These methods are discussed in Table 4-8.

Table 4-8: Reliability analysis methods

Method	Definition	Source
Test re-test reliability	The test re-test methods entail managing the same scale or measure to the same participants at two different points in time to test for stability.	Babbie (2010:152); Quinlan *et al*. (2015:114)
Equivalent forms reliability	Equivalent forms reliability is similar to the test re-test method, except it entails administering two different scales or measurements to the same participants at two different points in time.	Bollen (1989:180); Drost (2011:110)
Internal consistency reliability	Internal consistency reliability represents a measure of homogeneity and measures the extent to which the results on a particular item or scale correlate with each other.	Quinlan *et al*. (2015:113); Stagnor (2015:95)

Source: Author compilation

The reliability of measures can be enhanced as follows (Neuman & Kreuger, 2003:179; Salkind, 2006:108):

- The researcher should provide clear, concise and standardised instructions.
- Two or more indicators are employed to measure every feature of a variable, for example two or more questions in a questionnaire.
- Items that are unclear is eliminated.
- The length of the questionnaire is within reasonable limits.

The researcher complied with these procedures in the study and also ensured that the questions were understandable and could be answered by the participants as easy as possible (Leedy & Omrod, 2005:190; Salkind, 2006:108). It is important to take into account that high reliability does not guarantee valid results, however, there can be no valid results without reliability. Therefore, reliability is an essential, but not an adequate, pre-requisite of validity (Salkind, 2006:118; Delport & Roestenburg, 2011:178).

4.9.2 Validity analysis

According to Babbie (2007:146) validity refers to the degree to which an empirical measure accurately reflects the actual and truthful score or meaning of the concept being investigated. Salkind (2006:113) stated that the validity of a measurement instrument should ensure that the instrument being employed actually measures what the researcher has to measure. Therefore, the validity of a measurement instrument is the degree to which the instrument measures the variable that it is expected to measure (Leedy & Omrod, 2005:28).

Validity analysis is primarily categorised into four main categories, namely content validity, face validity, criterion validity and construct validity. Content and face validity can be established before the data are collected, whereas criterion and construct validity are established once the instrument has been employed to collect the data (Delport & Roestenburg, 2011:173). These categories are described in the following section.

4.9.2.1 Content validity

Quinlan *et al*. (2015:115) referred to content validity as the extent to which a measured variable accurately signifies the full domain of the theoretical variable. On the other hand, Babbie (2010:155) referred to it as the extent to which a measure covers the series of meaning incorporated within a concept. A questionnaire was used in this study as a valid instrument to analyse individual investors' risk tolerance during the investor lifecycle.

4.9.2.2 Face validity

Gravetter and Forzano (2003:87) stated that face validity is concerned with the appearance or face value of the measurement method. It refers to the concept what it appears to measure. Face validity is a sought-after trait of a measurement. This is by reason of that a lack of face validity can lead to researchers encountering resistance from respondents, which as a result may negatively affect the results acquired. It is important to structure an instrument in the manner that it accurately measures the elements under investigation and also appears to be an applicable measure of those elements (Delport & Roestenburg, 2011:174). The researcher attempted to ensure participants' co-operation in this study by submitting a questionnaire to the designated investment company. Furthermore, face validity was also ensured through the distribution and the completion of the questionnaires. It signifies the correlation between the researcher's capability to explain the theoretical foundation that the scale was built on and the results that were measured (Babbie. 2010:154; Quinlan *et al*., 2015:115).

4.9.2.3 Criterion validity

Criterion validity is the degree to which a measurement corresponds with an external criterion (Babbie, 2010:154; Flick, 2011:204). Criterion validity takes into account how the results of an instrument compare with the external criterion, recognised or assumed to measure the phenomena, characteristic or behaviour being investigated (Delport & Roestenburg, 2011:174).

4.9.2.4 Construct validity

According to Delport and Roestenburg (2011:174) construct validity is probably the most difficult validation method due to the fact that it determines the extent to which an instrument accurately and successfully measures the theoretical variables or concept. It does not only entail validation of the instrument, but also of the theory underlying the instrument. It is also based on a logical relationship among variables (Babbie, 2007:14).

Monette *et al*. (2002:117) advocate that the four main categories of validity entail a sequence in which each validity method builds on the prior method. Each method requires more information than the previous one, however, it also offers a more sufficient measurement of validity.

4.9.3 Descriptive statistics

Descriptive methods are employed to report the distribution of a sample or population across a broad series of variables (Fouché & Bartley, 2011:251). According to Quinlan (2011:399) descriptive statistics are used to describe the variables from the gathered data such as age, gender, income and educational level by means of frequencies, ranges, means, modes, medians and standard deviations. Descriptive statistics can be classified into three main categories, namely measures of central tendency, measures of dispersion and measures of shape. These measures are discussed in Table 4-9.

Table 4-9: Categories of descriptive statistics

Descriptive statistics		
Measures of central tendency	Mean	The sum of all values divided by the total number of values.
	Mode	The most frequently occurring value in a data set.
	Median	The middle value in a data set.
Measures of dispersion	Range	The values between the minimum and maximum values in a data set.
	Variance	The degree to which values differ from the arithmetic mean value.
	Standard deviation	Measures the spread of data around the arithmetic mean. It is used to compare data sets that consist of the same mean but a different data range. It is calculated as the square root of variance.
Measures of shape	Kurtosis	Measures the extent to which a frequency distribution is peaked or flat.
	Skewness	Measure of asymmetry in a frequency distribution.

Source: Babbie (2010:429); Quinlan *et al*. (2015:360)

4.9.4 Inferential statistics

Inferential statistics are used to gather data from a sample of a population to make conclusions about the population. As a result, it is used to infer, based on a sample study of a population, what the total population may think or do. It is used in quantitative data analysis for prediction (Quinlan, 2011:399). Inferential statistics can be classified into five main measures, namely t-tests, ANOVA, correlation, simple linear regression and multiple linear regressions. These measures are discussed in Table 4-10.

Table 4-10: Inferential statistic measures

Inferential statistics	
T-tests	T-tests are used to test if two arithmetic means are statistically different from each other.
ANOVA	ANOVA is used to test if various arithmetic means are statistically different from each other.
Correlation	Correlation is a single number used to explain the degree of relationship between two variables and the direction of the relationship. It measures the degree to which an independent variable predicts a dependent variable.
Simple linear regression	Simple linear regression is similar to correlation as it also measures the degree to which an independent variable predicts a dependent variable. However, it also displays how well the line suits the data, for example, the smaller the distance of the data from the regression line, the stronger the relationship between two variables.
Multiple linear regression	Multiple linear regression measures the degree to which multiple independent variable predict a dependent variable.
Binary logistic regression	Logistic regression is an expansion of simple linear regression. It is employed to predict the relationship between independent variables and a dependent variable that is categorical or binary.
Multinomial logistic regression	Multinomial logistic regression is an expansion of binary logistic regression where the dependent variable consists of more than two categories.

Source: Quinlan *et al*. (2015:360); Lee & Peters (2016)

4.9.5 Summary of statistical techniques employed

Table 4-11 summarises the descriptive and inferential statistics employed in this study to facilitate the achievement of the empirical objectives.

Table 4-11: Summary of descriptive and inferential statistics employed in this study

Empirical objectives	Methods
Determine the demographic factors that influence individual investors' risk tolerance when making investment decisions.	Descriptive ANOVA
Determine individual investors' level of risk tolerance.	Descriptive Cross tabulation with the chi-square test for independence
Determine individual investors' phase in the investor lifecycle.	Descriptive Cross tabulation with the chi-square test for independence Multinomial logistic regression
Determine how individual investors subjectively estimate their risk tolerance at different phases of the investor lifecycle.	Cross tabulation with the chi-square test for independence
Determine the relationship between individual investors' risk tolerance and investor lifecycle.	Correlation Multinomial logistic regression
Determine the relationship between individual investors objective (actual) risk tolerance and subjective risk tolerance and how it deviates from theory during different phases of the investor lifecycle.	Correlation Multinomial logistic regression

Source: Author compilation

4.9.5.1 Descriptive statistics

With reference to empirical objective one: *Determine the demographic factors that influence individual investors' risk tolerance when making investment decisions*. Descriptive analysis was applied with the purpose of describing the demographical information namely age, gender, ethnicity, marital status and income level of the participants in this study.

With reference to empirical objective two: *Determine individual investors' level of risk tolerance.* Individual investors' level of risk tolerance was measured in accordance with their subjective risk tolerance and objective (actual) risk tolerance and its subsections. In order to determine individual investors' level of subjective risk tolerance, perception and attitudes towards risk, descriptive statistics were employed to determine the frequencies and percentages of the SCF. In order to determine individual investors' actual level of risk tolerance, risk that an individual investor is able to take, descriptive statistics were also

applied to determine the frequencies and percentages as well as measures of central tendency, dispersion and shape of the GL-RTS.

With reference to empirical objective three: *Determine individual investors' phase in the investor lifecycle.* In order to determine individual investors' phase in the investor lifecycle, descriptive statistics were implemented to determine the frequencies and percentages of the self-report on lifecycle. Descriptive statistics were also implemented to determine the frequencies and percentages of the investment instruments and time period invested in the investment instrument categories.

4.9.5.2 Inferential statistics

With reference to empirical objective one: *Determine the demographic factors that influence individual investors' risk tolerance when making investment decisions*, ANOVA was employed. ANOVA was employed to test if arithmetic means are statistically different from each other pertaining to categories namely age, gender, ethnicity, marital status and income level.

With reference to empirical objective two: *Determine individual investors' level of risk tolerance,* cross tabulation with the chi-square test for independence was employed. Individual investors' level of subjective and actual risk tolerance was determined according to two main factors, namely age and income. Cross tabulation was used to determine the frequencies and percentages of individual investors' level of subjective and actual risk tolerance according to age and annual income, respectively. The chi-square test for independence was used to determine the statistical significant differences between individual investors' level of subjective and actual risk tolerance and the two main factors, namely age and annual income, respectively.

With reference to empirical objective three: *Determine individual investors' phase in the investor lifecycle,* cross tabulation with the chi-square test for independence and regression analysis was employed. Cross tabulation was used to determine the frequencies and percentages of individual investors' phase in the investor lifecycle according to age and the category and time period invested in investment instruments, respectively. The chi-square test for independence was used to determine the statistical significant differences between individual investors' phase in the investor lifecycle according to age as well as individual investors' phase in the investor lifecycle according to the category and time period invested

in investment instruments, respectively. Regression analysis was used to measure the degree to which age predicts individual investors' phase in the investor lifecycle.

With reference to empirical objective four: *Determine how individual investors subjectively estimate their risk tolerance at different phases of the investor lifecycle,* cross tabulation with the chi-square test for independence was employed. Cross tabulation was used to determine the frequencies and percentages of individual investors' willingness to tolerate risks at the different phases of the investor lifecycle. The chi-square test for independence was used to determine the statistical significant differences between the SCF, which reports on individual investors' perceptions and attitudes towards financial risk tolerance and the phase in the investor lifecycle.

With reference to empirical objective five: *Determine the relationship between individual investors' risk tolerance and investor lifecycle,* correlation and regression analysis was employed. Correlation analysis by means of the Pearson correlation coefficient, was used to determine the relationship and test the direction and strength of the relationship between individual investors' subjective risk tolerance (SCF), actual risk tolerance (GL-RTS) and the investor lifecycle (self-report on lifecycle), respectively. Regression analysis was used to measure the relationships between individual investors subjective risk tolerance, actual risk tolerance and phase in the investor lifecycle as well as the degree to which individual investors' subjective and actual risk tolerance predicts their phase in the investor lifecycle.

With reference to empirical objective six: *Determine the relationship between individual investors' actual risk tolerance and subjective risk tolerance and how it deviates from theory during different phases of the investor lifecycle,* correlation and regression analysis was employed. Correlation analysis, by means of the Pearson correlation coefficient, was used to determine the relationship and test the direction and strength of the relationship between individual investors' subjective risk tolerance (SCF) and actual risk tolerance (GL-RTS). Regression analysis was used to measure the relationships between individual investors' subjective risk tolerance, actual risk tolerance and phase in the investor lifecycle and also to determine individual investors' actual risk tolerance and subjective risk tolerance at different phases of the investor lifecycle and how it deviates from theory.

With reference to the third, fifth and sixth empirical objective, multinomial logistic regression was employed. A multinomial regression is employed for the reason that the investor lifecycle, the dependent variable, consists of three categories, namely the accumulation phase, consolidation phase as well as spending and gifting phase. A binary logistic

regression analysis would have been suitable if two dependent categories were used. However, as the dependent variable consists of more than two categories, multinomial logistic regression was employed. The following equation represents the estimated multinomial logistic regression equation:

$Pij\ \frac{\exp(\beta jXi)}{1+\sum_{j=1}^{3}\exp\beta}$ For j = 1, 2, 3, (1)

Where Xi is a vector of the independent variables, namely age, subjective risk tolerance (SCF) and actual risk tolerance (GL-RTS) of the i[th] individual investor, βj is a vector of regression parameter estimates associated with alternative j and 1-3 is the phases in the investor lifecycle. On the omitted or base category the coefficients of explanatory are assumed to be zero. The probability that a base category was chosen is calculated as:

$$Pi\ =\ 1|Xi\ =\ \frac{1}{1+\sum_{j=1}^{3}\exp(\beta jXi)} \quad (2)$$

The probabilities of the individual investors being in the other two categories (j = 2 or 3) can be estimated as:

$$Pi\ =\ (j\ =\ m|xi)\ =\ \frac{\exp(\beta jXi)}{1+\sum_{j=1}^{3}\exp(\beta jXi)} \text{ where } m > 1 \quad (3)$$

Ultimately, the multinomial regression model to estimate the phase in the investor lifecycle in the three categories according to age, subjective and actual risk tolerance is specified as follows:

$$Pij = (Pj/Pi) = \beta_0 + \beta_1 X_{1i} + \beta_2 X_{2i} + \beta_3 X_{3i} \ldots\ldots\ldots \beta_n X_{ni} + \varepsilon_i \quad (4)$$

Where the parameter estimated Pij is the probability of individual investors falling into any of the three phases in the investor lifecycle, namely accumulation phase, consolidation phase and spending and gifting phase.

4.10 SYNOPSIS

This chapter highlighted and explained the research design and methodology employed for the empirical portion of the study. The research design and methodology were constructed in accordance with the research objectives as stipulated in Chapter 1. This chapter primarily focused on explaining the research design, research approach, sampling procedure, measuring instrument and data collection method, data analysis as well as statistical analysis. This study comprises a descriptive quantitative research approach whereby a positivist research paradigm was applied. Furthermore, a convenience sampling frame, which is regarded as a non-probability sampling method, was applied to this study with the intention of reaching the required sample. The primary quantitative data were collected by means of a self-administered electronic questionnaire and validated scales. With regard to

the data analysis, a range of statistical measures such as reliability, validity, descriptive analysis as well as significance tests were discussed and used to analyse the quantitative data. This chapter is the foundation from which Chapter 5 originates and assisted with the analysis and interpretation of the data.

CHAPTER 5: ANALYSIS AND INTERPRETATION OF EMPIRICAL FINDINGS

"If you cannot measure it, you cannot improve it."

– William Thomson –

5.1 INTRODUCTION

This chapter provides an analysis and interpretation of the empirical findings of this study. A significant evaluation of this study is provided pertaining to analyse risk tolerance during the investor lifecycle. The theoretical, as well as conclusions drawn from the theoretical research in the previous chapters, was utilised to assist with the achievement of the empirical portion of the research study.

This chapter commences with a summary of the data gathering process in accordance with the sampling plan formulated in Chapter 4. This is followed by the coding of scales, with reference to the codes and constructs that were measured and the values assigned to each question in the questionnaire, and the demographical information of individual investors. Subsequently, the following sections of this chapter reported on the various descriptive and inferential statistics applied in this study in accordance with the empirical objectives as stipulated in Chapter 1.

Descriptive and inferential statistics were employed to facilitate the achievement of the following empirical objectives:

- Empirical objective one: Determine the demographical factors that influence individual investors' risk tolerance when making investment decisions.
- Empirical objective two: Determine individual investors' level of risk tolerance.
- Empirical objective three: Determine individual investors' phase in the investor lifecycle.
- Empirical objective four: Determine how individual investors subjectively estimate their risk tolerance at different phases of the investor lifecycle.
- Empirical objective five: Determine the relationship between individual investors' risk tolerance and investor lifecycle.
- Empirical objective six: Determine the relationship between individual investors' actual risk tolerance and subjective risk tolerance and how it deviates from theory during different phases of the investor lifecycle.

For the purpose of this study, the data were analysed by means of the statistical package, SPSS, version 25 for Microsoft Windows. The following section provides a summary of the data gathering process.

5.2 DATA GATHERING PROCESS

The data for this study were collected from the client base of a South African investment company consisting of individual investors. In relation to the sampling plan set out in Chapter 4, with reference to Section 4.5, once permission was obtained from the designated South African investment company to distribute the questionnaire to the participants, 800 self-administered questionnaires were distributed by the investment company to their client base. This was executed by distributing the questionnaires electronically to the participants to complete in an online format. All the participants received the same questionnaire consisting of the same format and number of questions. Participants were informed that participation is strictly voluntary and no participant is obligated to participate in this research study. Of the 800 self-administered questionnaires, 683 completed questionnaires were delivered given response rates and time constraints, which is equal to an 85 percent response rate.

In the following section the coding of scales is discussed.

5.3 CODING

Coding refers to the assignment of a code to every potential response to each question (Malhotra, 2010:454). Quinlan (2011:361) stated that researchers always allocate the codes by means of a simple logic. In coding every response as a number, the researcher allocates a numeric label, known as a value label, to every value. According to Zikmund and Babin (2013:363) coding converts the responses on the questionnaire into numbers with the intention of simplifying the process into a readily computable format. Furthermore, Wiid and Diggines (2013:222) highlighted that coding is employed to translate raw data by allocating numbers to each response or item. This is pursued by entering the functional data into a computer and tabulating the results. The questionnaire employed in this study consists of four sections namely Section A, Section B, Section C and Section D. Section A comprises eight questions relating to the demographical information of the participants. Section B consists of two questions aimed at acquiring information regarding the participants' investment instruments. Section C consists of two questions that entail two subjective measures of risk tolerance in order to determine how individual investors subjectively estimate and perceive their risk tolerance as well as phase in the investor lifecycle. Section D consists of four items and fourteen questions with the purpose of determining the

participants' level of risk tolerance by means of the GL-RTS. The variable codes and assigned values employed in the various sections of the questionnaire are presented in Table 5-1.

Table 5-1: Coding information

Section A: Demographic information			
Question	**Code**	**Construct measured**	**Value assigned to response**
Question 1	A1	Age	16-24 (1); 25-34 (2); 35-49 (3); 50+ (4)
Question 2	A2	Gender	Male (1); Female (2)
Question 3	A3	Ethnicity	African (1); White (2); Coloured (3); Asian (4); Other (5)
Question 4	A4	Marital status	Never married (1); Married (2); Divorced (3); Other (4)
Question 5	A5	Nationality	South African (1); Other (2)
Question 6	A6	Province of origin	Gauteng (1); Kwazulu-Natal (2); Western Cape (3); Northern Cape (4); Eastern Cape (5); Free State (6); Mpumalanga (7); Limpopo (8); North- West (9); I live outside South Africa (10)
Question 7	A7	Home language	English (1); Afrikaans (2); IsiXhosa (3); IsiZulu (4); Xitsonga (5); SiSwati (6); Sepedi (7); Sesotho (8); IsiNdebele (9); Setswana (10); Tshivenda (11); Other (12)
Question 8	A8	Annual income	Below R100 000 (1); R100 001-R200 000 (2); R200 001-R300 000 (3); R300 001-R 400 000 (4); R400 001-R500 000 (5); R550 001-R600 000 (6); R600 001-R700 000 (7); R700 001- R800 000 (8); R800 001-R900 000 (9); R900 001-R1 000 000 (10); R1 000 000 and above (11)
Section B: Investment instruments			
Question	**Code**	**Construct measured**	**Value assigned to response**
Question 1	B1	Investment instrument	Banked cash savings (1); Burial scheme (2); Education policies (3); Endowments (4); Funeral policies (5); Government bonds (6); Guaranteed annuities (7); Living annuities (8); Money market (9); Offshore investments (10); Pension or provident fund (11); Property (12); Retirement annuities (13); Saving money in your home loan (14); Shares (15); Stokvels (16); Unit trusts (17); Other (18)
Question 2	B2	How long have you had each of these investments/portfolio?	Less than 6 months (1); 6-12 months (2); 1-3 years (3); 4-6 years (4); 7-9 years (5); 10 or more years (6)

Section C: Subjective measures of risk tolerance			
Question	**Code**	**Construct measured**	**Value assigned to response**
Question 1	C1	Self-report on lifecycle	Accumulation phase(1); Consolidation phase (2); Spending phase (3); Gifting phase (4)
Question 2	C2	SCF	Take substantial financial risks expecting to earn substantial returns (1); Take above-average financial risks expecting to earn above-average returns (2); Take average financial risks expecting to earn average returns (3); Not willing to take any financial risks (4)
Section D: Grable and Lytton risk tolerance scale (GL-RTS)			
Item	**Code**	**Construct measured**	**Value assigned to response**
Item 1 Item 2 Item 3 Item 4	D1 D2 D3 D4	GL-RTS scale	Strongly disagree (1), Disagree (2), Agree (3), Strongly agree (4)
Question	**Code**	**Construct measured**	**Value assigned to response**
Question 1	D5	Financial risk	Loss (1); Uncertainty (2); Opportunity (3); Adventure (4)
Question 2	D6		Willing to take as much risk as possible (1); Willing to take calculated risks (2); Cautious (3); Avoid loss as much as possible (4)
Question 3	D7		Personal preferences/comfort/pleasure (1); Financial return/profit associated with the decision (2); Financial risk (loss) associated with the decision (3); Both risk and return (4)
Question 4	D8		You win R5 000 in a competition (1); You inherit R5 000 from a rich relative (2); You earn R5 000 by risking R1 000 in an investment (3)
Question 5	D9		Save money and buy an affordable pre-owned car for cash –second-hand car (1); Borrow money from a friend or relative to buy a good new affordable car – negotiable repayment terms (2); Ask for a loan from a bank or financial institution and pay monthly instalments as long as you buy the car of your dreams – repayment terms set by bank (3)

Question	Code	Construct measured	Value assigned to response
Question 6	D10	Speculative risk	R300 000 cash (1); A house worth R300 000 (2); Shares to the value of R300 000 at a company that is very close to your heart (3)
Question 7	D11		A once-off bonus of R300 000 (1); A 3-year employment contract earning R10 000 a month – i.e. it will be R360 000 in 3 years (2); Shares in the company to the value of R300 000 with the hope of selling them later at a larger profit (3)
Question 8	D12		R1 000 in cash (1); A 50% chance to win R5 000 (2); A 25% chance to win R10 000 (3); A 5% chance to win R100 000 (4)
Question 9	D13		Take your R3 000 and lose R0 (1); Possibility of gaining R5 000 or losing R1 000 (2); Possibility of gaining R8 000 or losing R2 000 (3); Possibility of gaining R12 000 or losing all your R3 000 (4)
Question 10	D14	Investment risk	Manage them yourself (1); Hire a manager (2); Ask a friend (3)
Question 11	D15		Nothing – 0% (1); Less than 10% (2); 10%-20% (3); 25%-35% (4); More than 40% (5)
Question 12	D16		60% in low risk with low return, 30% in medium risk with medium return, 10% in high risk with high return (1); 30% in low risk with low return, 40% in medium risk with medium return, 30% in high risk with high return (2); 10% in low risk with low return, 40% in medium risk with medium return, 50% in high risk with high return (3)
Question 13	D17		Deposit it into a bank account (1); Invest in fixed income investments where you will get low constant returns with minimal risk of loss (2); Invest in shares where it will be exposed to high-risk of loss but with high return possibilities (3)
Question 14	D18		Nothing - 0% (1); Less than 5% (2); 5%-15% (3); 15%-25% (4); 25%-40% (5); More than 40% (6)

Source: Author compilation

5.4 DEMOGRAPHIC INFORMATION

With reference to Annexure C, Section A of the final measuring instrument is designed to obtain demographical information from the participants. The sample comprised 683 individual investors from a designated South African investment company. The demographical information for this study entails the following frequencies and percentages on age; gender; ethnicity; marital status; nationality; home province; home language and annual income. Frequency tables, bar graphs and pie charts were employed to present this information during this section.

Table 5-2: Age

Age category	Frequency (*f*)	Percentage (%)
16–24	22	3.2
25–34	149	21.8
35–49	243	35.6
50+	269	39.4

Table 5-2 presents the age categories of the participants for this study. Age was divided into four main categories ranging from age 16–24; 25–34; 35–49 and 50 years and older. The first age category, 16–24 years only represented 3.2 percent of the sample, whereby only 22 out of the 683 participants were classified into this age category. The second age category, 25–34 years represented 21.8 percent of the sample whereby 149 out of the 683 participants were classified into this age category. The third age category, 35–49 years represented 35.6 percent of the sample with a total of 243 participants. The last age category (50 years and older) represented 39.4 percent of the sample whereby 269 out of 683 participants were classified into this age category.

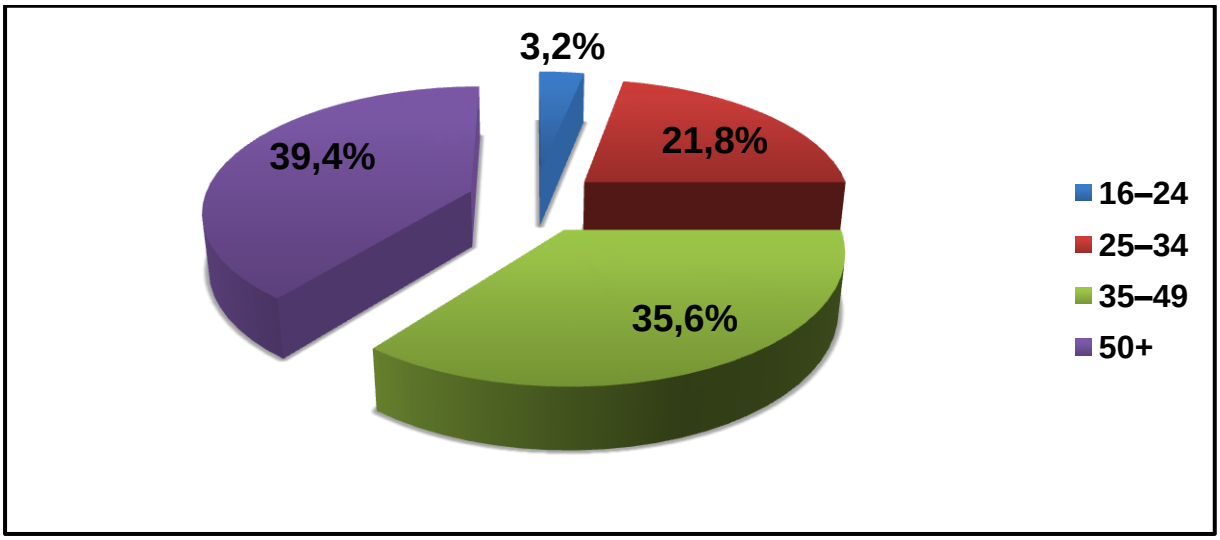


Figure 5-1: Age distribution

Figure 5-1 indicates that the majority of the sample was classified into the age category of 50 years and older representing 39.4 percent of the sample. Thereafter, 35.6 percent of the sample was classified under the age category 35–49 years. The age categories 16–24 years and 25–34 years represented a small part of the sample, 3.2 percent and 21.8 percent, respectively. The age categories 16–24 years and 25–34 years were combined into one category due to the small sample of these age categories. The adjusted age categories are illustrated in Table 5-3 and Figure 5-2.

Table 5-3: Adjusted age categories

Age category	Frequency (*f*)	Percentage (%)
16–34	171	25.0
35–49	243	35.6
50+	269	39.4

As indicated in Table 5-3 and Figure 5-2, the age category 50 years and older represented 39.4 percent of the sample. Subsequently, the age category 34–49 years represented 35.6 percent of the sample. Lastly, the adjusted age category 16–34 years represented 25.0 percent of the sample whereby 171 participants out of the 683 participants were classified into this age category.

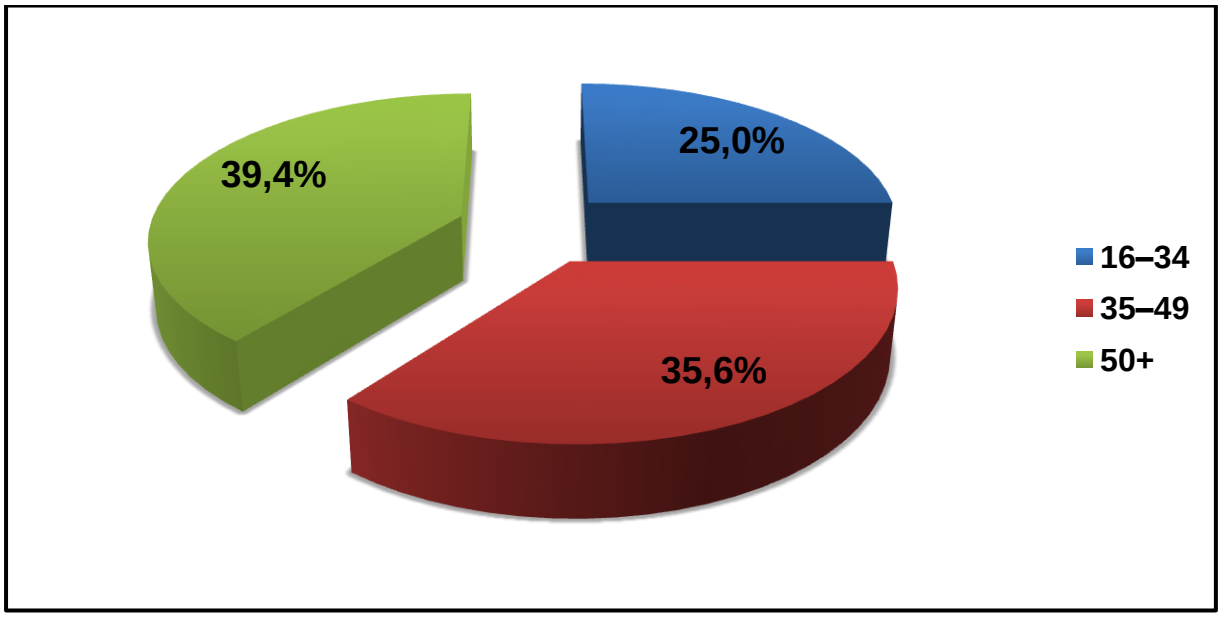


Figure 5-2: Adjusted age distribution

The following table, Table 5-4 indicates the demographical information in relation to the gender of participants. The gender differences of the sample suggest that there are more female (56.4%) than male (43.6%) participants in the sample. Females represented 385 out of the 683 participants, whereby males represented 298 out of the 683 participants. Thus, the majority of the sample was classified as females.

Table 5-4: Gender

Gender	Frequency (*f*)	Percentage (%)
Male	298	43.6
Female	385	56.4

Figure 5-3 demonstrates the gender distribution between males and females indicating the majority of participants being females (56.4%) towards 43.6 percent of male participants.

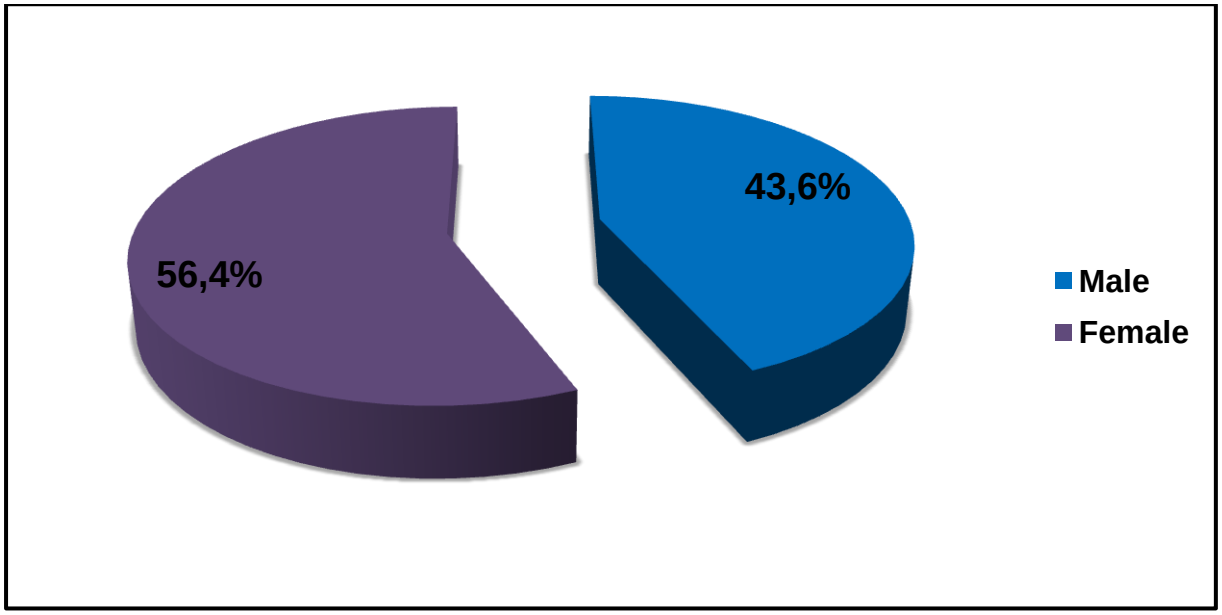


Figure 5-3: Gender distribution

The succeeding table, Table 5-5 indicates the demographical information pertaining to the ethnicity of the participants in this study. As indicated in Table 5-5, the majority of the sample was classified as White participants (66.6%) followed by African (17.6%), Asian (8.5%) and Coloured (7.3%) participants. Out of the 683 participants, 455 were White participants, 120 were African participants, 58 were Asian participants and 50 were Coloured participants.

Table 5-5: Ethnicity

Ethnicity	Frequency (*f*)	Percentage (%)
African	120	17.6
White	455	66.6
Coloured	50	7.3
Asian	58	8.5

Figure 5-4 demonstrates the ethnicity distribution between African, White, Coloured and Asian participants. Figure 5-4 indicates that the majority of the sample consists of White participants (66.6%) followed by African participants (17.6%). Asian (8.5%) and Coloured (7.3%) participants represented a minor segment of the sample.

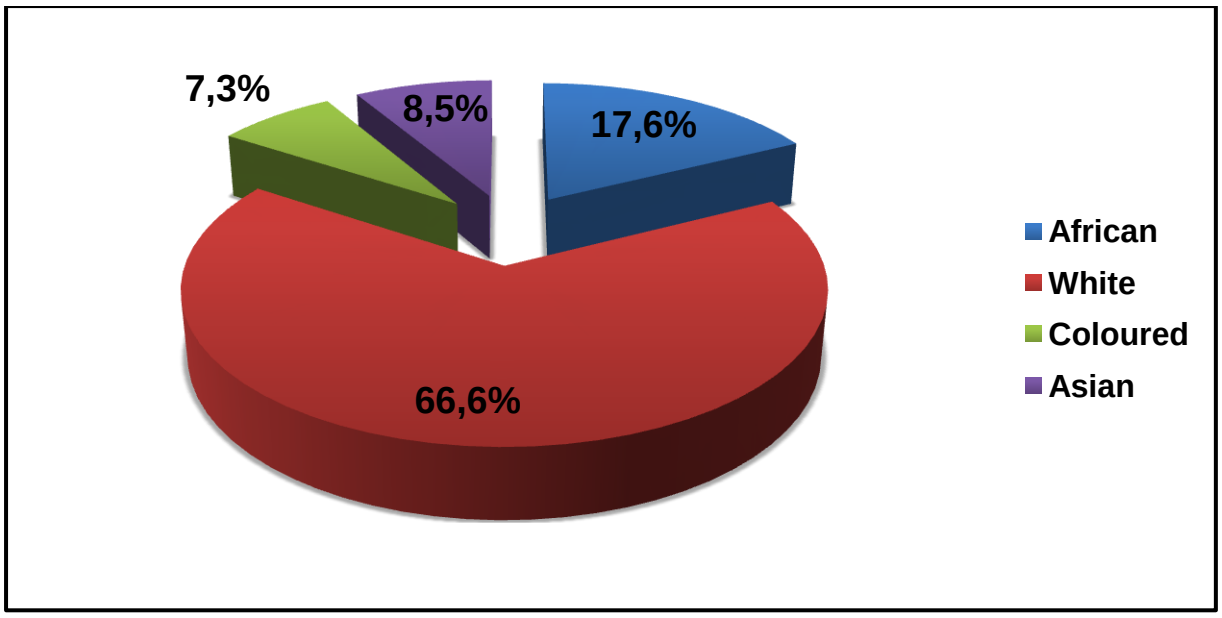


Figure 5-4: Ethnicity distribution

Table 5-6 indicates the different marital status categories. Marital status was divided into four main categories, namely never married, married, divorced and widowed.

Table 5-6: Marital status

Marital status	Frequency (*f*)	Percentage (%)
Never married	175	25.6
Married	394	57.7
Divorced	94	13.8
Widowed	20	2.9

The first category, never married, represented 25.6 percent of the sample with a total of 175 participants out of the 683 participants. The second category indicates that the majority of the sample is married (57.7%) consisting of a total of 394 participants. The third category represented a smaller portion of the sample indicating that 13.8 percent of the sample is divorced consisting of a total of 94 participants. While 2.9 percent of the sample are widowed consisting of a total of 20 participants out of the 683 participants.

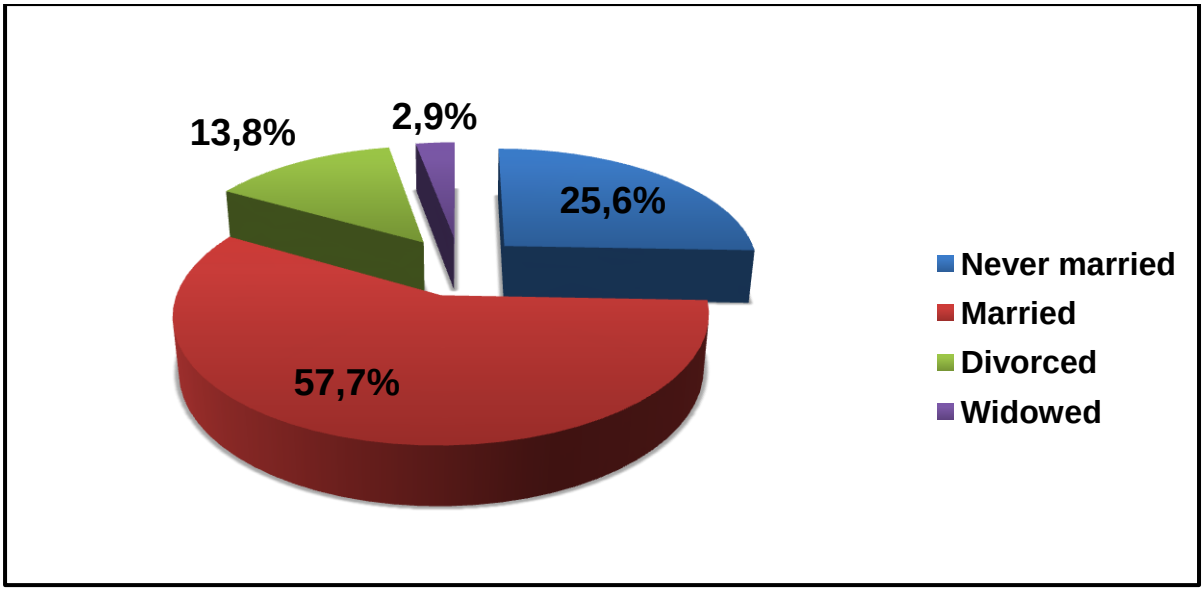


Figure 5-5: Marital status distribution

Figure 5-5 indicated the marital status distribution. As seen in Figure 5-5, the majority of the sample is married (57.7%) followed by never married (25.6%). Figure 5-5 also indicates that the divorced and widowed category represented a small portion of the sample. For that reason, it was combined into one category and renamed as previously married. The adjusted marital status categories are illustrated in Table 5-7 and Figure 5-6.

Table 5-7: Adjusted marital status

Marital status	Frequency (f)	Percentage (%)
Never married	175	25.6
Married	394	57.7
Previously married	114	16.7

As indicated in Table 5-7 and Figure 5-6 the majority of the sample is married (57.7%) participants followed by participants that were never married (25.6%). The new adjusted marital status category, previously married, represented 16.7 percent of the sample consisting of 114 out of 683 participants.

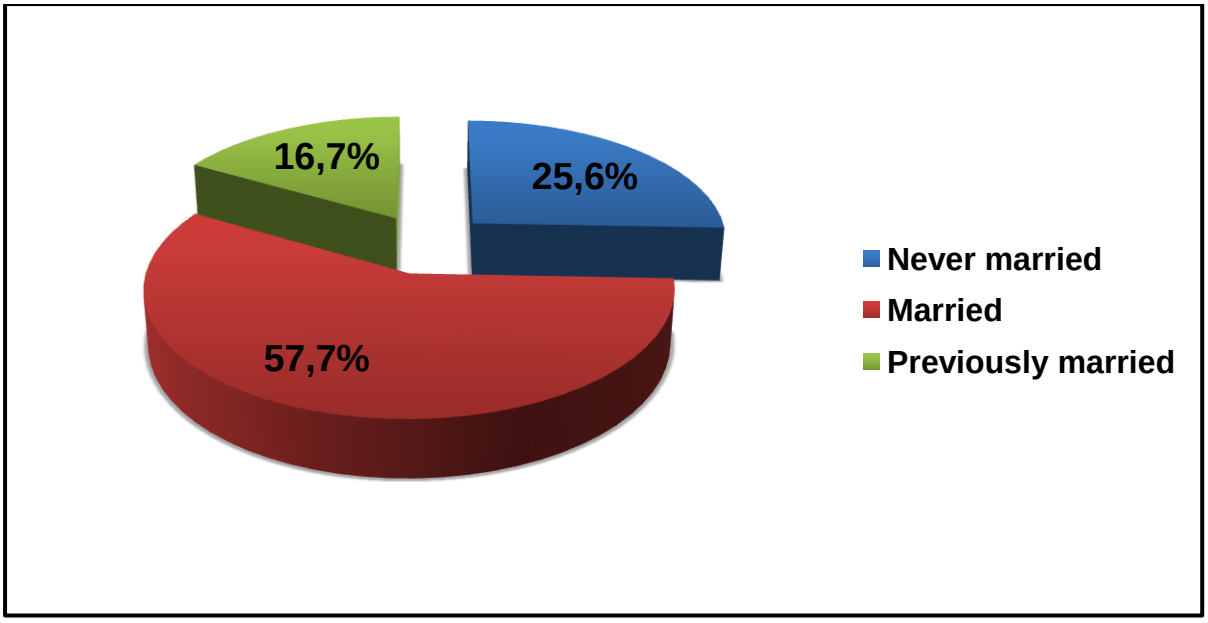


Figure 5-6: Adjusted marital status distribution

Table 5-8 and Figure 5-7 illustrate the various nationalities of the participants.

Table 5-8: Nationality

Nationality	Frequency (*f*)	Percentage (%)
South African	650	95.2
Belgian	1	0.1
British	13	1.9
French	1	0.1
German	2	0.3
Mexican	1	0.1
Namibian	5	0.7
Motswana	1	0.1
Swati	3	0.4
Zambian	1	0.1
Zimbabwean	5	0.7

As shown in Table 5-8, it is evident that the majority of the participants' nationality is South African, which represents 95.2 percent of the sample. Out of the 683 participants, 650 are participants with a South African nationality. This was followed by Britain which represented 1.9 percent of the sample with a total of 13 participants. The sample also consisted of other nationalities, namely Namibian and Zimbabwean which each represented 0.7 percent of the sample, Swati which represented 0.4 percent of the sample and German which represented 0.3 percent of the sample. Nationality categories that each represented 0.1 percent of the sample are Belgian, French, Mexican, Motswana and Zambian.

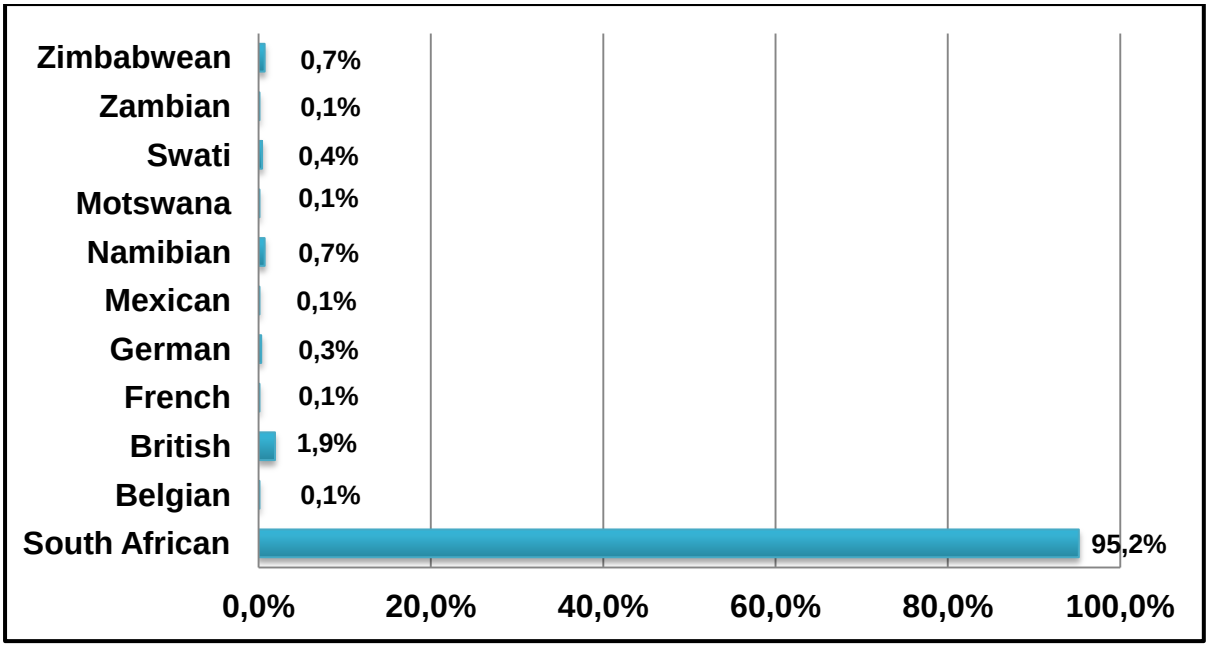


Figure 5-7: Nationality distribution

Figure 5-7 represents the nationality distribution of participants. As seen in Figure 5-7, the majority of the sample (95.2%) is participants with a South African nationality. Thereafter, 1.9 percent of the participants are of a Britain nationality. The other nationalities represented a smaller portion of the sample.

Table 5-9 and Figure 5-8 represent the participants' province of origin.

Table 5-9: Province

Province	Frequency (*f*)	Percentage (%)
Gauteng	267	39.1
Kwazulu-Natal	113	16.5
Western Cape	159	23.3
Northern Cape	7	1.0
Eastern Cape	36	5.3
Free State	18	2.6
Mpumalanga	24	3.5
Limpopo	14	2.0
North West	12	1.8

As shown in Table 5-9 the participants originated from different provinces in South Africa. It is evident from Table 5-9 that the majority of participants originate from the Gauteng province representing 39.1 percent of the sample. As a result, 267 out of the 683 participants originate from Gauteng. This was followed by the Western Cape representing 23.3 percent of the sample and Kwazulu-Natal representing 16.5 percent of the sample. The Eastern Cape represented 5.3 percent, Mpumalanga represented 3.5 percent, the Free State

represented 2.6 percent, Limpopo represented 2.0 percent, North West represented 1.8 percent and the Northern Cape represented 1.0 percent.

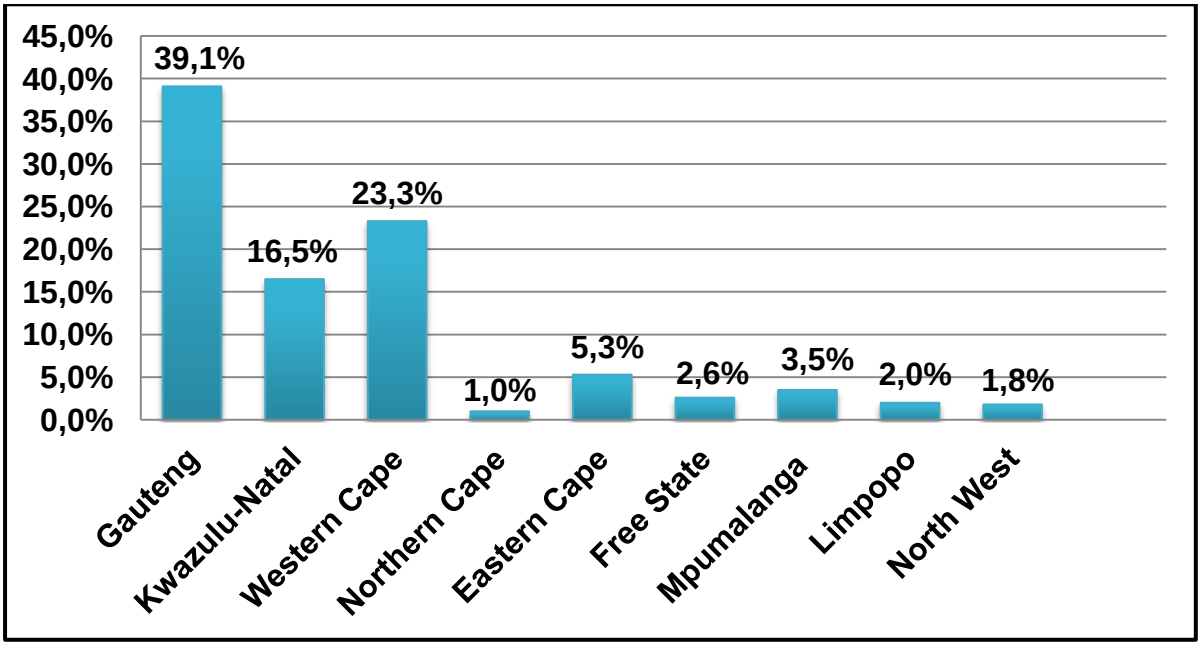


Figure 5-8: Province distribution

Figure 5-8 represents the province distribution of the participants. From this figure it is clear that the majority of the sample originates from Gauteng (39.1%), followed by the Western Cape (23.3%) and subsequently, Kwazulu-Natal (16.5%). The other provinces represent a small fraction of the sample. Table 5-10 and Figure 5-9 indicate the home languages of the participants.

Table 5-10: Home language

Home language	Frequency (*f*)	Percentage (%)
English	366	53.6
Afrikaans	228	33.4
IsiXhosa	14	2.0
IsiZulu	20	2.9
Xitsonga	2	0.3
SiSwati	3	0.4
Sepedi	10	1.5
Sesotho	9	1.3
IsiNdebele	3	0.4
Setswana	15	2.2
Tshivenda	6	0.9
Other	7	1.0

Table 5-10 provides a summary of the responses obtained relating to the home languages of the participants. As illustrated in Table 5-10 the main home language for this sample is

English (53.6%). Out of 683 participants, 366 participants' home language is English. This was followed by the Afrikaans home language representing 33.4 percent of the sample whereby 228 out of the 683 participants' home language is Afrikaans. Of the remaining participants, 2.9 percent were IsiZulu speaking, 2.2 percent Setswana speaking, 2.0 percent IsiXhosa speaking, 1.5 percent Sepedi speaking, 1.3 percent Sesotho speaking, 0.9 percent Tshivenda speaking, 0.4 percent IsiNdebele speaking, 0.4 percent SiSwati speaking and 0.3 percent Xitsonga speaking. Seven participants indicated that they speak other languages and represented 1.0 percent of the sample.

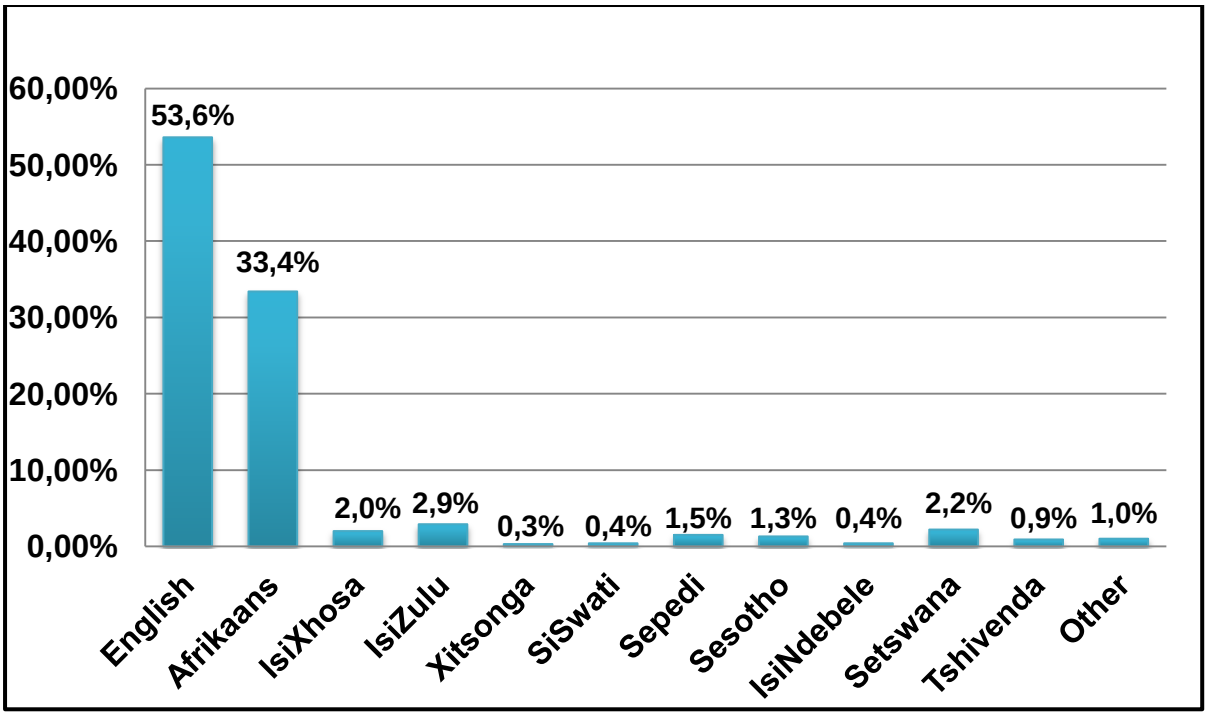


Figure 5-9: Home language distribution

Figure 5-9 signifies that the home language distribution of English is the highest (53.6%) followed by Afrikaans (33.40%). The other home languages represented a small portion of the sample. For that reason, it was combined into one category and renamed as African. The adjusted home language categories are illustrated in Table 5-11 and Figure 5-10.

Table 5-11: Adjusted home language

Home language	Frequency (*f*)	Percentage (%)
English	366	53.6
Afrikaans	228	33.4
African	89	13.0

As indicated in Table 5-11 and Figure 5-10 the majority of the sample's home language is English (53.6%) followed by Afrikaans (33.4%). The new adjusted home language category,

African speaking, represented 13.0 percent of the sample consisting of a total of 89 out of 683 participants.

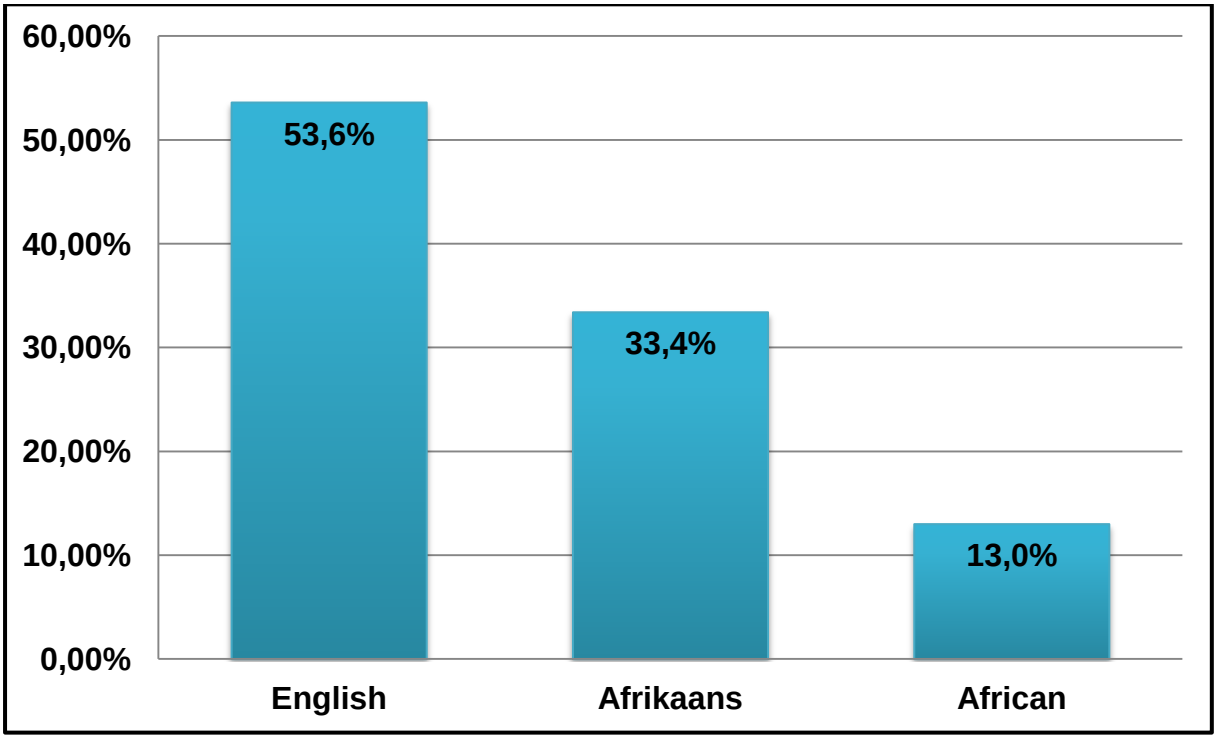


Figure 5-10: Adjusted home language distribution

Table 5-12 and Figure 5-11 illustrate the responses pertaining to the annual income of the participants.

Table 5-12: Annual income

Annual income	Frequency (*f*)	Percentage (%)
R100 000 or less	107	15.7
R100 001–R200 000	134	19.6
R200 001–R300 000	115	16.8
R300 001–R400 000	100	14.6
R400 001–R500 000	50	7.3
R500 001–R600 000	57	8.3
R600 001–R700 000	33	4.8
R700 001–R800 000	27	4.0
R800 001–R900 000	14	2.0
R900 001–R1 000 000	13	1.9
More than R1 000 000	33	4.8

As seen in Table 5-12, it is apparent that the majority of the sample receives an annual income of between R100 001 and R200 000 on an annual basis. Out of the 683 participants, 134 participants were classified into this annual income bracket. The second highest annual income bracket was R200 001–R300 000 representing 16.8 percent of the sample.

Thereafter, 15.7 percent of the sample earned R100 000 or less per annum and 14.6 percent of the sample earned between R300 001 and R400 000 per annum. The higher annual income brackets represented smaller portions of this sample, with only 4.8 percent of the sample earning more than R1 million per annum. Therefore, 33 out of the 683 participants earn more than R1 million on an annual basis.

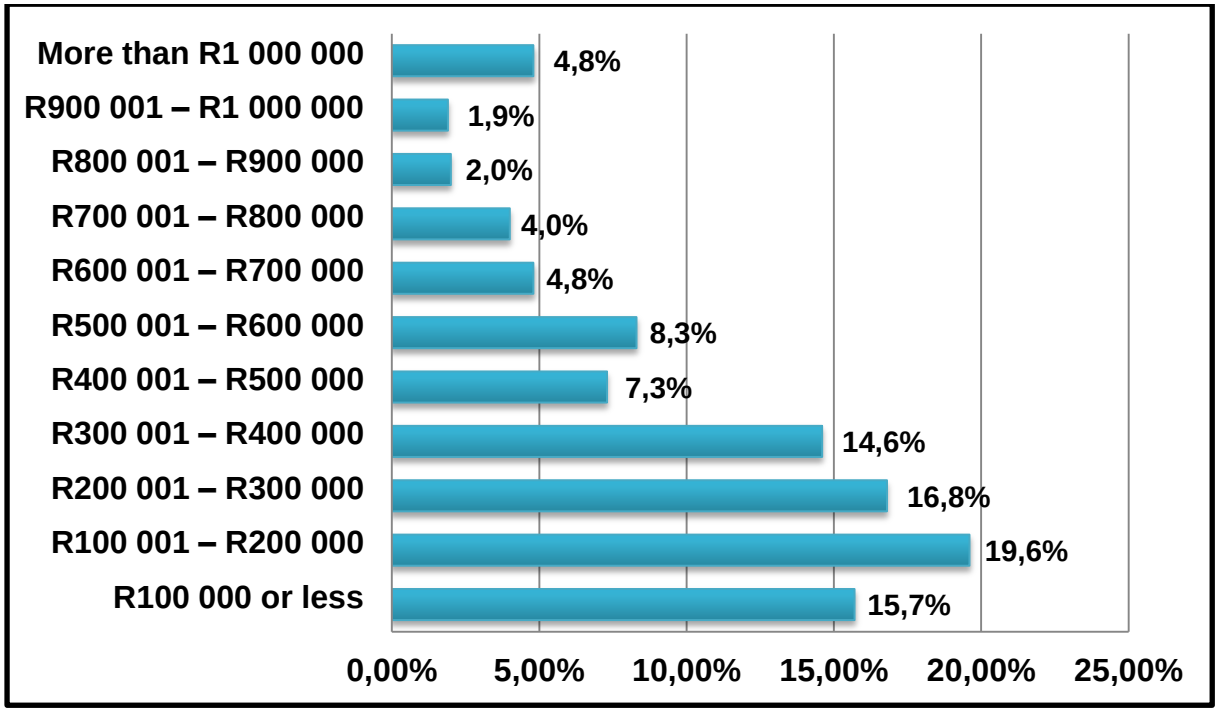


Figure 5-11: Annual income distribution

As indicated in Table 5-12 and illustrated in Figure 5-11, the majority of the sample earns less than R400 000 on an annual basis. The majority of the sample earns an annual income between R100 001 and R200 000 representing 19.6 percent of the sample. The minority of the sample earns an annual income between R900 000 and R1 million representing 1.9 percent of the sample. Due to some of the annual income categories representing a small portion of the sample it was combined into new annual income categories. The adjusted annual income is illustrated in Table 5-13 and Figure 5-12.

Table 5-13: Adjusted annual income

Annual income	Frequency (*f*)	Percentage (%)
R0–R200 000	241	35.3
R200 001–R300 000	115	16.8
R300 001–R400 000	100	14.6
R400 001–R500 000	50	7.3
R500 001–R800 000	117	17.1
More than R800 000	60	8.8

The annual income brackets R100 000 or less and R100 001–R200 000 were combined into a new adjusted annual income bracket, R0–R200 000, due to the small number of participants earning between these income brackets. In addition, because of the small number of the sample that receives an annual income between R500 001–R600 000, R600 001–R700 000 and R700 001–R800 000 it was decided to group these income brackets into one new category, namely R500 001–R800 000. This was also done by creating a new income category, more than R800 000, for the annual income brackets of R800 001–R900 000, R900 001–R1 000 000 and more than R1 000 000.

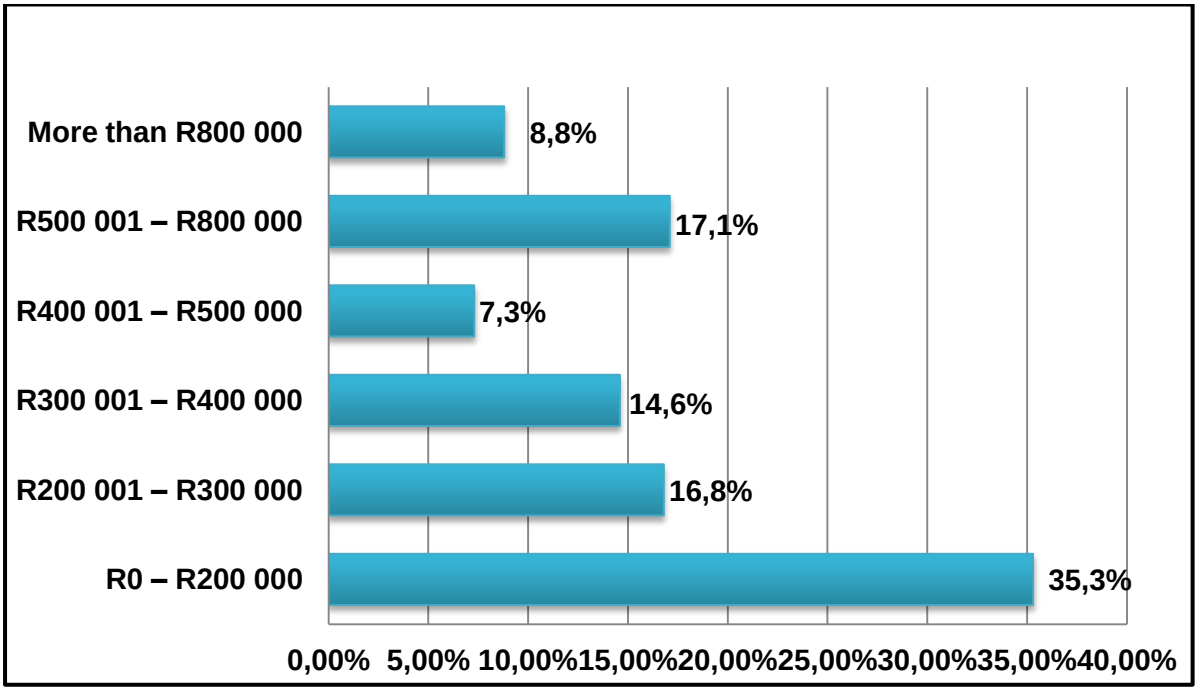


Figure 5-12: Adjusted annual income distribution

As seen in Table 5-13 and Figure 5-12, the majority of the sample earned between R0 and R200 000 on an annual basis representing 35.3 percent of the sample. With the adjusted annual income categories, 17.1 percent of the sample earned between R500 001 and R800 000 on an annual basis. This was followed by 16.8 percent of the sample earning between R200 001 and R300 000 and subsequently, 14.6 percent of the sample earning

between R300 001 and R400 000 on an annual basis. The income bracket R400 001–R500 000 only represented 7.3 percent of the sample. The highest income category earning R800 000 or more only represented 8.8 percent of the sample.

5.5 DESCRIPTIVE STATISTICS

Descriptive statistics are methods employed to summarise, organise and present the data in a systematic, convenient and informative manner (Privitera, 2012:2; Keller, 2014:2). Creswell and Plano-Clark (2011:31) stated that descriptive statistics serve the purpose of presenting the data gathered from the representative sample from the questionnaire applied in a systematic and objective manner.

Table 5-14 to Table 5-19 present the descriptive statistics relating to the total sample measured in the investment instrument section (Section B), the subjective measures of risk tolerance (Section C) and the GL-RTS (Section D) of the final questionnaire, respectively.

Table 5-14 reports on the descriptive statistics relating to the different frequencies and percentages of the investment instruments.

Table 5-14: Frequencies and percentages of the investment instruments

Investment instruments	Frequency (*f*)	Percentage (%)
Low-risk investment instruments	353	51.7
Low- to medium risk investment instruments	133	19.5
Medium- to high-risk investment instruments	91	13.3

Table 5-14 indicates the different investment instruments categorised as low-risk, low- to medium risk and medium- to high-risk investment instruments. Table 5-14 indicated that 51.7 percent of the participants which represented 353 of the 683 participants invested in low-risk investment instruments. Participants that invested in low- to medium risk investment instruments represented 19.5 percent of the sample which is 133 out of the 683 participants. Out of the 683 participants, only 91 participants invested in medium- to high-risk investment instruments representing 13.3 percent of the sample.

Table 5-15 indicates the descriptive statistics relating to the different frequencies and percentages of the term invested in the investment instruments.

Table 5-15: Frequencies and percentages of the time periods invested in investment instruments

Time period	Frequency (*f*)	Percentage (%)
Short-term	141	20.6
Medium-term	76	11.1
Long-term	179	26.6

Table 5-15 indicates the various time periods categorised as short-, medium- and long-term invested in the investment instruments.

The time period categories represent the following time periods:

- Short-term: Less than 6 months; 6–12 months; or 1–3 years;
- Medium-term: 4–6 years; and
- Long-term: 7–9 years; 10 years or more.

Table 5-15 indicated that 20.6 percent of the sample which represented 141 of the 683 participants has only invested for a short time period less than 3 years in the investment instruments. Participants that have invested in investment instruments for a medium time period of 4–6 years represented 11.1 percent of the sample which is 76 of the 683 participants. Out of the 683 participants, 179 participants representing 26.6 percent of the sample have invested for a long time period of 7 years or more.

Table 5-16 reports on the descriptive statistics relating to the different frequencies and percentages of the self-report on lifecycle.

Table 5-16: Frequencies and percentages of the self-report on lifecycle

Phase in the investor lifecycle	Frequency (*f*)	Percentage (%)
Accumulation phase	322	47.1
Consolidation phase	291	42.6
Spending and gifting phase	70	10.2

With reference to the first section of Category C of the questionnaire, which is the self-report on lifecycle, one of the empirical objectives to be achieved is to determine individual investors' phase in the investor lifecycle. Participants were asked to indicate based on a set of statements where they would describe themselves to be in the investor lifecycle. The investor lifecycle is categorised into three phases, namely accumulation phase, consolidation phase and spending and gifting phase. Table 5-16 indicates the frequencies and percentages of how participants reported on this question. Table 5-16 indicated that 47.1 percent of the sample, which is 322 of the 683 participants, reported that they are in the accumulation phase of the investor lifecycle. Out of the 683 participants, 291 participants

representing 42.6 percent of the sample indicated that they believe to be in the consolidation phase of the investor lifecycle. Participants that described themselves to be in the spending and gifting phase of the investor lifecycle represented only 10.2 percent of the sample, which is 70 of the 683 participants.

Table 5-17 reports on the descriptive statistics relating to the different frequencies and percentages of the SCF.

Table 5-17: Frequencies and percentages for the SCF

Statement	No	Frequency (*f*)	Percentage (%)
Take substantial financial risks expecting to earn substantial returns	1	64	9.4
Take above-average financial risks expecting to earn above-average returns	2	171	25.0
Take average financial risks expecting to earn average returns	3	304	44.5
Not willing to take any financial risks	4	144	21.1

The second empirical objective of this study is to determine individual investors' level of risk tolerance. Table 5-17 indicated that 9.4 percent of the sample, 64 out of 683 participants, is willing to take substantial financial risks expecting to earn substantial returns. Participants who are willing to take above-average financial risks expecting to earn above-average returns represented 25.0 percent of the sample which is 171 out of 683 participants. Out of 683 participants, 304 participants that represented 44.5 percent of the sample are willing to take average financial risks expecting to earn average returns. Participants who are not willing to take any financial risks represented 21.1 percent of the sample which consists of 144 out of the 683 participants. From the sample 9.4 percent (1) and 25.0 percent (2) are classified into the high risk category. However, the majority of the sample seems to be more risk adverse whereby 44.5 percent (3) and 21.1 percent (4) of the participants are classified into the low risk category.

Table 5-18 reports on the descriptive statistics relating to risk tolerance and its subsections.

Table 5-18: Descriptive statistics for risk tolerance and subsections

Risk sections	Number of questions	N	Mean	Std Dev	Skewness	Kurtosis
Risk tolerance	14	683	29.6772	4.91773	0.158	-0.267
Financial risk section	5	683	10.9912	2.42843	0.158	-0.406
Speculative risk section	4	683	6.5161	2.04130	0.291	-0.699
Investment risk section	5	683	12.1698	2.26095	0.062	-0.093

As seen in Table 5-18, the risk tolerance scale (GL-RTS) recorded a mean of 29.6772 and standard deviation of 4.91773. With regard to the subsections of risk tolerance, investment risk recorded the highest mean (mean = 12.1698) compared to financial risk (mean = 10.9912) and speculative risk (mean = 6.5161). However, the highest standard deviation was recorded on the financial risk section (Std. Dev. = 2.42843). This was followed by the investment risk section with a standard deviation of 2.26095 and speculative risk section with the lowest standard deviation of 2.04130. From Table 5-18, it is seen that risk tolerance and its subsections show positive values for skewness which indicates a positive right skewed symmetry of distribution. Pertaining to the kurtosis that measures the peakedness of the distributions, risk tolerance and its subsections reflected negative values below 0, indicating relatively flat distributions.

Table 5-19 reports on the descriptive statistics regarding the different frequencies and percentages of the GL-RTS pertaining to individual investors' risk tolerance levels.

Table 5-19: Frequencies and percentages of the GL-RTS pertaining to individual investors' risk tolerance levels

Risk category	Frequency (*f*)	Percentage (%)
Conservative – low-risk tolerant	237	34.7
Moderate – medium-risk tolerant	389	57.0
Aggressive – high-risk tolerant	38	5.6

As seen in Table 5-19, the risk tolerance levels of individual investors were categorised into conservative (low-risk tolerant), moderate (medium-risk tolerant) and aggressive (high-risk tolerant). It is evident from Table 5-19 that the majority of participants are regarded as moderate individual investors who are willing to tolerate medium (average) levels of risk. Out of 683 participants, 389 participants are regarded as moderate individual investors that represent 57.0 percent of the sample. Out of 683 participants, 237 participants representing 34.7 percent of the sample are regarded as conservative individual investors who are willing to tolerate low levels of risk. The minority of participants are regarded as aggressive

individual investors. Only 38 out of 683 participants, representing 5.6 percent of the sample, are willing to tolerate high levels of risk.

The risk tolerance levels for the risk tolerance subsections namely financial risk, speculative risk and investment risk were also analysed. The risk tolerance levels were divided into low, medium and high risk tolerance. Table 5-20 reports on the different frequencies and percentages of the risk tolerance levels for the financial risk tolerance section.

Table 5-20: Frequencies and percentages of the financial risk tolerance section

Financial risk tolerance section		
	Frequency (*f*)	**Percentage (%)**
Low risk tolerance	193	28.3
Medium risk tolerance	443	64.9
High risk tolerance	47	6.9

As indicated in Table 5-20, the majority of participants, 443 out of 683 participants, are medium-risk tolerant towards financial risk representing 64.9 percent of the sample. This is followed by 28.3 percent of the sample, 193 out of 683 participants, being low-risk tolerant towards financial risk. The minority of participants, 47 out of 683 participants, are high-risk tolerant towards financial risk representing 6.9 percent of the sample.

Table 5-21 reports on the different frequencies and percentages of the risk tolerance levels for the speculative risk tolerance section.

Table 5-21: Frequencies and percentages of the speculative risk tolerance section

Speculative risk tolerance section		
	Frequency (*f*)	**Percentage (%)**
Low risk tolerance	208	30.5
Medium risk tolerance	289	42.3
High risk tolerance	121	17.7

As indicated in Table 5-21, the majority of participants, 289 out of 683 participants, are medium-risk tolerant towards speculative risk representing 42.3 percent of the sample. This is followed by 30.5 percent of the sample, 208 out of 683 participants, being low-risk tolerant towards speculative risk. The minority of participants, 121 out of 683 participants, are high-risk tolerant towards speculative risk representing 17.7 percent of the sample.

Table 5-22 reports on the different frequencies and percentages of the risk tolerance levels for the investment risk tolerance section.

Table 5-22: Frequencies and percentages of the investment risk tolerance section

Investment risk tolerance section

	Frequency (f)	Percentage (%)
Low risk tolerance	90	13.2
Medium risk tolerance	499	73.1
High risk tolerance	94	13.8

Table 5-22, shows that the majority of participants, 499 out of 683 participants, are medium risk tolerant towards investment risk representing 73.1 percent of the sample. Participants that are high risk tolerant towards investment risk represent 13.8 percent of the sample, 94 out of 683 participants. The minority of participants, 90 out of 683 participants, are low-risk tolerant towards investment risk representing 13.2 percent of the sample.

5.6 HYPOTHESIS TESTING

Hypothesis testing is a systematic manner to test assumptions or ideas about a group or population (Privitera, 2012:226). For the purpose of this study, hypothesis tests namely ANOVA, chi-square tests and correlation analysis were employed to achieve the empirical objectives and test the hypotheses as stipulated in Chapter 1. A one-way between groups ANOVA with post-hoc tests was used. Tukey's post-hoc test was used as it is mainly the most preferred test for performing one-way ANOVA post-hoc tests (Pallant, 2007:243; Privitera, 2012:349). Furthermore, cross tabulation with the chi-square test for independence was employed to determine the relationship between two categorical variables (Pallant, 2007:214; Privitera, 2012:559).

The significant level for each of these tests is set at the conventional 5 percent level, specifically, α = 0.05 (Pallant, 2007:235; Kolb, 2008:259). As recommended by Pallant (2007:235) the decision rule pertained is as follows:

- If P-value is > than α, then conclude Ho.
- If P-value is $\leq$ than α, then conclude Ha.

5.6.1 Demographic factors that influence individual investors' risk tolerance when making investment decisions

The first empirical objective to be achieved is to determine the demographical factors that influence individual investors' risk tolerance when making investment decisions. In order to test the hypothesis relating to the demographical factors that influence risk tolerance, ANOVA was employed. Firstly, the effect of demographical factors on subjective risk tolerance was determined. With reference to Section C of the questionnaire (Annexure C), the SCF was used to obtain individual investors' perceptions and attitude towards risk tolerance. Secondly, the effect of demographical factors on actual risk tolerance was

determined. The GL-RTS, Section D of the questionnaire (Annexure C), was used to determine individual investors' actual risk tolerance. The effect of demographical factors was also determined on the three subsections of risk tolerance namely financial risk, speculative risk and investment risk.

In order to determine the statistical difference between age, gender, ethnicity, marital status, home language and annual income for risk tolerance a null-hypothesis had to be stated. Differences were determined by undertaking a one-way ANOVA whereby the confidence level was set at 95 percent. The following hypotheses were formulated:

Effect of demographical factors on subjective risk tolerance:

Null hypothesis (Ho1): There is no significant difference for subjective risk tolerance in terms of age, gender, ethnicity, marital status and annual income.

Alternative hypothesis (Ha1): There is a significant difference for subjective risk tolerance in terms of age, gender, ethnicity, marital status and annual income.

Effect of demographical factors on risk tolerance and subsections:

Null hypothesis (Ho2): There is no significant difference for risk tolerance/sections in terms of age, gender, ethnicity, marital status and annual income.

Alternative hypothesis (Ha2): There is a significant difference for risk tolerance/sections in terms of age, gender, ethnicity, marital status and annual income.

Table 5-23 reports on the findings relating to the statistical differences between risk tolerance and age categories.

Table 5-23: Risk tolerance and age categories

		Sum of squares	Df	Mean square	F-ratio	Sig.
Subjective risk tolerance/ SCF	Between groups	9.040	3	3.013	4.908	0.002*
	Within groups	416.898	679	0.614		
	Total	425.939	682			
Risk tolerance total/GL-RTS	Between groups	23.003	50	0.460	0.722	0.925
	Within groups	402.935	635	0.638		
	Total	425.939	682			
Financial risk section	Between groups	8.172	13	0.629	1.007	0.443
	Within groups	417.767	669	0.624		
	Total	425.939	682			
Speculative risk section	Between groups	8.630	16	0.539	0.861	0.615
	Within groups	417.308	666	0.627		
	Total	425.939	682			
Investment risk section	Between groups	13.912	14	0.994	1.611	0.071
	Within groups	412.026	668	0.617		
	Total	425.939	682			
*Significant at p<0.05 level						

It is evident from Table 5-23 that there is a statistical significant difference between individual investors' subjective risk tolerance and age ($p < 0.05$). Therefore, the null hypothesis, Ho1, can be rejected and the alternative hypothesis, Ha1, can be concluded. This suggests that there is a significant difference between individual investors' subjective risk tolerance and age categories ($p = 0.002 < 0.05$).

With regard to the remaining constructs and influence of age on risk tolerance and its subsections, the null hypothesis, Ho2, cannot be rejected at the 5 percent significance level. It is evident from Table 5-23 that there is no significant difference between age categories and risk tolerance ($p = 0.925 > 0.05$) and age categories and risk tolerance's subsections, namely financial, speculative and investment risk, respectively ($p = 0.443, 0.615, 0.071 > 0.05$). The reason that no significant differences were found between age categories and risk tolerance and its subsections may be due to the fact that the context in which risk tolerance was measured may be different than the context of previous research studies on risk

tolerance. In this study, risk tolerance and its subsections were measured in a South African context consisting of South African individual investors.

Table 5-24: Significant differences between age categories for subjective risk tolerance/SCF

Age	Mean
16–34	2.42
35–49	2.24
50 years and older	2.09

As indicated in Table 5-24 a significant difference exists between individual investors' subjective risk tolerance and age categories. Individual investors between the age of 16–34 years are more risk tolerant than individual investors between the ages of 35–49 years and 50 years and older. However, individual investors that are 50 years and older are the least risk tolerant. Therefore, participants' perceptions and attitudes towards risk indicate that younger individuals are more risk tolerant than older individuals. This viewpoint is supported by numerous studies such as Wallach and Kogan (1961:26); McInish (1982:125); Morin and Suarez (1983:1211); Hawley and Fujji (1993:1); Palsson (1996:772); Grable (1997:38); Hallahan *et.al.* (2003:495); Yao *et al*. (2004:259); Yao *et al*. (2011:883) as well as Van Schalkwyk (2012:283) that found younger individuals to be more risk tolerant than older individuals.

Table 5-25 reports on the findings relating to the statistical differences between risk tolerance and gender.

Table 5-25: Risk tolerance and gender

		Sum of squares	Df	Mean square	F-ratio	Sig.
Subjective risk tolerance/ SCF	Between groups	6.571	3	2.190	9.214	0.000*
	Within groups	161.408	679	0.238		
	Total	167.980	682			
Risk tolerance total/GL-RTS	Between groups	15.402	50	0.308	1.276	0.102
	Within groups	152.577	632	0.241		
	Total	167.980	682			
Financial risk section	Between groups	8.438	13	0.649	2.722	0.001*
	Within groups	159.542	669	0.238		
	Total	167.980	682			
Speculative risk section	Between groups	5.085	16	0.318	1.300	0.191
	Within groups	162.894	666	0.245		
	Total	167.980	682			
Investment risk section	Between groups	4.386	14	0.313	1.279	0.215
	Within groups	163.593	668	0.245		
	Total	167.980	682			
*Significant at p<0.05 level						

As indicated in Table 5-25, there is a statistical significant difference between individual investors' subjective risk tolerance and gender ($p < 0.05$). As a result, the null hypothesis, Ho1, can be rejected and the alternative hypothesis, Ha1, can be concluded. This suggests that there is a significant difference between individual investors' subjective risk tolerance and gender ($p = 0.000 < 0.05$).

In addition, it is evident from Table 5-25 that a statistical significant difference was found between the financial risk section and gender ($p < 0.05$). For that reason, the null hypothesis, Ho2, can be rejected and the alternative hypothesis, Ha2, can be concluded. This suggests that there is a significant difference between financial risk and gender ($p = 0.001 < 0.05$). With regard to the remaining constructs, Table 5-25 indicates that no statistical significant differences were found between gender and risk tolerance ($p= 0.102 > 0.05$), gender and speculative risk ($p = 0.191 > 0.05$) and gender and investment risk ($p=$

0.215 > 0.05). Therefore, the null hypothesis, Ho2, cannot be rejected at the 5 percent significance level.

Table 5-26: Significant differences between gender for subjective risk tolerance/SCF

Gender	Mean
Male	2.40
Female	2.09

It is evident from Table 5-26 that participants' perceptions and attitudes towards risk indicate that males are more risk tolerant than females. This viewpoint is confirmed by Grable and Roszkowzki (2007:801) that not only found that males are more risk tolerant than females, but also that they are likely to over-estimate their tendency for taking on risks. Previous studies that have also used the SCF risk tolerance item confirmed similar findings that males are more risk tolerant than females (Hawley & Fujji, 1993:199; Irwin, 1993; Roszkowski *et al.,* 1993:225; Sung & Hanna, 1996; Grable & Roszkowzki, 2007:801).

Table 5-27: Significant differences between gender for financial risk section

Gender	Mean
Male	1.88
Female	1.72

As indicated in Table 5-27, males are regarded as more financial risk tolerant than females. Numerous studies also reported that males are likely to tolerate more financial risk than females (Bajtelsmit *et al*., 1999:8; Grable, 2000:629; Halek & Eisenhauer, 2001:21; Eckel & Grossman, 2002: 290; Yao *et al*., 2004:259; Ardehali *et al.,* 2005:500; Nairn, 2005:384; Anbar & Eker, 2010:514; Dohmen *et al.,* 2011:549; Faff *et al.,* 2011:115; Hallahan *et al.,* 2011:497; Dickason, 2017:161). In addition, Grable and Lytton (1999:64) found that females are more conservative and less risk tolerant than males when making financial decisions.

Table 5-28 reports on the findings relating to the statistical differences between risk tolerance and ethnicity.

Table 5-28: Risk tolerance and ethnicity

		Sum of squares	Df	Mean square	F-ratio	Sig.
Subjective risk tolerance/ SCF	Between groups	10.951	3	3.650	6.389	0.000*
	Within groups	387.951	679	0.571		
	Total	398.902	682			
Risk tolerance total/GL-RTS	Between groups	45.304	50	0.906	1.619	0.006*
	Within groups	353.598	632	0.559		
	Total	398.902	682			
Financial risk section	Between groups	7.871	13	0.605	1.036	0.414
	Within groups	391.031	669	0.585		
	Total	398.902	682			
Speculative risk section	Between groups	18.756	16	1.172	2.054	0.009*
	Within groups	380.145	666	0.571		
	Total	398.902	682			
Investment risk section	Between groups	16.682	14	1.192	2.083	0.011*
	Within groups	382.220	668	0.572		
	Total	398.902	682			
*Significant at p<0.05 level						

As seen in Table 5-28, it is evident that there is a statistical significant difference between individual investors' subjective risk tolerance and ethnicity ($p < 0.05$). Consequently, the null hypothesis, Ho1, can be rejected and the alternative hypothesis, Ha1, can be concluded. This suggests that there is a significant difference between individual investors' subjective risk tolerance and ethnicity ($p = 0.000 < 0.05$).

Furthermore, Table 5-28 indicates that statistical significant differences exist between risk tolerance and ethnicity, speculative risk section and ethnicity as well as investment risk section and ethnicity ($p < 0.05$). As a result, the null hypothesis, Ho2, can be rejected and the alternative hypothesis, Ha2, can be concluded. This suggests that there is a significant difference between risk tolerance and ethnicity ($p = 0.006 < 0.05$), speculative risk section and ethnicity ($p = 0.009 < 0.05$) and investment risk section and ethnicity ($p = 0.011 < 0.05$). As seen in Table 5-28, no statistical significant difference was found between ethnicity and

the financial risk section (p = 0.414 > 0.05). Therefore, the null hypothesis, Ho2, cannot be rejected at the 5 percent significance level.

Table 5-29: Significant differences between ethnicity groups for subjective risk tolerance/SCF

Ethnicity	Mean
African	2.62
White	2.14
Coloured	2.12
Asian	2.17

As indicated in Table 5-29, participants' perceptions and attitudes towards risk show that African participants are the most risk tolerant followed by Asian participants, White participants and Coloured participants. However, this is in contrast with the findings of other researchers that made use of subjective measures of risk tolerance. Irwin (1993); Sung and Hanna (1996:14) and Coleman (2003:43) found that White participants are more risk tolerant than African, Coloured and Asian participants. However, this may be attributable to the fact that the context in which subjective risk tolerance was measured may be different than the context of previous research studies on risk tolerance. In this study, the SCF as a subjective risk tolerance measure was utilised in a South African context consisting of South African individual investors.

Table 5-30: Significant differences between ethnicity groups for risk tolerance

Ethnicity	Mean
African	2.00
White	1.69
Coloured	1.84
Asian	1.50

As indicated in Table 5-30, African participants are more risk tolerant than Coloured participants, White participants and Asian participants. Barsky *et al.* (1997:550); Grable and Joo (1999:58) as well as Halek and Eisenhauer (2001:13) also reported that non-whites were assumed to be significantly more risk tolerant than Whites. The results reported in Table 5-30 confirms the findings of Van Schalkwyk (2012:286) and Dickason (2017:162) that found African individuals to be more risk tolerant than White, Coloured and Asian individuals within a South African context.

Table 5-31: Significant differences between ethnicity groups for speculative risk section

Ethnicity	Mean
African	2.18
White	1.79
Coloured	1.78
Asian	1.76

As seen in Table 5-31, African participants are willing to take more speculative risk than White participants, Coloured participants and Asian participants. This viewpoint is confirmed by Strydom *et al.* (2009:17) and Dickason (2017:164) that also found African participants to be more likely to take speculative risk than White participants, Coloured participants and Asian participants within the South African context.

Table 5-32: Significant differences between ethnicity groups for investment risk section

Ethnicity	Mean
African	2.08
White	1.99
Coloured	2.02
Asian	1.91

As seen in Table 5-32, African participants are the most risk tolerant towards investment risk followed by Coloured participants, White participants and Asian participants. Dickason (2017:165) also found that African individuals tolerate more investment risk than White, Coloured and Asian individuals.

It can be concluded from Table 5-29 to Table 5-32 that African individuals tolerate more risk than White, Coloured and Asian individuals within a South African context. However, this is in contrast with the general consensus among international researchers (Haliassos & Bertaut, 1995:1119; Zhong & Xiao, 1995:109; Grable, 1997:15; Bajtelsmith *et al.*, 1999:4; Gutter *et al.*, 1999:161; Plath & Stevenson, 2000:344; Brown, 2007:16) that reported White individuals to be more risk tolerant than non-white individuals.

Table 5-33 reports on the findings relating to the statistical differences between risk tolerance and marital status.

Table 5-33: Risk tolerance and marital status

		Sum of squares	Df	Mean square	F-ratio	Sig.
Subjective risk tolerance/ SCF	Between groups	3.354	3	1.118	2.709	0.044*
	Within groups	280.198	679	0.413		
	Total	283.552	682			
Risk tolerance total/GL-RTS	Between groups	19.803	50	0.396	0.949	0.575
	Within groups	263.749	632	0.417		
	Total	283.552	682			
Financial risk section	Between groups	6.207	13	0.477	1.152	0.312
	Within groups	277.345	669	0.415		
	Total	283.552	682			
Speculative risk section	Between groups	7.503	16	0.469	1.131	0.321
	Within groups	276.049	666	0.414		
	Total	283.552	682			
Investment risk section	Between groups	8.806	14	0.629	1.529	0.095
	Within groups	274.746	668	0.411		
	Total	283.552	682			
*Significant at p<0.05 level						

As displayed in Table 5-33, there is a statistical significant difference between individual investors' subjective risk tolerance and marital status ($p < 0.05$). Therefore, the null hypothesis, Ho1, can be rejected and the alternative hypothesis, Ha1, can be concluded. This suggests that there is a significant difference between individual investors' subjective risk tolerance and marital status ($p = 0.044 < 0.05$).

With regard to the remaining constructs, the influence of marital status on risk tolerance and its subsections, the null hypothesis, Ho2, cannot be rejected at the 5 percent significance level. It is apparent from Table 5-33 that there is no statistical significant difference between marital status and risk tolerance ($p = 0.575 > 0.05$) and marital status and risk tolerance's subsections, namely financial, speculative and investment risk, respectively ($p = 0.312, 0.321, 0.095 > 0.05$). The reason that no significant differences were found between marital status and risk tolerance and its subsections may be attributable to the fact that the context in which risk tolerance was measured may be different than the context of previous research

studies on risk tolerance. In this study, risk tolerance and its subsections were measured in a South African context consisting of South African individual investors.

Table 5-34: Significant differences between marital status groups for subjective risk tolerance/SCF

Marital status	Mean
Single	2.36
Married	2.21
Previously married	2.09

As indicated in Table 5-34, participants' perceptions and attitudes towards risk indicate that single participants are more risk tolerant than married participants and participants that were previously married. This is in line with the general consensus and findings of other researchers that made use of subjective measures of risk tolerance. Sung and Hanna (1996:15) as well as Grable and Lytton (2001:44) made use of the SCF risk tolerance scale and reported that single individuals are more risk tolerant than married individuals.

Table 5-35 reports on the findings relating to the statistical differences between risk tolerance and annual income.

Table 5-35: Risk tolerance and annual income

		Sum of squares	Df	Mean square	F-ratio	Sig.
Subjective risk tolerance/ SCF	Between groups	92.649	3	30.883	10.389	0.000*
	Within groups	2018.452	679	2.973		
	Total	2111.101	682			
Risk tolerance total/GL-RTS	Between groups	168.329	50	3.367	1.095	0.308
	Within groups	1942.772	632	3.074		
	Total	2111.101	682			
Financial risk section	Between groups	145.502	13	11.192	3.809	0.000*
	Within groups	1965.599	669	2.938		
	Total	2111.101	682			
Speculative risk section	Between groups	74.913	16	4.682	1.531	0.083
	Within groups	2036.188	666	3.057		
	Total	2111.101	682			
Investment risk section	Between groups	33.624	14	2.402	0.772	0.700
	Within groups	2077.477	668	3.110		
	Total	2111.101	682			
*Significant at p<0.05 level						

As shown in Table 5-35, there is a statistical significant difference between individual investors' subjective risk tolerance and annual income ($p < 0.05$). As a result, the null hypothesis, Ho1, can be rejected and the alternative hypothesis, Ha1, can be concluded. This suggests that there is a significant difference between individual investors' subjective risk tolerance and annual income ($p = 0.000 < 0.05$).

In addition, it is evident from Table 5-35 that there is a statistical significant difference between the financial risk section and annual income ($p < 0.05$). For that reason, the null hypothesis, Ho2, can be rejected and the alternative hypothesis, Ha2, can be concluded. This suggests that there is a significant difference between financial risk and annual income ($p = 0.000 < 0.05$). With regard to the remaining constructs, Table 5-35 shows that no statistical significant differences were found between annual income and risk tolerance ($p= 0.308 > 0.05$), annual income and speculative risk ($p = 0.083 > 0.05$) and annual income and

investment risk (p= 0.700 > 0.05). Therefore, the null hypothesis, Ho2, cannot be rejected at the 5 percent significance level.

Table 5-36: Significant differences between annual income groups for subjective risk tolerance/SCF

Annual income	Mean
R0–R200 000	2.18
R200 001–R300 000	2.04
R300 001–R400 000	2.18
R400 001–R500 000	2.20
R500 001–R800 000	2.41
More than R800 000	2.52

As seen in Table 5-36, participants' perceptions and attitudes towards risk indicate that the more income individuals earn per annum, the more willing they are to tolerate higher levels of risk. Participants earning more than R800 000 per annum are willing to tolerate the most risk, followed by participants earning R500 001–R800 000; R400 001–R500 000; R300 001–R400 000; R0–R200 000 and R200 001–R300 000, respectively. Participants earning between R200 001–R300 000 are the least risk tolerant. Therefore, individuals earning a higher income are more risk tolerant than individuals earning a lower income. This is confirmed by the findings of Hawley and Fujji (1993:197) that made use of the SCF risk tolerance scale and as a result found that higher income earners are likely to tolerate more risk than low-income earners.

Table 5-37: Significant differences between annual income groups for financial risk tolerance section

Annual income	Mean
R0–R200 000	1.70
R200 001–R300 000	1.75
R300 001–R400 000	1.79
R400 001–R500 000	1.84
R500 001–R800 000	1.95
More than R800 000	1.85

It is evident from Table 5-37 that participants earning between R500 001–R800 000 tolerate the highest level of financial risk. This is followed by participants earning more than R800 000; R400 001–R500 000; R300 001–R400 000; R200 001–R300 000 and R0–R200 000, respectively. Therefore, higher levels of income results in higher financial risk tolerance levels. This viewpoint is in line with theory and supported by researchers such as Cohn *et al.* (1975:614); O'Neil (1996:4) and Kannadhasan (2015:178) that found individuals who earn higher levels of income tend to have higher financial risk tolerance levels, compared to individuals with lower levels of income. This viewpoint is also supported by Van

Schalkwyk (2012:290) and Dickason (2017:169) who also found that higher annual income levels lead to higher financial risk tolerance levels within a South African context.

5.6.2 Individual investors' level of risk tolerance

The second empirical objective is to determine individual investors' level of risk tolerance. In order to achieve the second empirical objective and test for hypothesis relating to individual investors' level of risk tolerance, cross tabulation with the chi-square test for independence was employed. Firstly, individual investors' subjective level of risk tolerance, perception and attitudes towards risk, was determined according to two main factors, namely age and annual income. Secondly, individual investors' actual level of risk tolerance was determined according to two main factors, namely age and annual income.

In order to determine the statistical difference between individual investors' level of risk tolerance and the two main factors, namely age and annual income, a null-hypothesis had to be stated. Differences were determined by undertaking a chi-square test for independence whereby the confidence level was set at 95 percent. The following hypotheses were formulated:

Individual investors' level of subjective risk tolerance according to age and annual income:

Null hypothesis (Ho3): There is no significant difference in individual investors' level of subjective risk tolerance in terms of age and annual income.

Alternative hypothesis (Ha3): There is a significant difference in individual investors' level of subjective risk tolerance in terms of age and annual income.

Individual investors' level of actual risk tolerance according to age and annual income:

Null hypothesis (Ho4): There is no significant difference in individual investors' level of risk tolerance in terms of age and annual income.

Alternative hypothesis (Ha4): There is a significant difference in individual investors' level of risk tolerance in terms of age and annual income.

Table 5-38: Cross tabulation for individual investors' level of subjective risk tolerance according to age

Age categories	Frequency (*f*) and percentages (%)	Level of subjective risk tolerance/SCF	Total

		Not willing to take any financial risks	Take average risks– average returns	Take above-average risks– above-average returns	Take substantial risks– substantial returns	
16–34	*f*	23	77	48	23	171
	%	13.5	45.0	28.1	13.5	100
35–49	*f*	59	92	66	26	243
	%	24.3	37.9	27.2	10.7	100
50 years and older	*f*	62	135	57	15	269
	%	23.0	50.2	21.2	5.6	100
Total	*f*	144	304	171	64	683
	%	21.1	44.5	25.0	9.4	100

Table 5-38 shows the frequencies and percentages for individual investors' level of subjective risk tolerance according to age. With reference to the first age category between 16 and 34 years, the majority of individual investors (45%) are willing to take average financial risks expecting to earn average returns consisting of 77 out of 171 participants. This is followed by 28.1 percent of the individual investors, 48 out of 171 participants who are willing to take above-average financial risks expecting to earn above-average returns. However, individual investors who are not willing to take any financial risks and willing to take substantial financial risks expecting to earn substantial returns, each represents only 13.5 percent of the sample. Out of 171 participants, 23 participants are not willing to take any financial risks and 23 participants are willing to take substantial financial risks expecting to earn substantial returns.

As shown in Table 5-38, according to the second age category between 35 and 49 years, the majority of individual investors (37.9%) are willing to take average financial risks expecting to earn average returns consisting of 92 out of 243 participants. This is followed by 27.2 percent of the individual investors, 66 out of 243 participants who are willing to take above-average financial risks expecting to earn above-average returns. However, 24.3 percent of individual investors, 59 out of 243 participants, are not willing to take any financial risks. Only 26 out of 243 participants are willing to take substantial financial risks expecting to earn substantial returns representing 10.7 percent of the sample.

As seen in Table 5-38, according to the last age category, 50 years and older, the majority of individual investors (50.2%) are willing to take average financial risks expecting to earn average returns consisting of 135 out of 269 participants. This is followed by 23 percent of the individual investors, 62 out of 269 participants, are not willing to take any financial risks.

However, 21.2 percent of the individual investors, 57 out of 269 participants, are willing to take above-average financial risks expecting to earn above-average returns. Only 15 out of 269 participants are willing to take substantial financial risks expecting to earn substantial returns representing 5.6 percent of the sample.

It can be concluded from Table 5-38 that the majority of individual investors across all age categories are willing to take average financial risks expecting to earn average returns and can be regarded as moderate individual investors.

Table 5-39 reports on the results obtained relating to the statistical differences between the individual investors' level of subjective risk tolerance and age.

Table 5-39: Individual investors' level of subjective risk tolerance according to age

Pearson Chi-Square test		
Value	**df**	**Sig.**
21.052	6	.002*
*Significant at p<0.05 level		

As indicated in Table 5-39, there is a statistical significant difference between individual investors' level of subjective risk tolerance and age ($p < 0.05$). As a result, the null hypothesis, Ho3, can be rejected and the alternative hypothesis, Ha3, can be concluded. This suggests that there is a significant difference between individual investors' level of subjective risk tolerance and age ($p = 0.002 < 0.05$).

Table 5-40 reports on the frequencies and percentages for individual investors' level of subjective risk tolerance according to annual income.

Table 5-40: Cross tabulation for individual investors' level of subjective risk tolerance according to annual income

Annual income categories	Frequency (*f*) and percentages (%)	Level of subjective risk tolerance/SCF				Total
		Not willing to take any financial risks	Take average risks– average returns	Take above-average risks– above-average returns	Take substantial risks– substantial returns	
R0–R200 000	*f*	68	92	51	30	241
	%	28.2	38.2	21.2	12.4	100
R200 001–R300 000	*f*	29	61	16	9	115
	%	25.2	53.0	13.9	7.8	100
R300 001–R400 000	*f*	18	51	26	5	100
	%	18.0	51.0	26.0	5.0	100
R400 001–R500 000	*f*	9	26	11	4	50
	%	18.0	52.0	22.0	8.0	100
R500 001–R800 000	*f*	13	53	41	10	117
	%	11.1	45.3	35.0	8.5	100
More than R800 001	*f*	7	21	26	6	60
	%	11.7	35.0	43.3	10.0	100
Total	*f*	144	304	171	64	683
	%	21.1	44.5	25.0	9.4	100

As indicated in Table 5-40, with reference to the first annual income category (R0–R200 000), the majority of individual investors (38.2%) earning between R0 and R200 000 on an annual basis are willing to take average financial risks expecting to earn average returns consisting of 92 out of 241 participants. This is followed by 28.2 percent of the individual investors, 68 out of 241 participants, are not willing to take any financial risks. However, 21.2 percent of the individual investors, 51 out of 241 participants, are willing to take above-average financial risks expecting to earn above-average returns. Only 30 out of 241 participants are willing to take substantial financial risks expecting to earn substantial returns representing 12.4 percent of the sample.

With reference to the second annual income category (R200 001–R300 000), the majority of individual investors (53%) are willing to take average financial risks expecting to earn average returns consisting of 61 out of 115 participants. This is followed by 25.2 percent of the individual investors, 29 out of 115 participants who are not willing to take any financial risks. Out of 115 participants, 16 participants are willing to take above-average financial risks

expecting to earn above-average returns representing 13.9 percent of the sample. The minority of individual investors (7.8%) consisting of 9 out of 115 participants are willing to take substantial financial risks expecting to earn substantial returns.

As seen in Table 5-40, with reference to the third annual income category (R300 001–R400 000), the majority of individual investors (51%) earning between R300 001 and R400 000 on an annual basis are willing to take average financial risks expecting to earn average returns consisting of 51 out of 100 participants. Thereafter, 26 percent of individual investors, 26 out of 100 participants, are willing to take above-average financial risks expecting to earn above-average returns. Out of 100 participants, 18 participants are not willing to take any financial risks representing 18 percent of the sample. The minority of individual investors (5%) consisting of 5 out of 100 participants are willing to take substantial financial risks expecting to earn substantial returns.

With reference to the fourth annual income category (R400 001–R500 000), Table 5-40 indicates that the majority of individual investors (52%) earning between R400 001 and R500 000 on an annual basis are willing to take average financial risks expecting to earn average returns consisting of 26 out of 50 participants. Subsequently, 22 percent of individual investors, 11 out of 50 participants, are willing to take above-average financial risks expecting to earn above-average returns. Out of 50 participants, 9 participants are not willing to take any financial risks representing 18 percent of the sample. The minority of individual investors (8%) consisting of 4 out of 50 participants are willing to take substantial financial risks expecting to earn substantial returns.

With reference to the fifth annual income category (R500 001–R800 000), Table 5-40 indicates that the majority of individual investors (45.3%) earning between R500 001 and R800 000 on an annual basis are willing to take average financial risks expecting to earn average returns consisting of 53 out of 117 participants. This is followed by 35 percent of individual investors, 41 out of 117 participants, are willing to take above-average financial risks expecting to earn above-average returns. Out of 117 participants, 13 participants are not willing to take any financial risks representing 11.1 percent of the sample. The minority of individual investors (8.5%) consisting of 10 out of 117 participants are willing to take substantial financial risks expecting to earn substantial returns.

With reference to the last annual income category (More than R800 001), Table 5-40 points out that the majority of individual investors (43.3%) earning more than R800 001 on an annual basis are willing to take above-average financial risks expecting to earn above-average returns consisting of 26 out of 60 participants. Thereafter, 35 percent of individual

investors, 21 out of 60 participants, are willing to take average financial risks expecting to earn average returns. Out of 60 participants, 7 participants are not willing to take any financial risks representing 11.7 percent of the sample. The minority of individual investors (10%) consisting of 6 out of 60 participants are willing to take substantial financial risks expecting to earn substantial returns.

It can be concluded from Table 5-40 that the majority of individual investors across all annual income categories, except those earning more than R800 001 on an annual basis, are willing to take average financial risks expecting to earn average returns and can be regarded as moderate individual investors. The majority of individual investors earning more than R800 001 on an annual basis are willing to take above-average financial risks expecting to earn above-average returns and are regarded as more aggressive individual investors.

Table 5-41 reports on the results obtained relating to the statistical differences between the individual investors' level of subjective risk tolerance and annual income.

Table 5-41: Individual investors' level of subjective risk tolerance according to annual income

Pearson Chi-Square test		
Value	**df**	**Sig.**
47.362	15	.000*
*Significant at p<0.05 level		

As indicated in Table 5-41, there is a statistical significant difference between individual investors' level of subjective risk tolerance and annual income ($p < 0.05$). As a result, the null hypothesis, Ho3, can be rejected and the alternative hypothesis, Ha3, can be concluded. This suggests that there is a significant difference between individual investors' level of subjective risk tolerance and annual income ($p = 0.000 < 0.05$).

Table 5-42 reports on the frequencies and percentages for individual investors' level of actual risk tolerance according to age.

Table 5-42: Cross tabulation for individual investors' level of risk tolerance according to age

Age categories	Frequency (f) and percentages (%)	Level of actual risk tolerance/GL-RTS			Total
		Conservative–low-risk tolerant	Moderate–medium-risk tolerant	Aggressive–high-risk tolerant	
16–34	f	55	99	10	164
	%	33.5	60.4	6.1	100
35–49	f	79	144	16	239
	%	33.1	60.3	6.7	100
50 years and older	f	103	146	12	261
	%	39.5	55.9	4.6	100
Total	f	237	389	38	664
	%	35.7	58.6	5.7	100

As shown in Table 5-42, with regard to the first age category between 16 and 34 years, the majority of individual investors (60.4%) are regarded as moderate individual investors that tolerate medium levels of risk consisting of 99 out of 164 participants. Subsequently, 33.5 percent of individual investors, 55 out of 164 participants, are regarded as conservative individual investors that tolerate low levels of risk. The minority of individual investors (6.1%), 10 out of 164 participants, are regarded as aggressive individual investors that tolerate high levels of risk.

As shown in Table 5-42, according to the second age category between 35 and 49 years, the majority of individual investors (60.3%) are regarded as moderate individual investors that tolerate medium levels of risk consisting of 144 out of 239 participants. This is followed by 33.1 percent of individual investors, 79 out of 239 participants, are regarded as conservative individual investors that tolerate low levels of risk. The minority of individual investors (6.7%), 16 out of 239 participants, are regarded as aggressive individual investors that tolerate high levels of risk.

According to the last age category, 50 years and older, Table 5-42 points out that the majority of individual investors (55.9%) are regarded as moderate individual investors that tolerate medium levels of risk consisting of 146 out of 261 participants. Thereafter, 39.5 percent of individual investors, 103 out of 261 participants, are regarded as conservative individual investors that tolerate low levels of risk. Out of 261 participants, 12 participants are regarded as aggressive individual investors that tolerate high levels of risk representing the minority (4.6%) of the sample.

It can be concluded from Table 5-42 that the majority of individual investors across all age categories are moderate individual investors that tolerate medium levels of risk. This is followed by conservative individual investors that tolerate low levels of risk. The minority of individual investors across all age categories are regarded as aggressive individual investors that tolerate high levels of risk.

Table 5-43 reports on the results obtained relating to the statistical differences between the individual investors' level of actual risk tolerance and age.

Table 5-43: Individual investors' level of risk tolerance according to age

Pearson Chi-Square test		
Value	**df**	**Sig.**
3.245	4	.518
*Significant at p<0.05 level		

As indicated in Table 5-43, there is no statistical significant difference between individual investors' level of actual risk tolerance and age ($p = 0.518 > 0.05$). Therefore, the null hypothesis, Ho4, cannot be rejected at the 5 percent significance level.

Table 5-44 reports on the frequencies and percentages for individual investors' level of actual risk tolerance according to annual income.

Table 5-44: Cross tabulation for individual investors' level of risk tolerance according to annual income

Annual income categories	**Frequency (*f*) and percentages (%)**	**Level of actual risk tolerance/GL-RTS**			**Total**
		Conservative–low-risk tolerant	**Moderate–medium-risk tolerant**	**Aggressive–high-risk tolerant**	
R0–R200 000	*f*	91	129	13	233
	%	39.1	55.4	5.6	100
R200 001–R300 000	*f*	48	58	3	109
	%	44.0	53.2	2.8	100
R300 001–R400 000	*f*	39	56	4	99
	%	39.4	56.6	4.0	100
R400 001–R500 000	*f*	18	29	2	49
	%	36.7	59.2	4.1	100
R500 001–R800 000	*f*	28	77	10	115
	%	24.3	67.0	8.7	100
More than R800 001	*f*	13	40	6	59
	%	22.0	67.8	10.2	100

Annual income categories	Frequency (*f*) and percentages (%)	Level of actual risk tolerance/GL-RTS			Total
		Conservative–low-risk tolerant	Moderate–medium-risk tolerant	Aggressive–high-risk tolerant	
Total	*f*	237	389	38	664
	%	35.7	58.6	5.7	100

As shown in Table 5-44, with reference to the first annual income category (R0–R200 000), the majority of individual investors (55.4%) earning between R0 and R200 000 on an annual basis are regarded as moderate individual investors that tolerate medium levels of risk consisting of 129 out of 233 participants. After that, 39.1 percent of individual investors, 91 out of 233 participants, are regarded as conservative individual investors that tolerate low levels of risk. The minority of individual investors (5.6%), 13 out of 233 participants are regarded as aggressive individual investors that tolerate high levels of risk.

Pertaining to the second annual income category (R200 001–R300 000), the majority of individual investors (53.2%) are regarded as moderate individual investors that tolerate medium levels of risk consisting of 58 out of 109 participants. This is followed by 48 out of 109 participants, whereby 44 percent of individual investors are regarded as conservative individual investors that tolerate low levels of risk. Out of 109 participants, only 3 participants are regarded as aggressive individual investors that tolerate high levels of risk representing the minority (2.8%) of the sample.

With regard to the third annual income category (R300 001–R400 000), Table 5-44 shows that the majority of individual investors (56.6%) earning between R300 001 and R400 000 on an annual basis are regarded as moderate individual investors that tolerate medium levels of risk consisting of 56 out of 99 participants. Subsequently, 39 out of 99 participants are regarded as conservative individual investors that tolerate low levels of risk representing 39.4 percent of the sample. The minority of individual investors (4.0%) are regarded as aggressive individual investors that tolerate high levels of risk consisting of 4 out of 99 participants.

With reference to the fourth annual income category (R400 001–R500 000), Table 5-44 indicates that the majority of individual investors (59.2%) earning between R400 001 and R500 000 on an annual basis are regarded as moderate individual investors that tolerate medium levels of risk consisting of 29 out of 49 participants. This is followed by 18 out of 49 participants, whereby 36.7 percent of individual investors are regarded as conservative

individual investors that tolerate low levels of risk. Only 2 out of 49 participants are regarded as aggressive individual investors that tolerate high levels of risk representing the minority (4.1%) of the sample.

Regarding the fifth annual income category (R500 001–R800 000), Table 5-44 indicates that the majority of individual investors (67.0%) earning between R500 001 and R800 000 on an annual basis are regarded as moderate individual investors that tolerate medium levels of risk consisting of 77 out of 115 participants. This is followed by 28 out of 115 participants, whereby 24.3 percent of individual investors are regarded as conservative individual investors that tolerate low levels of risk. The minority (8.7%) of individual investors, 10 out of 115 participants, are regarded as aggressive individual investors that tolerate high levels of risk.

With reference to the last annual income category (More than R800 001), Table 5-44 points out that the majority of individual investors (67.8%) earning more than R800 001 on an annual basis are regarded as moderate individual investors that tolerate medium levels of risk consisting of 40 out of 59 participants. Subsequently, 13 out of 59 participants are regarded as conservative individual investors that tolerate low levels of risk representing 22.0 percent of the sample. The minority of individual investors (10.2%), consisting of 6 out of 59 participants, are regarded as aggressive individual investors that tolerate high levels of risk.

It can be concluded from Table 5-44 that the majority of individual investors across all annual income categories are regarded as moderate individual investors that tolerate medium levels of risk. This is followed by conservative individual investors that tolerate low levels of risk. The minority of individual investors across all annual income categories are regarded as aggressive individual investors that tolerate high levels of risk.

Table 5-45 reports on the results obtained relating to the statistical differences between individual investors' level of actual risk tolerance and annual income.

Table 5-45: Individual investors' level of risk tolerance according to annual income

Pearson Chi-Square test		
Value	**df**	**Sig.**
19.966	10	.030*
*Significant at p<0.05 level		

As shown in Table 5-45, there is a statistical significant difference between individual investors' level of actual risk tolerance and annual income ($p < 0.05$). As a result, the null hypothesis, Ho4, can be rejected and the alternative hypothesis, Ha4, can be concluded.

This suggests that there is a significant difference between individual investors' level of actual risk tolerance and annual income ($p = 0.030 < 0.05$).

5.6.3 Individual investors' phase in the investor lifecycle

In order to achieve the third empirical objective and test for hypotheses relating to individual investors' phase in the investor lifecycle, cross tabulation with the chi-square test for independence was employed. Firstly, individual investors' phase in the investor lifecycle according to age was determined. Secondly, individual investors' phase in the investor lifecycle according to the category and time period invested in the investment instruments was determined.

With reference to the first section of Section C of the questionnaire (Annexure C), a null-hypothesis had to be stated to determine the statistical significant differences between age and the individual investors' phase in the investor lifecycle. Differences were determined by undertaking a chi-square test for independence whereby the confidence level was set at 95 percent. The following hypotheses were formulated:

Null hypothesis (Ho5): There is no significant difference between the individual investors' phase in the investor lifecycle and age.

Alternative hypothesis (Ha5): There is a significant difference between the individual investors' phase in the investor lifecycle and age.

Table 5-46 reports on the frequencies and percentages for individual investors' phase in the investor lifecycle according to age.

Table 5-46: Cross tabulation for individual investors' phase in the investor lifecycle according to age

Age categories	Frequency (*f*) and percentages (%)	Phase in the investor lifecycle			Total
		Accumulation	Consolidation	Spending and gifting	
16–34	*f*	120	44	7	171
	%	70.2	25.7	4.1	100
35–49	*f*	134	100	9	243
	%	55.1	41.2	3.7	100
50 years and older	*f*	68	147	54	269
	%	25.3	54.6	20.1	100
Total	*f*	322	291	70	683
	%	47.1	42.6	10.2	100

As seen in Table 5-46, according to the first age category between 16 and 34 years, the majority of individual investors (70.2%) are classified into the accumulation phase of the investor lifecycle consisting of 120 out of 171 participants. This is followed by 25.7 percent of the individual investors, 44 out of 171 participants, being classified into the consolidation phase of the investor lifecycle. However, only 4.1 percent of the individual investors, 7 out of 171 participants, are classified into the spending and gifting phase of the investor lifecycle.

As indicated in Table 5-46, according to the second age category between 35 and 49 years, the majority of individual investors are classified into the accumulation phase of the investor lifecycle. Out of the total 243 participants in this age category, 134 participants representing 55.1 percent of the sample are classified into the accumulation phase of the investor lifecycle. Subsequently, according to this age category, 41.2 percent of the individual investors, 100 out of 243 participants, are classified into the consolidation phase of the investor lifecycle. The minority of individual investors (3.7%), 9 out of 243 participants, are classified into the spending and gifting phase of the investor lifecycle according to this age category.

Table 5-46 shows that 54.6 percent of the individual investors, representing 147 out of 269 participants, that are 50 years and older are classified into the consolidation phase of the investor lifecycle. Subsequently, 25.3 percent of the individual investors, 68 out of 269 participants according to this age category are classified into the accumulation phase of the investor lifecycle. The minority of individual investors (20.1%) in the age category 50 years

and older, 54 out of 243 participants, are classified into the spending and gifting phase of the investor lifecycle.

Table 5-47 reports on the results obtained relating to the statistical differences between the individual investors' phase in the investor lifecycle and age.

Table 5-47: Individual investors phase in the investor lifecycle according to age

Pearson Chi-Square test		
Value	**df**	**Sig.**
112.338	4	.000*
*Significant at p<0.05 level		

As shown in Table 5-47, there is a statistical significant difference between the individual investors' phase in the investor lifecycle and age ($p < 0.05$). As a result, the null hypothesis, Ho5, can be rejected and the alternative hypothesis, Ha5, can be concluded. This suggests that there is a significant difference between individual investors' phase in the investor lifecycle and age ($p = 0.000 < 0.05$).

With reference to Section B and the first part of Section C of the questionnaire (Annexure C), a null-hypothesis had to be stated to determine individual investors' phase in the investor lifecycle according to the category and time period invested in investment instruments. Differences were determined by undertaking a chi-square test for independence whereby the confidence level was set at 95 percent. The hypotheses were formulated as follows:

Null hypothesis (Ho6): There is no significant difference between individual investors' phase in the investor lifecycle, investment instrument category and time period invested in the investment instrument category.

Alternative hypothesis (Ha6): There is a significant difference between individual investors' phase in the investor lifecycle, investment instrument category and time period invested in the investment instrument category.

Table 5-48 represents the frequencies and percentages for individual investors' phase in the investor lifecycle according to the category and time period invested in investment instruments.

Table 5-48: Cross tabulation of investment instruments and the investor lifecycle phase

Investment instruments	Time period		Phase in the investor lifecycle			Total
			Accumulation Phase	Consolidation Phase	Spending & Gifting Phase	
Low-risk investment instruments	Short-term	*f*	78	38	5	121
		%	64.5	31.4	4.1	100.0
	Medium-term	*f*	30	23	7	60
		%	50.0	38.3	11.7	100.0
	Long-term	*f*	52	66	23	141
		%	36.9	46.8	16.3	100.0
	Total	*f*	160	127	35	322
		%	49.7	39.4	10.9	100.0
Low- to medium risk investment instruments	Short-term	*f*	5	3	0	8
		%	62.5	37.5	0.0	100.0
	Medium-term	*f*	4	3	1	8
		%	50.0	37.5	12.5	100.0
	Long-term	*f*	8	8	5	21
		%	38.1	38.1	23.8	100.0
	Total	*f*	17	14	6	37
		%	45.9	37.8	16.2	100.0
Medium- to high-risk investment instruments	Short-term	*f*	8	3	0	11
		%	72.7	27.3	0.0	100.0
	Medium-term	*f*	3	4	0	7
		%	42.9	57.1	0.0	100.0
	Long-term	*f*	3	8	2	13
		%	23.1	61.5	15.4	100.0
	Total	*f*	14	15	2	31
		%	45.2	48.4	6.5	100.0
Total	Short-term	*f*	91	44	5	140
		%	65.0	31.4	3.6	100.0
	Medium-term	*f*	37	30	8	75
		%	49.3	40.0	10.7	100.0
	Long-term	*f*	63	82	30	175
		%	36.0	46.9	17.1	100.0
	Total	*f*	191	156	43	390
		%	49.0	40.0	11.0	100.0

As indicated in Table 5-48, investment instruments are categorised as low-risk, low- to medium risk and medium- to high-risk investment instruments whereby time period is categorised into short-, medium- and long-term. As shown in Table 5-48, the majority of participants that have invested in low-risk investment instruments over the short-term are categorised in the accumulation phase. Out of 121 participants, 78 participants are

categorised in this category representing 64.5 percent of the sample. The majority of participants that have invested in low-risk investment instruments over the medium-term are also categorised in the accumulation phase. Out of 60 participants, 30 participants are categorised in this category representing 50.0 percent of the sample. The majority of participants that have invested in low-risk investment instruments over the long-term are categorised in the consolidation phase. Out of 141 participants, 66 participants are categorised in this category representing 46.8 percent of the sample. Out of the total 322 participants that have invested in low-risk investment instruments, the majority of participants, 160 participants, are categorised in the accumulation phase representing 49.7 percent of the sample.

As seen in Table 5-48, the majority of participants that have invested in low- to medium risk investment instruments over the short-term are categorised in the accumulation phase. Out of 8 participants, 5 participants are categorised in this category representing 62.5 percent of the sample. The majority of participants that have invested in low- to medium risk investment instruments over the medium-term are also categorised in the accumulation phase. Out of 8 participants, 4 participants are categorised in this category representing 50.0 percent of the sample. The majority of participants that have invested in low- to medium risk investment instruments over the long-term are categorised in the accumulation and consolidation phase whereby each represents 38.1 percent of the sample. Out of 21 participants, 8 participants are categorised in the accumulation phase in this category. Moreover, 8 out of 21 participants are categorised in the consolidation phase of this category. Out of 21 participants, 5 participants that have invested in low- to medium risk investment instruments over the long-term are categorised in the spending and gifting phase representing 23.8 percent of the sample. Out of the total 37 participants that have invested in low- to medium risk investment instruments, the majority of participants, 17 participants, are categorised in the accumulation phase representing 45.9 percent of the sample.

With regard to participants that have invested in medium- to high-risk investment instruments, Table 5-48 shows that the majority of participants that have invested over the short-term are categorised in the accumulation phase. Out of 11 participants, 8 participants are categorised in this category representing 72.7 percent of the sample. Out of 7 participants, 4 participants that have invested over the medium-term are categorised in the consolidation phase representing 57.1 percent of the sample. Out of 13 participants, 8 participants that have invested over the long-term are categorised in the consolidation phase representing 61.5 percent of the sample. Out of the total 31 participants that have invested in

medium- to high-risk investment instruments, the majority of participants, 15 participants, are categorised in the consolidation phase representing 48.4 percent of the sample.

Table 5-49 reports on the findings relating to the statistical differences between the individual investors' phase in the investor lifecycle, investment instrument category and time period invested in the investment instrument category.

Table 5-49: Significant differences between investment instruments, time period invested in the investment instrument categories and investor lifecycle

Investment instruments	Pearson Chi-Square test		
	Value	df	Sig.
Low-risk investment instruments	22.843	4	.000*
Low- to medium risk investment instruments	2.900	4	.575
Medium- to high-risk investment instruments	7.621	4	.106
Total	30.991	4	.000
*Significant at p<0.05 level			

As shown in Table 5-49, there is a statistical significant difference between low-risk investment instruments, time period invested in the investment instrument category and the investor lifecycle ($p < 0.05$). As a result, the null hypothesis, Ho6, can be rejected and the alternative hypothesis, Ha6, can be concluded. This suggests that there is a significant difference between low-risk investment instruments, time period invested in the investment instrument category and the investor lifecycle ($p = 0.000 < 0.05$).

As represented in Table 5-49, no statistical significant differences were found between low- to medium risk investment instruments, time period invested in the investment instrument category and the investor lifecycle ($p = 0.575 > 0.05$) as well as medium- to high-risk investment instruments, time period invested in the investment instrument category and the investor lifecycle ($p = 0.106 > 0.05$). Therefore, the null hypothesis, Ho6, cannot be rejected at the 5 percent significance level.

5.6.4 Individual investors' subjective risk tolerance at different phases of the investor lifecycle

In order to achieve the fourth empirical objective and test for hypothesis relating to how individual investors subjectively estimate their risk tolerance at different phases of the investor lifecycle, cross tabulation with the chi-square test for independence was employed.

With reference to Section C of the questionnaire (Annexure C), a null-hypothesis had to be stated to determine the statistical significant differences between the SCF and self-report on lifecycle. Differences were determined by undertaking a chi-square test for independence whereby the confidence level was set at 95 percent. The following hypotheses were formulated:

Null hypothesis (Ho7): There is no significant difference between individual investors' subjective risk tolerance and phase in the investor lifecycle.

Alternative hypothesis (Ha7): There is a significant difference between individual investors' subjective risk tolerance and phase in the investor lifecycle.

Table 5-50 reports on the frequencies and percentages of individual investors' subjective risk tolerance at different phases of the investor lifecycle.

Table 5-50: Cross tabulation of the SCF at different phases of the investor lifecycle

SCF	Frequency (*f*) and percentages (%)	Phase in the investor lifecycle			Total
		Accumulation	Consolidation	Spending and gifting	
Take substantial financial risks expecting to earn substantial returns	*f*	37	23	4	64
	%	57.8	35.9	6.3	100
Take above-average financial risks expecting to earn above-average returns	*f*	93	64	14	171
	%	54.4	37.4	8.2	100
Take average financial risks expecting to earn average returns	*f*	123	150	31	304
	%	40.5	49.3	10.2	100
Not willing to take any financial risks	*f*	69	54	21	144
	%	47.9	37.5	14.6	100
Total	*f*	322	29	70	683
	%	47.1	42.6	10.2	100

As indicated in Table 5-50, the majority of individual investors that are willing to take substantial financial risks expecting to earn substantial returns are categorised in the

accumulation phase. Out of 64 participants, 37 participants are categorised in this category representing 57.8 percent of the sample. This is followed by 23 out of 64 participants that are willing to take substantial financial risks expecting to earn substantial returns representing 35.9 percent of the sample, are categorised in the consolidation phase. Only 6.3 percent of the sample, 4 out of 64 participants, that are willing to take substantial financial risks expecting to earn substantial returns are categorised in the spending and gifting phase.

As shown in Table 5-50, the majority of individual investors that are willing to take above-average financial risks expecting to earn above-average returns are categorised in the accumulation phase. Out of 171 participants, 93 participants are categorised in this category representing 54.4 percent of the sample. This is followed by 64 out of 171 participants that are willing to take above-average financial risks expecting to earn above-average returns representing 37.4 percent of the sample, are categorised in the consolidation phase. Only 8.2 percent of the sample, 14 out of 171 participants, that are willing to take above-average financial risks expecting to earn above-average returns are categorised in the spending and gifting phase.

The majority of individual investors that are willing to take average financial risks expecting to earn average returns are categorised in the consolidation phase. As shown in Table 5-50, out of 304 participants, 150 participants are categorised in this category representing 49.3 percent of the sample. This is followed by 123 out of 304 participants that are willing to take average financial risks expecting to earn average returns, representing 40.5 percent of the sample, are categorised in the accumulation phase. Only 10.2 percent of the sample, 31 out of 304 participants, that are willing to take average financial risks expecting to earn average returns are categorised in the spending and gifting phase.

The majority of individual investors that are not willing to take any financial risks are categorised in the accumulation phase. As shown in Table 5-50, out of 144 participants, 69 participants are categorised in this category representing 47.9 percent of the sample. This is followed by 54 out of 144 participants that are not willing to take any financial risks representing 37.5 percent of the sample, are categorised in the consolidation phase. Only 14.6 percent of the sample, 21 out of 144 participants, that are not willing to take any financial risks are categorised in the spending and gifting phase.

Table 5-51 reports on the findings relating to the statistical differences between individual investors' subjective risk tolerance and phase in the investor lifecycle.

Table 5-51: Significant differences between SCF and self-report on lifecycle

Pearson Chi-Square test		
Value	**df**	**Sig.**
16.557	6	.011*
*Significant at p<0.05 level		

As shown in Table 5-51, there is a statistical significant difference between the SCF and self-report on lifecycle ($p < 0.05$). As a result, the null hypothesis, Ho7, can be rejected and the alternative hypothesis, Ha7, can be concluded. This suggests that there is a significant difference between individual investors' subjective risk tolerance and phase in the investor lifecycle ($p = 0.011 < 0.05$).

5.7 CORRELATION ANALYSIS

Correlation analysis is a statistical procedure used to determine the strength and direction (positive or negative) of the relationship between two variables (Pallant, 2007:101; Privitera, 2012:473). Pearson correlation coefficient was calculated in order to measure the relationship between individual investors' subjective risk tolerance (measured by means of the SCF), actual risk tolerance (measured by means of the GL-RTS) and the investor lifecycle (self-report on lifecycle). Privitera (2012:473) stated that a positive correlation specifies that as one variable increase, the second variable also increases. On the other hand, a negative correlation specifies that as one variable increases, the second variable decreases. The strength of a relationship is established by calculating Pearson *r* and ranges from -1.0 to +1.0 (Heiman, 2006:150; Pallant, 2007:132; Privitera, 2012:473). A correlation value of 0 indicates that there is no relationship, a correlation value of +1.0 indicates a perfect positive correlation and a correlation value of -1.0 indicates a perfect negative relationship (Heiman, 2006:150; Pallant, 2007:132; Privitera, 2012:473).

Cohen (1988:79) and Pallant (2007:132) provide the following guidelines for evaluating the strength of the relationship:

- r = 0.10 to 0.29 indicates a small strength relationship;
- r = 0.30 to 0.49 indicates a medium strength relationship; and
- r = 0.50 to 1.0 indicates a strong strength relationship.

The fifth and sixth empirical objectives, which are as follows, were achieved by means of conducting correlation analysis:

- Empirical objective five: Determine the relationship between individual investors' risk tolerance and investor lifecycle.

- Empirical objective six: Determine the relationship between individual investors' actual risk tolerance and subjective risk tolerance and how it deviates from theory during different phases of the investor lifecycle.

The following section analyses the potential relationship between individual investors' subjective risk tolerance (measured using SCF), actual risk tolerance (measured using GL-RTS) and the investor lifecycle (self-report on lifecycle) in order to accomplish the empirical objectives. Table 5-52 reports on the results of the correlation matrix.

Table 5-52: Relationship between individual investors' subjective risk tolerance, actual risk tolerance and the investor lifecycle

Scale *N* **= 683**		**Investor lifecycle (Self-report on lifecycle)**	**Subjective risk tolerance (SCF)**	**Actual risk tolerance (GL-RTS)**
Investor lifecycle (Self-report on lifecycle)	Pearson correlation	1	-0.099	-0.103
	Sig. (2-tailed)		0.009*	0.007*
Subjective risk tolerance (SCF)	Pearson correlation	-0.099	1	0.386
	Sig. (2-tailed)	0.009*		0.000*
Actual risk tolerance (GL-RTS)	Pearson correlation	-0.103	0.386	1
	Sig. (2-tailed)	0.007*	0.000*	
*Correlation is significant at the 0.05 level (2-tailed)				

The following hypothesis was formulated to test the relationship between subjective risk tolerance and the investor lifecycle:

Null hypothesis (Ho8): There is no relationship between subjective risk tolerance and the investor lifecycle.

Alternative hypothesis (Ha8): There is a relationship between subjective risk tolerance and the investor lifecycle.

As indicated in Table 5-52, there is a statistically weak, negative relationship between subjective risk tolerance and the investor lifecycle (r = -0.099, p = 0.009 < 0.05). Therefore, for the relationship between individual investors' subjective risk tolerance and investor lifecycle, the null hypothesis, Ho8, can be rejected and the alternative hypothesis, Ha8, can be concluded at the 5 percent significance level.

The following hypothesis was formulated to test the relationship between actual risk tolerance and the investor lifecycle:

Null hypothesis (Ho9): There is no relationship between actual risk tolerance and the investor lifecycle.

Alternative hypothesis (Ha9): There is a relationship between actual risk tolerance and the investor lifecycle.

As shown in Table 5-52, there is a statistically small, negative relationship between actual risk tolerance and the investor lifecycle (r = -0.103, p = 0.007 < 0.05). Therefore, for the relationship between individual investors' actual risk tolerance and investor lifecycle, the null hypothesis, Ho9, can be rejected and the alternative hypothesis, Ha9, can be concluded at the 5 percent significance level. The correlation value of the strength of the relationship between individual investors' actual risk tolerance and investor lifecycle is in the range of 0.10 to 0.29 indicating a small strength relationship between these scales.

The following hypothesis was formulated to test the relationship between subjective risk tolerance and actual risk tolerance:

Null hypothesis (Ho10): There is no relationship between subjective risk tolerance and actual risk tolerance.

Alternative hypothesis (Ha10): There is a relationship between subjective risk tolerance and actual risk tolerance.

As presented in Table 5-52, there is a statistically positive, medium strength relationship between individual investors' subjective risk tolerance and actual risk tolerance (r = 0.386, p = 0.000 < 0.05). Therefore, for the relationship between individual investors' subjective risk tolerance and actual risk tolerance, the null hypothesis, Ho10, can be rejected and the alternative hypothesis, Ha10, can be concluded at the 5 percent significance level. The correlation value of the strength of the relationship between individual investors' subjective risk tolerance and actual risk tolerance is in the range of 0.30 to 0.49 indicating a medium strength relationship between these scales. This indicates that the more positive and greater

individual investors' perception and attitude towards risk is, the greater risk individual investors are likely to tolerate.

5.8 REGRESSION ANALYSIS

As stated by Pallant (2007:166) logistic regression makes provision to predict categorical outcomes with two or more categories. Multinomial logistic regression is employed given that the investor lifecycle, the dependent variable, consists of three categories, namely the accumulation phase, consolidation phase and spending and gifting phase.

In addition to the hypothesis tests that were employed on all six empirical objectives in the aforementioned sections, multinomial logistic regression was also employed on the following three objectives, only, in order to fulfil the successful achievement of these objectives:

- Empirical objective three: Determine individual investors' phase in the investor lifecycle.
- Empirical objective five: Determine the relationship between individual investors' risk tolerance and investor lifecycle.
- Empirical objective six: Determine the relationship between individual investors' actual risk tolerance and subjective risk tolerance and how it deviates from theory during different phases of the investor lifecycle.

The regression model was mainly used to facilitate the achievement of the above-mentioned empirical objectives and to determine if individual investors' age, subjective risk tolerance as well as actual risk tolerance are significant to predict the probability of individual investors being categorised into one of the three phases in the investor lifecycle. Table 5-53 reports on the results of the multinomial logistic regression model.

Table 5-53: Multinomial logistic regression results

Individual investors' phase in the investor lifecycle		Beta	Std. error	Wald	df	Sig.	Exp(B)	95% Confidence interval for Exp(B)	
								Lower bound	Upper bound
Accumulation phase	Intercept	0,282	0,610	0,214	1	0,644			
	16–34 years of age	2,585	0,435	35,285	1	0,000*	13,263	5,652	31,120
	35–49 years of age	2,430	0,393	38,202	1	0,000*	11,360	5,257	24,550
	50 years and older (Ref group)	0[b]			0				
	Not willing to take any financial risks	-0,472	0,640	0,544	1	0,461	0,624	0,178	2,187
	Take average financial risks – earn average returns	-0,458	0,607	0,568	1	0,451	0,633	0,193	2,079
	Take above-average financial risks – earn above-average returns	-0,125	0,631	0,039	1	0,843	0,882	0,256	3,041
	Take substantial financial risks – earn substantial returns (Ref group)	0[b]			0				
	Conservative – low-risk tolerant	0,053	0,408	0,017	1	0,897	1,054	0,474	2,345
	Moderate – medium-risk tolerant	0,825	0,417	3,920	1	0,048**	2,283	1,008	5,167
	Aggressive – high-risk tolerant (Ref group)	0[b]			0				

Individual investors' phase in the investor lifecycle		Beta	Std. error	Wald	df	Sig.	Exp(B)	95% Confidence interval for Exp(B)	
								Lower bound	Upper bound
Consolidation phase	Intercept	0,590	0,609	0,939	1	0,333			
	16–34 years of age	0,800	0,442	3,275	1	0,070***	2,226	0,936	5,297
	35–49 years of age	1,438	0,387	13,795	1	0,000*	4,212	1,972	8,997
	50 years and older (Ref group)	0[b]			0				
	Not willing to take any financial risks	-0,767	0,638	1,449	1	0,229	0,464	0,133	1,620
	Take average financial risks – earn average returns	-0,129	0,604	0,046	1	0,831	0,879	0,269	2,872
	Take above-average financial risks – earn above-average returns	-0,158	0,632	0,062	1	0,803	0,854	0,247	2,947
	Take substantial financial risks – earn substantial returns (Ref group)	0[b]			0				
	Conservative – low-risk tolerant	0,688	0,402	2,932	1	0,087***	1,989	0,905	4,370
	Moderate – medium-risk tolerant	1,045	0,415	6,354	1	0,012**	2,843	1,262	6,407
	Aggressive – high-risk tolerant (Ref group)	0[b]			0				
a. The reference category is: Spending and gifting phase.									
b. This parameter is set to zero because it is redundant.									
-2 Log Likelihood 207.212		P-value 0.000							

Goodness-of-fit		
Pearson 52.259	Df = 56	P-value = 0.617
Deviance 57.568	Df = 56	P-Value= 0.417
Pseudo R-Square		
Cox and Snell	0,186	
Nagelkerke	0,219	
McFadden	0,108	
*Significant at the 0.01 level; ** Significant at the 0.05 level; ***Significant at the 0.10 level		

With reference to the goodness-of-fit-test in Table 5-53, the model passed the goodness-of-fit test as the p-values for both the Pearson chi-square (p=0.617) and deviance (p= 0.417) are greater than the 5 percent significance level. As the p-values are high and greater than the 5 percent significance level, the model passes the goodness-of-fit test (Pallant, 2007:174; Allison, 2014:4). With regard to the Pseudo R-square the following methods, namely Cox and Snell, Nagelkerke and McFadden was used to approximate the coefficient of determination. These Pseudo R-square methods give an indication of the degree of variation in the dependent variable explained by the model from a minimum value of 0 to a maximum value of 1 (Pallant, 2007:174). As seen in Table 5-53, the model coefficients explained between 10.8 percent (McFadden R-square), 18.6 percent (Cox and Snell R-square) and 21.9 percent (Nagelkerke R-square) of the variation in individual investors' phase in the investor lifecycle.

As indicated in Table 5-53, the spending and gifting phase in the investor lifecycle is the main reference category. Theoretically, individuals in the spending and gifting phase of the investor lifecycle are those who have reached retirement age (Marx, 2009:267).

According to Goodall (2005:3); Reilly and Brown (2012:33), as well as Harty (2014:1), age plays an important role to determine individual investors' phase in the investor lifecycle. In accordance with the third empirical objective, Table 5-53 indicates a difference between individual investors' phase in the investor lifecycle among the three age categories. The age category, 50 years and older, is the reference group. It can be seen in Table 5-53, given the large positive coefficient (2.585) that individual investors between the ages of 16 and 34 years are more likely to be in the accumulation phase of the investor lifecycle than in the spending and gifting phase compared to individual investors 50 years and older. The p-value for individual investors between the ages of 16 and 34 years is 0.000 which is significant at the 1 percent significance level. This indicates that there is a significant difference between individual investors' phase in the investor lifecycle given their age. Given the odds ratio (13.263) the confidence interval ranges from 5.652 to 31.120. Therefore, although the odds ratio is 13.263, there is 95 percent confidence that the actual value of the odds ratio in the sample lies between 5.652 and 31.120. Taking into account the age category 35–49 years, Table 5-53 shows that these individual investors are more likely to be in the accumulation phase of the investor lifecycle than in the spending and gifting phase compared to individual investors 50 years and older as a result of the large positive coefficient (2.430). The p-value of 0.000 is significant at the 1 percent significant level which indicates a significant difference in individual investors' phase in the investor lifecycle given their age. Given the odds ratio (11.360) there is 95 percent confidence that the actual value of the odds ratio in the sample lies between 5.257 and 24.550. It can be concluded from the above-mentioned findings that there is a relationship between the accumulation phase and age categories. In addition, the above-mentioned findings are in line with the investor lifecycle theory as individuals in their early to middle

years of their working careers are considered to be in the accumulation phase of the investor lifecycle (Reilly & Brown, 2012:33).

With reference to the consolidation phase in the investor lifecycle, theoretically, individuals in the consolidation phase of the investor lifecycle are past the midpoint of their working careers (Marx, 2009:267; Reilly & Brown, 2012:34). In addition, Table 5-53 indicates that given the positive coefficient (0.800) and odds ratio (2.226-1), individual investors between the ages of 16 and 34 years are 122.6 percent more likely to be in the consolidation phase of the investor lifecycle than in the spending and gifting phase compared to individual investors 50 years and older. The p-value of 0.070 is significant at the 10 percent significance level. Given the odds ratio (2.226) the confidence interval ranges from 0.936 to 5.297. Therefore, although the odds ratio is 2.226, there is 95 percent confidence that the actual value of the odds ratio in the sample lies between 0.936 and 5.297. For individual investors between 35 and 49 years, a large positive coefficient (1.438) with an odds ratio (4.212-1) indicates that these individual investors are 321.2 percent more likely to be in the consolidation phase of the investor lifecycle than in the spending and gifting phase compared to individual investors 50 years and older. The p-value of 0.000 is significant at the 1 percent significant level which indicates a significant difference in individual investors' phase in the investor lifecycle given their age. Given the odds ratio (4.212) there is 95 percent confidence that the actual value of the odds ratio in the sample lies between 1.972 and 8.997. It can be concluded from the above-mentioned findings that there is a relationship between the consolidation phase and age categories. In addition, the above-mentioned findings are in line with the investor lifecycle theory, especially with regard to the age category, 35–49 years, as these individuals are past the midpoint of their working careers and are theoretically considered to be in the consolidation phase and not in the spending and gifting phase of the investor lifecycle. Ultimately, it can be concluded that there is a significant difference between individual investors' phase in the investor lifecycle given their age. These results are similar to the Pearson Chi-Square test for independence in Table 5-47.

With reference to the fifth and sixth empirical objective, these objectives are relatively allied with each other in the sense that the relationship and significance between individual investors' subjective risk tolerance, actual risk tolerance and phase in the investor lifecycle needed to be determined. In addition, individual investors' actual risk tolerance and subjective risk tolerance at different phases of the investor lifecycle and how it deviates from theory also needed to be determined by means of regression analysis. Theoretically, aggressive individual investors are willing to tolerate a high degree of risk in order to earn high returns and are considered to be in the accumulation phase of the investor lifecycle (Tools for Money, 2014:1). While, moderate investors are willing to tolerate moderate levels of risk in order to earn moderate returns and are considered to be in the accumulation or consolidation phase of the investor lifecycle (Poole, 2014:1; Sanlam, 2014:2). However, conservative individual investors are willing to tolerate low risk, or unable to

tolerate any risk, and as a result are willing to accept lower returns and are considered to be in the spending and gifting phase of the investor lifecycle (AMP, 2014:1; Sanlam, 2014:2).

As illustrated in Table 5-53, with reference to individual investors' subjective risk tolerance, individual investors' willingness to take substantial financial risks expecting to earn substantial returns was entered as the reference group. Given the negative coefficient (-0.472) and odds ratio (0.624-1), individual investors who are not willing to take any financial risks are 37.6 percent less likely to be in the accumulation phase and more likely to be in the spending and gifting phase of the investor lifecycle compared to individual investors who are willing to take substantial financial risks expecting to earn substantial returns. However, the p-value of 0.461 indicates a non-significant influence on individual investors' phase in the investor lifecycle. Given the odds ratio (0.624) the confidence interval ranges from 0.178 to 2.187. Therefore, although the odds ratio is 0.624, there is 95 percent confidence that the actual value of the odds ratio in the sample lies between 0.178 and 2.187. This is in line with theory as individuals who are not willing to tolerate any financial risk is considered to be in the spending and gifting phase of the investor lifecycle.

Furthermore, Table 5-53 indicates that individual investors who are willing to take average financial risks expecting to earn average returns are 36.7 percent less likely to be in the accumulation phase and more likely to be in the spending and gifting phase of the investor lifecycle, given the negative coefficient (-0.458) and odds ratio (0.633-1), compared to individual investors who are willing to take substantial financial risks expecting to earn substantial returns. The p-value of 0.451 indicates a non-significant influence on individual investors' phase in the investor lifecycle. Given the odds ratio (0.633) the confidence interval ranges from 0.193 to 2.079. Consequently, although the odds ratio is 0.633, there is 95 percent confidence that the actual value of the odds ratio in the sample lies between 0.193 and 2.079. However, theoretically, individual investors that are willing to take average financial risks expecting to earn average returns should be in the accumulation or consolidation phase.

Compared to individual investors who are willing to take substantial financial risks expecting to earn substantial returns, Table 5-53 indicates that given the negative coefficient (-0.125) and odds ratio (0.882-1), individual investors who are willing to take above-average financial risks expecting to earn above-average returns are 11.8 percent less likely to be in the accumulation phase and more likely to be in the spending and gifting phase of the investor lifecycle. However, the p-value of 0.843 indicates a non-significant influence on individual investors' phase in the investor lifecycle. Given the odds ratio (0.882) the confidence interval ranges from 0.256 to 3.041. Therefore, although the odds ratio is 0.882, there is 95 percent confidence that the actual value of the odds ratio in the sample lies between 0.256 and 3.041. However, theoretically, individual investors who

are willing to take above-average financial risks expecting to earn above-average returns should be in the accumulation phase.

As represented in Table 5-53, individual investors who are not willing to take any financial risks are 53.6 percent less likely to be in the consolidation phase, given the negative coefficient (-0.767) and odds ratio (0.464-1), and more likely to be in the spending and gifting phase of the investor lifecycle compared to individual investors who are willing to take substantial financial risks expecting to earn substantial returns. This is in line with theory as individuals who are not willing to tolerate any financial risk is considered to be in the spending and gifting phase of the investor lifecycle. However, the p-value of 0.229 indicates no significant influence on individual investors' phase in the investor lifecycle. Given the odds ratio (0.464) the confidence interval ranges from 0.133 to 1.620. As a result, although the odds ratio is 0.464, there is 95 percent confidence that the actual value of the odds ratio in the sample lies between 0.133 and 1.620.

Furthermore, as seen in Table 5-53, individual investors who are willing to take average financial risks expecting to earn average returns are 12.1 percent less likely to be in the consolidation phase and more likely to be in the spending and gifting phase of the investor lifecycle, given the negative coefficient (-0.129) and odds ratio (0.879-1), compared to individual investors who are willing to take substantial financial risks expecting to earn substantial returns. Conversely, theoretically, individual investors who are willing to take average financial risks expecting to earn average returns should be in the accumulation or consolidation phase. The p-value of 0.831 indicates a non-significant influence on individual investors' phase in the investor lifecycle. Given the odds ratio (0.879) the confidence interval ranges from 0.269 to 2.872. Consequently, although the odds ratio is 0.879, there is 95 percent confidence that the actual value of the odds ratio in the sample lies between 0.269 and 2.872.

It is depicted in Table 5-53, given the negative coefficient (-0.158) and odds ratio (0.854-1), that individual investors who are willing to take above-average financial risks expecting to earn above-average returns are 14.6 percent less likely to be in the consolidation phase and more likely to be in the spending and gifting phase of the investor lifecycle compared to individual investors who are willing to take substantial financial risks expecting to earn substantial returns. However, theoretically, individual investors who are willing to take above-average financial risks expecting to earn above-average returns should be in the accumulation phase. The p-value of 0.803 indicates a non-significant influence on individual investors' phase in the investor lifecycle. Given the odds ratio (0.854) the confidence interval ranges from 0.247 to 2.947. Therefore, although the odds ratio is 0.854, there is 95 percent confidence that the actual value of the odds ratio in the sample lies between 0.247 and 2.947.

Considering individual investors' actual risk tolerance, aggressive – high-risk tolerant was entered as the reference group, as indicated in Table 5-53. Given the positive coefficient (0.053) and odds ratio (1.054-1), conservative individual investors who are willing to tolerate low levels of risk are 5.4 percent more likely to be in the accumulation phase and less likely to be in the spending and gifting phase compared to aggressive individual investors who are willing to tolerate high levels of risk. However, this is in contrast with theory as conservative individual investors are theoretically considered to be in the spending and gifting phase of the investor lifecycle and aggressive investors in the accumulation phase of the investor lifecycle. However, the p-value of 0.897 indicates no significant influence on individual investors' phase in the investor lifecycle. Given the odds ratio (1.054) the confidence interval ranges from 0.474 to 2.345. For that reason, although the odds ratio is 1.054, there is 95 percent confidence that the actual value of the odds ratio in the sample lies between 0.474 and 2.345.

Table 5-53 further illustrates that given the positive coefficient (0.825) and odds ratio (2.283-1), moderate individual investors who are willing to tolerate moderate levels of risk are 128.3 percent more likely to be in the accumulation phase and less likely to be in the spending and gifting phase compared to aggressive individual investors who are willing to tolerate high levels of risk. This is in line with theory as moderate investors are theoretically considered to be in the accumulation or consolidation phase of the investor lifecycle. The p-value for moderate individual investors is 0.048, which is significant at the 5 percent significance level. This indicates that there is a significant difference between moderate individual investors' level of risk tolerance and phase in the investor lifecycle. Given the odds ratio (2.283) the confidence interval ranges from 1.008 to 5.167. As a result, even though the odds ratio is 2.283, there is 95 percent confidence that the actual value of the odds ratio in the sample lies between 1.008 and 5.167.

Lastly, Table 5-53 demonstrates that conservative individual investors who are willing to tolerate low levels of risk are 98.9 percent more likely to be in the consolidation phase given the positive coefficient (0.688) and odds ratio (1.989-1) and less likely to be in the spending and gifting phase compared to aggressive individual investors who are willing to tolerate high levels of risk. However, theoretically conservative individual investors are considered to be in the spending and gifting phase of the investor lifecycle. The p-value of 0.087 is significant at the 10 percent significance level. This indicates that there is a significant difference between conservative individual investors' level of risk tolerance and phase in the investor lifecycle. Given the odds ratio (1.989) the confidence interval ranges from 0.905 to 4.370. Consequently, although the odds ratio is 1.989, there is 95 percent confidence that the actual value of the odds ratio in the sample lies between 0.905 and 4.370.

In addition, Table 5-53 shows that compared to aggressive individual investors who are willing to tolerate high levels of risk, given the positive coefficient (1.045) and odds ratio (2.843-1) that moderate individual investors who are willing to tolerate moderate levels of risk are 184.3 percent more likely to be in the consolidation phase and less likely to be in the spending and gifting phase. This is in line with theory as moderate investors are theoretically considered to be in the accumulation or consolidation phase of the investor lifecycle. The p-value of 0.012 is significant at the 5 percent significance level. This indicates that there is a significant difference between moderate individual investors' level of risk tolerance and phase in the investor lifecycle. Given the odds ratio (2.843) the confidence interval ranges from 1.262 to 6.407. As a result, even though the odds ratio is 2.843, there is 95 percent confidence that the actual value of the odds ratio in the sample lies between 1.262 and 6.407.

It can be concluded from the above-mentioned findings that age is significant to predict the probability of individual investors being categorised into one of the three phases in the investor lifecycle. Individual investors between the ages of 16 and 34 years and 35 and 49 years are more likely to be in the accumulation and consolidation phase of the investor lifecycle than in the spending and gifting phase compared to individual investors 50 years and older.

With reference to individual investors' subjective risk tolerance, it can be concluded that individual investors who are not willing to take any financial risks are less likely to be in the accumulation and consolidation phase and more likely to be in the spending and gifting phase of the investor lifecycle compared to individual investors who are willing to take substantial financial risks expecting to earn substantial returns. This in accordance with theory as individuals who are not willing to tolerate any financial risk is considered to be in the spending and gifting phase of the investor lifecycle.

Individual investors who are willing to take average financial risks expecting to earn average returns are less likely to be in the accumulation and consolidation phase and more likely to be in the spending and gifting phase of the investor lifecycle compared to individual investors who are willing to take substantial financial risks expecting to earn substantial returns. This is in contrast to theory as individual investors who are willing to take average financial risks expecting to earn average returns should be in the accumulation or consolidation phase.

Individual investors who are willing to take above-average financial risks expecting to earn above-average returns are less likely to be in the accumulation and consolidation phase and more likely to be in the spending and gifting phase of the investor lifecycle, compared to individual investors who are willing to take substantial financial risks expecting to earn substantial returns. This is in contrast to theory as individual investors who are willing to take above-average financial risks expecting to earn above-average returns should be in the accumulation phase.

However, with reference to individual investors' actual risk tolerance it can be concluded that conservative individual investors who are willing to tolerate low levels of risk are more likely to be in the accumulation and consolidation phase and less likely to be in the spending and gifting phase compared to aggressive individual investors who are willing to tolerate high levels of risk. However, this is in contrast to theory as conservative individual investors are theoretically considered to be in the spending and gifting phase of the investor lifecycle.

It can also be concluded that moderate individual investors who are willing to tolerate moderate levels of risk are more likely to be in the accumulation and consolidation phase and less likely to be in the spending and gifting phase compared to aggressive individual investors who are willing to tolerate high levels of risk. This is in line with theory as moderate investors are theoretically considered to be in the accumulation or consolidation phase of the investor lifecycle.

5.9 SYNOPSIS

Chapter 5 presented the results gathered from the empirical portion of this study and consisted of nine sections. Section 5.2 entails the data-gathering process followed by Section 5.3 that comprises the coding of the questionnaire. Section 5.3 presented the demographical information of this study followed by Section 5.4 that presented the descriptive statistics of the category and time period invested in investment instruments, the investor lifecycle, SCF and GL-RTS. It can be concluded from this section that the majority of the sample is in the accumulation phase of the investor lifecycle and is moderate individual investors that tolerate moderate (medium) levels of risk. Section 5.6 reported on the hypothesis testing that included ANOVA and cross tabulation with the chi-Square tests for independence. This was followed by Section 5.7 that consisted of correlation analysis with the aim to determine the relationships as well as strength and direction of the relationships between individual investors' subjective risk tolerance (SCF), actual risk tolerance (GL-RTS) as well as the investor lifecycle (self-report on lifecycle), respectively. The last section, Section 5.8, reported on the regression analysis that was employed to determine if individual investors' age is significant to predict the probability of individual investors being categorised into one of the three phases in the investor lifecycle. In addition to the correlation analysis, the regression analysis was also employed to determine individual investors' actual risk tolerance and subjective risk tolerance at different phases of the investor lifecycle and how it deviates from theory.

In the following chapter, Chapter 6, the summary and findings of this study as per empirical objectives as well as recommendations, limitations and avenues for further research are provided. Furthermore, the final synopsis regarding this study is provided.

CHAPTER 6: CONCLUSION AND RECOMMENDATIONS

"In theory there's no difference between theory and practise, but in practise there is."

– Yogi Berra –

6.1 SUMMARY

It is evident from this study that the role of South African financial planners are becoming more important as most individuals require the assistance of financial planners to facilitate them with their financial and investment planning. The general norm that exists in economic and financial theories is that individual investors behave rationally when making investment decisions. Individual investors are also considered to be rational wealth-maximisers who make decisions to capitalise on available opportunities. Consequently, financial planners and financial institutions in South Africa assume that individual investors behave rationally when making investment decisions. This is by reason of that risk tolerance is measured by means of risk assessment forms that incorporate risk tolerance and risk personalities. However, these forms are not comprehensive enough to take into consideration what market risk individual investors cannot tolerate. Moreover, in reality, the level of risk tolerance individual investors are willing to take differs from theory and mainly depends on their personal traits and attitudes towards risk. The difficulties that financial planners, financial institutions as well as individual investors face to recognise and implement suitable investment strategies often take on preferences that relate to how individual investors recognise risk and behave towards risk.

For that reason, this study provided a thorough analysis of risk tolerance during the investor lifecycle within the South African context. The theoretical objectives provided an in-depth analysis of the risk tolerance and investment decisions of individual investors and assisted with the achievement of the empirical objectives of this research study. Chapter 2 provided an analysis on the theory of risk tolerance. The literature review by defining and explaining risk tolerance as well as the relationship between risk and return was explained. An overview of previous studies conducted on risk tolerance was provided and the factors influencing individual investors' risk tolerance pertaining to demographical factors were analysed. It is evident that individual investors' ability to tolerate risk is a significant factor that needs to be taken into consideration when planning individual investors' investment strategies.

Chapter 3 examined the theoretical aspects relating to individual investors' investment decisions in order to provide an understanding of what needs to be taken into consideration by individual investors when making investment decisions. The investor lifecycle theory, individual investors' objectives and constraints, the five risk tolerance categories (risk profiles) as well as the traditional

and non-traditional asset classes in South Africa were explained. It is of great importance that individual investors recognise their position in the investor lifecycle as it is an essential element in the management of an effective investment portfolio. In addition, individual investors' asset allocation decisions vary at different phases of the investor lifecycle. Chapter 4 highlighted and explained the research design and methodology employed for the empirical portion of the study. This study consisted of a descriptive quantitative research approach whereby a positivist research paradigm was applied. Furthermore, a convenience sampling frame was applied to this study with the intent to reach the required sample. Chapter 5 presented the results and findings of the empirical portion of this research study. The results and findings as per empirical objectives were conferred.

This chapter provides a final synopsis of this study. An overview of the study followed by the main findings and conclusions drawn from this study is provided. Results obtained and conclusions drawn as per objectives of the study are summarised. Subsequent recommendations with regard to avenues for further study are provided based on the main findings and outcomes of this study. Together with an overview of the contributions made to the field of study, some of the limitations encountered in this study are also highlighted.

The following section, Section 6.2, provides and explains the main findings of this study as per empirical objectives.

6.2 FINDINGS

The primary objective of this study was to analyse risk tolerance during the investor lifecycle. The accomplishment of the following empirical objectives attributed to the fulfilment of the primary objective and successful findings of this study.

6.2.1 Empirical objective one: Demographic factors that influence individual investors' risk tolerance when making investment decisions

The first empirical objective to be achieved was to determine the demographical factors that influence individual investors' risk tolerance when making investment decisions. The effect of demographical factors on subjective and actual risk tolerance was determined. ANOVA was employed to test the hypothesis relating to the demographical factors that influence risk tolerance. Null-hypotheses were stated to determine the statistical difference between age, gender, ethnicity, marital status, home language and annual income for subjective risk tolerance as well as objective (actual) risk tolerance, respectively.

With regard to the influence of age on risk tolerance, a statistical significant difference was found between individual investors' subjective risk tolerance and age. Individual investors between the ages of 16 and 34 years are willing to tolerate the most risk followed by individual investors between the ages of 35 and 49 years. However, individual investors that are 50 years and older are the least risk tolerant. It can be concluded that individual investors' perception and attitudes towards risk indicates that younger individuals are more risk tolerant than older individuals and is similar to theory and the findings of previous studies. It is evident that no statistical significant differences were found between age categories and risk tolerance and age categories and risk tolerance's subsections, namely financial risk, speculative risk and investment risk, respectively.

In terms of gender and risk tolerance, a statistical significant difference was found between individual investors' subjective risk tolerance and gender. Individual investors' perceptions and attitudes towards risk indicate that males are more risk tolerant than females. In addition, a statistical significant difference was found between gender and the financial risk tolerance section. The findings indicated that males are regarded to be more financial risk tolerant than females. Both these findings are in line with theory and previous studies. However, no statistical significant differences were found between gender and risk tolerance, gender and the speculative risk section and gender and the investment risk section.

In terms of ethnicity and risk tolerance, a statistical significant difference was found between individual investors' subjective risk tolerance and ethnicity. Individual investors' perceptions and attitudes towards risk indicate that African participants are regarded the most risk tolerant followed by Asian participants, White participants and Coloured participants. However, this is in contrast with previous studies that found individual investors' perceptions and attitudes towards risk indicated that White participants are more risk tolerant than non-white participants. This can be attributed towards the reason that the context in which subjective risk tolerance was measured can possibly be different than the context of previous research studies on risk tolerance. This study focused on the South African context consisting of South African individual investors. Moreover, statistical significant differences were found between risk tolerance and ethnicity, the speculative risk section and ethnicity as well as the investment risk section and ethnicity. It can be concluded that African participants were found to be more risk tolerant than Coloured participants, White participants and Asian participants. These findings correspond with previous studies that found non-white participants to be more risk tolerant than White participants. However, no statistical significant difference was found between ethnicity and the financial risk section.

In terms of marital status and risk tolerance, a statistical significant difference was found between individual investors' subjective risk tolerance and marital status. Individual investors' perceptions and attitudes towards risk indicated that single participants are more risk tolerant than married

participants and participants that were previously married. These findings are in line with the general consensus and findings of other researchers that made use of subjective measures of risk tolerance. However, no statistical significant differences were found between marital status and risk tolerance and marital status and risk tolerance's subsections, namely financial risk, speculative risk and investment risk, respectively.

In terms of annual income and risk tolerance, a statistical significant difference was found between individual investors' subjective risk tolerance and annual income. Individual investors' perceptions and attitudes towards risk indicate that the more income individuals earn per annum, the more willing they are to tolerate higher levels of risk. Additionally, a statistical significant difference was found between the financial risk section and annual income. It is evident that individual investors that earn higher levels of income consist of higher financial risk tolerance levels. These findings are in line with previous research studies that found individuals that consist of higher income levels are likely to consist of higher risk tolerance levels compared to individuals with lower levels of income. However, no statistical significant differences were found between annual income and risk tolerance, annual income and the speculative risk section and annual income and the investment risk section.

In this study, the lack of significant differences between certain demographical factors and risk tolerance may be due to the fact that the context in which risk tolerance was measured may be different than the context of previous research studies on risk tolerance. In this study, risk tolerance and its subsections were measured in the South African context consisting of South African individual investors.

6.2.2 Empirical objective two: Individual investors' level of risk tolerance

The second empirical objective of this study was to determine individual investors' level of risk tolerance. Individual investors' level of subjective risk tolerance as well as level of actual risk tolerance was determined. Individual investors' level of subjective risk tolerance, measured using the SCF, was divided into two categories, namely low-risk tolerance and high-risk tolerance. It can be concluded that more than half of the sample are individual investors who are willing to tolerate low levels of risk. Furthermore, individual investors actual risk tolerance, measured using the GL-RTS, and it's subsections, namely financial risk section, speculative risk section and investment risk section was divided into three categories. These categories are conservative (low-risk tolerant), moderate (medium-risk tolerant) and aggressive (high-risk tolerant). The sample of individual investors for the GL-RTS and the financial risk section, speculative risk section and investment risk section were found to be moderate individual investors that tolerate medium levels of risk. The minority of the sample were found to be aggressive individual investors who tolerate

high levels of risk for the GL-RTS and financial risk section and speculative risk section. However, with regard to the investment risk section the minority of the sample are conservative individual investors who tolerate low levels of investment risk. It can be concluded that the overall level of risk tolerance for the sample are moderate individual investors who tolerate medium levels of risk. Interestingly, according to the sample of this study, individual investors' perceptions and attitudes towards risk indicated that they are conservative individual investors who are willing to tolerate low levels of risk. However, in reality, individual investors' actual level of risk tolerance indicated that they are found to be moderate individual investors that tolerate medium levels of risk.

In addition, individual investors' level of subjective risk tolerance and actual risk tolerance were also determined according to two main factors, namely age and annual income by means of cross tabulation with the chi-square test for independence. Null-hypotheses were stated in order to determine the statistical significant differences between individual investors' level of risk tolerance and the two main factors, namely age and annual income. In terms of individual investors' subjective level of risk tolerance according to age, a statistical significant difference was found between individual investors' level of subjective risk tolerance and age. It can be concluded that the majority of individual investors across all age categories are willing to take average financial risks expecting to earn average returns and are moderate individual investors. Pertaining to individual investors' level of subjective risk tolerance according to annual income, a statistical significant difference was found between individual investors' level of subjective risk tolerance and annual income. It can be concluded that the majority of individual investors across all annual income categories, except those earning more than R800 001 on an annual basis, are willing to take average financial risks expecting to earn average returns and are moderate individual investors. The majority of individual investors earning more than R800 001 on an annual basis are willing to take above-average financial risks expecting to earn above-average returns and are regarded as aggressive individual investors.

Pertaining to individual investors' level of actual risk tolerance according to age, no statistical significant difference was found between individual investors' level of actual risk tolerance and age. However, according to the cross tabulation, the majority of individual investors across all age categories are moderate individual investors who tolerate medium levels of risk. The minority of individual investors across all age categories are regarded as aggressive individual investors who tolerate high levels of risk. In terms of individual investors' level of actual risk tolerance according to annual income, a statistical significant difference was found between individual investors' level of actual risk tolerance and annual income. It can be concluded that the majority of individual investors across all annual income categories are moderate individual investors who tolerate medium levels of risk. This is followed by conservative individual investors who tolerate low levels

of risk. The minority of individual investors across all annual income categories are aggressive individual investors who tolerate high levels of risk.

In general, it can be concluded that individual investors' perceptions and attitudes towards risk tolerance according to age and annual income indicated that they are moderate individual investors who are willing to take average financial risks expecting to earn average returns. Correspondingly, individual investors' level of actual risk tolerance according to age and annual income indicated that they are also moderate individual investors who tolerate medium levels of risk.

6.2.3 Empirical objective three: Individual investors' phase in the investor lifecycle

The third empirical objective was to determine individual investors' phase in the investor lifecycle. The investor lifecycle was categorised into three phases, namely accumulation phase, consolidation phase and spending and gifting phase. According to the self-report on lifecycle, the majority of the sample was found to be in the accumulation phase of the investor lifecycle followed by the consolidation phase of the investor lifecycle. However, the minority of the sample was found to be in the spending and gifting phase of the investor lifecycle.

Individual investors' phase in the investor lifecycle according to age was determined by means of cross tabulation with the chi-square test for independence and multinomial logistic regression analysis. With reference to the cross tabulation with the chi-square test for independence, null-hypotheses were stated to determine the statistical significant differences between age and individual investors' phase in the investor lifecycle. A statistical significant difference was found between individual investors' phase in the investor lifecycle and age. The majority of individual investors between the ages of 16 and 34 years as well as 35 and 49 years are classified into the accumulation phase of the investor lifecycle followed by the consolidation phase and spending and gifting phase of the investor lifecycle, respectively. The majority of individual investors who are 50 years and older are classified into the consolidation phase of the investor lifecycle followed by the accumulation phase and spending and gifting phase of the investor lifecycle, respectively. In terms of the multinomial logistic regression analysis, statistical significant differences were found in individual investors' phase in the investor lifecycle given their age. It can be concluded that age is significant to predict the probability of individual investors being categorised into one of the three phases in the investor lifecycle. Individual investors between the ages of 16 and 34 years and 35 and 49 years are more likely to be in the accumulation phase and consolidation phase of the investor lifecycle than in the spending and gifting phase compared to individual investors 50 years and older.

In addition, individual investors' phase in the investor lifecycle according to the category and time period invested in the investment instruments was also determined by means of the chi-square test for independence. Null-hypotheses were stated to determine individual investors' phase in the investor lifecycle according to the category and time period invested in investment instruments. A statistical significant difference was found between low-risk investment instruments, time period invested in the investment instrument category and the investor lifecycle. The majority of individual investors who have invested in low-risk investment instruments over the short- and medium-term are categorised in the accumulation phase of the investor lifecycle. However, the majority of participants who have invested in low-risk investment instruments over the long-term are categorised in the consolidation phase of the investor lifecycle. With reference to low- to medium risk investment instruments over the short- and medium-term, the majority of individual investors are categorised in the accumulation phase of the investor lifecycle. The majority of participants who have invested in low- to medium risk investment instruments over the long-term are categorised in the accumulation phase and consolidation phase of the investor lifecycle. However, no statistical significant differences were found between low-to medium risk investment instruments, time period invested in the investment instrument category and the investor lifecycle. In terms of individual investors who have invested in medium- to high-risk investment instruments, the majority of individual investors who have invested over the short-term are categorised in the accumulation phase of the investor lifecycle. The majority of individual investors who have invested over the medium-term and long-term are categorised in the consolidation phase of the investor lifecycle. However, no statistical significant differences were found between medium- to high-risk investment instruments, time period invested in the investment instrument category and the investor lifecycle.

6.2.4 Empirical objective four: Individual investors' subjective risk tolerance at different phases of the investor lifecycle

The fourth empirical objective was to determine how individual investors subjectively estimate their risk tolerance at difference phases of the investor lifecycle. This empirical objective was achieved through cross tabulation with the chi-square test for independence. A null-hypothesis was stated to determine the statistical significant differences between the SCF and self-report on lifecycle. A statistical significant difference was found between the SCF and self-report on lifecycle.

It can be concluded that the majority of individual investors who are willing to take substantial financial risks expecting to earn substantial returns are categorised in the accumulation phase followed by the consolidation phase and spending and gifting phase of the investor lifecycle. Correspondingly, the majority of individual investors who are willing to take above-average financial risks expecting to earn above-average returns are categorised in the accumulation phase

followed by the consolidation phase and spending and gifting phase of the investor lifecycle. However, the majority of individual investors who are willing to take average financial risks expecting to earn average returns are categorised in the consolidation phase followed by the accumulation phase and spending and gifting phase of the investor lifecycle. Interestingly, the majority of individual investors who are not willing to take any financial risks are categorised in the accumulation phase followed by the consolidation phase and spending and gifting phase of the investor lifecycle.

6.2.5 Empirical objective five: Relationship between individual investors' risk tolerance and investor lifecycle

The fifth empirical objective was to determine the relationship between individual investors' risk tolerance and the investor lifecycle. This empirical objective was achieved by means of correlation analysis and multinomial logistic regression analysis. Correlation analysis was employed to determine the degree and direction of the potential relationship between individual investors' subjective risk tolerance (measured using the SCF), actual risk tolerance (measured using the GL-RTS) and the investor lifecycle (measured using the self-report on lifecycle), respectively. Values ranging from 0.10 to 0.29 indicated a small strength relationship, from 0.30 to 0.49 indicated a medium strength relationship and from 0.50 to 1.0 indicated a strong strength relationship. A null-hypothesis was formulated to determine the relationship between individual investors' subjective risk tolerance and the investor lifecycle. A statistically significant weak, negative relationship was found between individual investors' subjective risk tolerance and the investor lifecycle. In addition, a null-hypothesis was formulated to determine the relationship between individual investors' actual risk tolerance and the investor lifecycle. A statistically significant small, negative relationship was found between individual investors' actual risk tolerance and the investor lifecycle. Overall, a statistically significant, negative relationship between individual investors' subjective risk tolerance and the investor lifecycle as well as actual risk tolerance and the investor lifecycle was found.

In addition, the multinomial logistic regression analysis was also employed to determine the relationship between individual investors' risk tolerance and the investor lifecycle. According to the multinomial logistic regression analysis, individual investors' subjective risk tolerance had no significant influence on the individual investors' phase in the investor lifecycle. However, it did indicate that individual investors who are not willing to take any financial risks, willing to take average financial risks expecting to earn average returns and willing to take above-average financial risks expecting to earn above-average returns are less likely to be in the accumulation phase and consolidation phase and more likely to be in the spending and gifting phase of the investor lifecycle compared to individual investors who are willing to take substantial financial risks expecting to earn substantial returns. In terms of individual investors' actual risk tolerance, there

was no significant relationship between conservative individual investors who are willing to tolerate low levels of risk and the accumulation phase of the investor lifecycle. However, a significant relationship was found between conservative individual investors who are willing to tolerate low levels of risk and the consolidation phase of the investor lifecycle. It can be concluded that conservative individual investors who are willing to tolerate low levels of risk are more likely to be in the accumulation phase and consolidation phase and less likely to be in the spending and gifting phase compared to aggressive individual investors who are willing to tolerate high levels of risk. In addition, significant relationships were found between moderate individual investors who are willing to tolerate medium levels of risk and the accumulation phase and consolidation phase of the investor lifecycle. It can be concluded that moderate individual investors who are willing to tolerate moderate levels of risk are more likely to be in the accumulation phase and consolidation phase and less likely to be in the spending and gifting phase compared to aggressive individual investors who are willing to tolerate high levels of risk.

6.2.6 Empirical objective six: Relationship between individual investors' actual risk tolerance and subjective risk tolerance and how it deviates from theory during different phases of the investor lifecycle

The sixth empirical objective was to determine the relationship between individual investors' actual risk tolerance and subjective risk tolerance and how it deviates from theory during different phases of the investor lifecycle. This objective was achieved by means of correlation analysis and multinomial logistic regression analysis. With regard to the correlation analysis, a null-hypothesis was stated to determine the relationship between individual investors' subjective risk tolerance and actual risk tolerance. A statistically significant positive, medium strength relationship was found between individual investors' subjective risk tolerance and actual risk tolerance. Therefore, it can be concluded that the more positive and greater individual investors' perceptions and attitudes towards risk is; the higher levels of risk individual investors are likely to tolerate.

The multinomial logistic regression analysis was employed to determine how individual investors' subjective risk tolerance and actual risk tolerance deviates from theory during different phases of the investor lifecycle. In terms of individual investors' subjective risk tolerance, firstly, it can be concluded that individual investors who are not willing to take any financial risks are less likely to be in the accumulation phase and consolidation phase and more likely to be in the spending and gifting phase of the investor lifecycle compared to individual investors who are willing to take substantial financial risks expecting to earn substantial returns. This is in accordance with theory as individual investors who are not willing to tolerate any financial risk is considered to be in the spending and gifting phase of the investor lifecycle. Additionally, individual investors who are willing to take average financial risks expecting to earn average returns and willing to take above-

average financial risks expecting to earn above-average returns are less likely to be in the accumulation phase and consolidation phase. These individual investors are more likely to be in the spending and gifting phase of the investor lifecycle compared to individual investors who are willing to take substantial financial risks expecting to earn substantial returns. However, this is in contrast to theory as individual investors who are willing to take average financial risks expecting to earn average returns should be in the accumulation or consolidation phase. Furthermore, individual investors who are willing to take above-average financial risks expecting to earn above-average returns should be in the accumulation phase.

In terms of individual investors' actual risk tolerance, conservative individual investors who are willing to tolerate low levels of risk are more likely to be in the accumulation phase and consolidation phase and less likely to be in the spending and gifting phase compared to aggressive individual investors who are willing to tolerate high levels of risk. However, this is in contrast to theory as conservative individual investors are theoretically considered to be in the spending and gifting phase of the investor lifecycle. Moreover, moderate individual investors who are willing to tolerate moderate levels of risk are more likely to be in the accumulation phase and consolidation phase and less likely to be in the spending and gifting phase compared to aggressive individual investors who are willing to tolerate high levels of risk. This is in line with theory as moderate investors are theoretically considered to be in the accumulation or consolidation phase of the investor lifecycle.

6.3 GENERAL CONCLUSION

This study contributed to previous research on risk tolerance as it provided a framework to analyse individual investors' risk tolerance during the investor lifecycle, within the South African context. In accordance with previous studies, it is evident from this study that risk tolerance is an imperative factor that should be taken into consideration when planning individual investors' investment strategies. Moreover, it is also imperative that individual investors acknowledge their position in the investor lifecycle as it is an essential element in the management of an effective investment portfolio. The theoretical objectives provided an in-depth analysis of the risk tolerance and investment decisions of individual investors and facilitated the accomplishment of the empirical objectives of this research study. Accordingly, the six empirical objectives facilitated the fulfilment of the primary objective.

It can be concluded that certain demographical factors have a significant influence on South African individual investors' subjective and actual risk tolerance. However, individual investors within the South African context do not behave rationally as per theory when making investment decisions. According to this study, the level of risk tolerance individual investors are willing to take

are not entirely according to theory and depends on certain demographical factors and their perceptions and attitudes towards risk. Individual investors' level of subjective risk tolerance, their perceptions and attitudes towards risk, differs from the actual levels of risk they are willing to tolerate. Within the South African context, individual investors' perceptions and attitudes towards risk indicated that they are conservative individual investors who are willing to tolerate low levels of risk. However, South African individual investors' actual level of risk tolerance indicated that they are moderate individual investors that tolerate medium levels of risk. In addition, it can be concluded that the more positive and greater individual investors' perceptions and attitudes towards risk is; the higher levels of risk individual investors are likely to tolerate. Furthermore, individual investors' subjective and actual risk tolerance during certain phases of the investor lifecycle deviates and is not completely in line with theory.

This study will contribute significantly towards assisting financial planners and financial institutions to facilitate individual investors with successful financial and investment planning, not only within the South African context, but also internationally. It will also assist financial planners, financial institutions and individual investors to overcome the difficulties they are confronted with when recognising and implementing suitable investment strategies. Furthermore, it will assist to identify the factors that are not taken into account by risk assessment forms that influence individual investors' risk tolerance when making investment decisions during different phases of the investor lifecycle. It will transform the manner in which individual investors' risk profiling as well as investment goals, objectives and constraints are constructed. Holistically, a framework is provided to analyse individual investors' risk tolerance during the investor lifecycle.

6.4 RECOMMENDATIONS AND LIMITATIONS

Suitable recommendations derived from the findings and insights obtained from the literature as well as empirical findings in this study pertaining to analyse risk tolerance during the investor lifecycle is provided in this section. Certain limitations within this research are recognised. However, it may provide numerous avenues for further research in the future.

This research study analysed individual investors' risk tolerance during the investor lifecycle. However, it can be recommended to construct a risk profiling model whereby individual investors' risk profile in accordance with the factors influencing risk tolerance, perceived level of risk tolerance and phase in the investor lifecycle can be determined. The primary quantitative data were obtained from a designated South African investment company with a sample size of 683 respondents. However, it can be recommended to involve various investment companies to partake in the study in order to analyse the risk tolerance of individual investors in the investor lifecycle between various investment companies. In addition, with the involvement of various

investment companies, the study will also consist of a larger sample. In this study, a quantitative research approach was employed by the researcher. However, it can be recommended to investigate the reasons for the difference between individual investors' subjective risk tolerance and actual risk tolerance by conducting a mixed method approach with qualitative interviews. In addition, a mixed method approach with qualitative interviews can also be employed to investigate and determine the reasons for the deviation in individual investors' level of risk tolerance and phase in the investor lifecycle.

In this study, only the influence of demographical factors on individual investors' risk tolerance was investigated. However, a further recommendation is to determine the influence of investor behaviour and personalities or economic, political and market related factors on individual investors' risk tolerance when making investment decision. It can also be recommended that this study can become province or education specific. In addition, this study can also be taken into consideration by financial planners, financial institutions as well as individual investors not only in South Africa, but also internationally, to contribute towards more accurate individual investors' analyses and successful investment strategies when making investment decisions.

REFERENCE LIST

2020 DirectInvest. 2014. Investment risk profile. http://www.2020directinvest.com.au/investor-education/risk-profiles.aspx Date of access: 18 Aug. 2014.

Alexander, G.J. & Sharpe, W.F. 1989. Fundamentals of investments. Englewood Cliffs, NJ: Prentice-Hall, Inc.

Alexander, G.J. & Sharpe, W.F. 1990. Investments. 4th ed. Englewood Cliffs, NJ: Prentice-Hall Inc.

Allison, P.D. 2014. Measures of fit for logistic regression. Paper 1485-2014 presented at the SAS User's Group International. https://support.sas.com/resources/papers/proceedings14/1485-2014.pdf Date of access: 6 Sep. 2018.

Alston, M. & Bowles, W. 2003. Research for caring professions: an introduction to methods. London: Routledge Taylor & Francis Group.

AMP. 2014. What type of investor am I? https://www.amp.com.au/personal/investments/education/how-to-invest Date of access: 18 Aug. 2014.

Anbar, A. & Eker, M. 2010. An empirical investigation for determining of the relation between personal financial risk tolerance and demographic characteristics. *EGE Academic Review,* 10(2):503-523.

Anderson, C. 2010. Presenting and evaluating qualitative research. *American Journal of Pharmaceutical Education,* 74(8):1-7.

Antonites, A.J. & Wordsworth, R. 2009. Risk tolerance: a perspective on entrepreneurship education. *Southern African Business Review,* 13(3):69-85.

Ardehali, P.H., Paradi, J.C. & Asmild, M. 2005. Assessing financial risk tolerance of portfolio investors using data envelopment analysis. *International Journal of Information Technology and Decision Making,* 4(1):491-519.

Babbie, E. & Mouton, J. 2001. The practice of social research. Cape Town: Oxford University Press.

Babbie, E. 2007. The practice of social research. 11th ed. Belmont: Thomson Wadsworth.

Babbie, E.R. 2010. The practice of social research. 12th ed. Belmont, CA: Wadsworth Cengage.

Bajtelsmit, V.L. & Bernasek, A. 1996. Why do women invest differently than men? *Financial Counseling and Planning,* 7(1):1-10.

Bajtelsmit, V.L., Bernasek, A. & Jianakopolos, N.A. 1999. Gender differences in defined contribution pension decisions. *Financial Services Review,* 8(1):1-10.

Baker, H.K. & Haslem, J.A. 1974. The impact of investor socioeconomic characteristics on risk and return preferences. *Journal of Business Research,* 2(1):469-476.

BCPS (Baltimore Country Public Schools). 2017. Key elements of a research proposal: quantitative design. https://www.wssu.edu/about/offices-and-departments/office-of-sponsored-programs/pre-award/_Files/documents/develop-quantitative.pdf Date of access: 7 Apr. 2018.

Barber, B. & Odean, T. 2001. Boys will be boys: gender, overconfidence and common stock investment. *Quarterly Journal of Economics,* 116(1):261-292.

Barker, R.L. 2003. The social work dictionary. 5th ed. Washington, DC: National Association of Social Workers Press.

Barreiro, P.L. & Albandoz, J.P. 2001. Population and sample: sampling techniques. *Management Mathematics for European School:* 1-18.

Barsky, R.B., Juster, T., Kimball, M.S. & Shapiro, M.D. 1997. Preference parameters and behavioural heterogeneity: an example approach in the health and retirement study. *Quarterly Journal of Economics,* 112(1):537-579.

Bernhardt, D. & Eckblad, M. 2013. Stock market crash of 1987. https://www.federalreservehistory.org/essays/stock_market_crash_of_1987 Date of access: 10 Sep. 2017.

Blume, M, 1978. The changing role of the individual investor. New York, NY: Wiley.

Bodie, Z., Kane, A. & Marcus, A.J. 2008. Investments. 7th ed. New York, NY: McGraw-Hill.

Bodie, Z., Kane, A. & Marcus, A.J. 2010. Essentials of investments. 8th ed. New York: McGraw-Hill.

Bollen, K.A. 1989. Structural equations with latent variables. New York: John Wiley & Sons.

Botha, M., Rossini, L., Geach, W., Goodall, B., Du Preez, L. & Rabenowitz, P. 2012. The South African financial planning handbook. Durban: LexisNexis.

Brislin, R.W. 1986. The wording and translation of research instruments. (*In* Lonner, W.J. & Berrt, J.W., *ed.* Field methods in cross-cultural research. Newbury Park, CA: Sage. p. 137-164).

Brooks, C. 2014. Introductory econometrics for finance. 3rd ed. United Kingdom: Cambridge University Press.

Brown, D.A. 2007. Pensions and risk aversion: the influence of race, ethnicity and class on investor behaviour. *Lewis and Clark Review,* 11(1):1-20.

Campbell, R.A.J. 2008. Art as an alternative investment. *Journal of Alternative Investments,* 10(1):64-81.

Campbell, R.A.J., Koedijk C.G. & de Roon, F.A. 2008. Emotional assets and investment behaviour. Working paper in Finance. University of Tilburg.

Cant, M., Gerber-Nel, C., Nel, D. & Kotze, T. 2005. Marketing research. 2nd ed. Pretoria: Van Schaik.

Chaulk, B., Johnson, P.J. & Bulcroft, R. 2003. Effects of marriage and children on financial risk tolerance: a synthesis of family development and prospect theory. *Journal of Family and Economic Issues,* 24(1):257-279.

CIRT (Centre for Innovation in Research and Teaching). 2018. Quantitative approaches. https://cirt.gcu.edu/research/developmentresources/research_ready/quantresearch/approaches Date of access: 4 Apr. 2018.

Clandinin, D.J. & Conelly, F.M. 2000. Narrative inquiry: experience and story in qualitative research. San Francisco: Jossye-Bass.

Cohen, J.W. 1988. Statistical power analysis for the behavioural sciences. 2nd ed. Hillsdale, NJ: Lawrence Erlbaum Associates.

Cohn, R.A., Lewellen, W.G., Lease, R.C. & Schlarbaum, G.G. 1975. Individual financial risk aversion and investment portfolio composition. *Journal of Finance,* 30(1):605-620.

Cole, S. & Shastry, G.K. 2009. Smart money: the effect of education, cognitive ability, and financial literacy on financial market participation. http://hbswk.hbs.edu/item/smart-money-the-effect-of-education-cognitive-ability-and-financial-literacy-on-financial-market-participation Date of access: 6 Aug. 2017.

Coleman, S. 2003. Risk tolerance and the investment behaviour of black and Hispanic heads of household. *Financial Counseling and Planning,* 14(2):43-52.

Colombo, J. 2012. Black Monday – the stock market crash of 1987. http://www.thebubblebubble.com/1987-crash/ Date of access: 10 Sep. 2017.

Commonwealth Bank. 2014. Risks vs. return. https://www.commbank.com.au/personal/financial-planning/maximise-your-investments/risk-vs-return.html Date of access: 21 Jul. 2014.

Conrad, S.F. & Serlin, R.C. 2011. The SAGE handbook for research in education: pursuing ideas as the keystone of exemplary inquiry. 2nd ed. California: SAGE Publications Inc.

Coronation Fund Managers. 2013. Profile's unit trusts & collective investments. Johannesburg: Profile Media.

Coronation Fund Managers. 2014. Profile's unit trusts & collective investments. Johannesburg: Profile Media.

Coronation Fund Managers. 2016. Profile's unit trusts & collective investments. Johannesburg: Profile Media.

Coronation Fund Managers. 2017. Profile's unit trusts & collective investments. Johannesburg: Profile Media.

Creswell, J.W. 1994. Research design: qualitative and quantitative approaches. Thousand Oaks, CA: SAGE Publications.

Creswell, J.W. 1998. Qualitative inquiry and research design: choosing among five traditions. London: SAGE Publications.

Creswell, J.W. 2003. Research design: qualitative, quantitative and mixed methods approaches. 2nd ed. London: SAGE Publications Inc.

Creswell, J.W. 2009. Research design: qualitative, quantitative and mixed methods approaches. 3rd ed. London: SAGE Publications Inc.

Creswell, J.W. 2014. Research design: qualitative, quantitative and mixed methods approaches. 4th ed. London: SAGE Publications Inc.

Creswell, J.W. & Plano Clark, V.L. 2007. Designing and conducting mixed methods research. Thousand Oaks, CA: SAGE.

Creswell, J.W. & Plano Clark, V.L. 2010. Designing and conducting mixed methods research. 2nd ed. Thousand Oaks, CA: SAGE.

Creswell, J.W. & Plano Clark, V.L. 2011. Designing and conducting mixed methods research. 2nd ed. Los Angles: SAGE Publications Inc.

Creswell, J.W., Plano Clark, V.L., Gutmann, M.L. & Hanson, W.E. 2003. Advanced mixed methods research designs. (*In* Tashakkori, A. & Teddlie, C., *ed.* Hanbdook on mixed methods in the behavioural and social sciences. Thousand Oaks, CA: Sage Publications. p. 209-240).

Crouhy, M., Galai, D. & Mark, R. 2014. The essentials of risk management. 2nd ed. New York, NY: McGraw-Hill Education.

Dash, N.K. 2005. Module: selection of the research paradigm and methodology. https://www.celt.mmu.ac.uk/researchmethods/Modules/Selection_of_methodology/ Date of access: 6 Apr. 2017.

Davey, G. & Resnik, P. 2008. Risk tolerance, risk profiling and the financial planning process. http://www.riskprofiling.com/WWW_RISKP/media/RiskProfiling/Downloads/PR_RT.pdf Date of access: 7 July 2018.

Davidson, C. 2014. What type of investor are you? http://www.dummies.com/how-to/content/what-type-of-investor-are-you.html Date of access: 19 Aug. 2014.

Delport, C.S.L. & Fouché, C.B. 2011. Mixed method research. (*In* Read, J., *ed.* Research at grass roots. 4th ed. Pretoria: Van Schaik Publishers. p. 433-448).

Delport, C.S.L. & Roestenburg, W.J.H. 2011. Quantitative data collection methods: questionnaires, checklists, structured observations and structured interview schedules. (*In* Read, J., *ed.* Research at grass roots. 4th ed. Pretoria: Van Schaik Publishers. p. 171-205).

Denscombe, M. 2008. A research paradigm for the mixed methods approach. *Journal of Mixed Methods Research,* 2(3):270-283.

DePoy, E. & Gilson, S. 2008. Evaluation practice: how to do good evaluation research in work settings. London: Routledge Taylor & Francis Group.

De Vos, A.S., Strydom, H., Fouché, C.B. & Delport, C.S.L. 2011. Research at grass roots. 4th ed. Pretoria: Van Schaik Publishers.

De Vos, A.S., Strydom, H., Schulze, S. & Patel, L. 2011. The sciences and the professions. (*In* Read, J., *ed.* Research at grass roots. 4th ed. Pretoria: Van Schaik Publishers. p. 3-27).

Dickason, Z. 2017. Modelling investor behaviour in the South African context. Vanderbijlpark: NWU (Thesis-PhD).

Discovery. 2012. Understanding property as an asset class. https://www.discovery.co.za/discovery_coza/web/linked_content/pdfs/invest/choose_your_investment/understanding_property_as_an_asset_class.pdf Date of access: 20 Sep. 2014.

Discovery. 2014. Understanding investment risk profiles. https://www.discovery.co.za/discovery_coza/web/linked_content/pdfs/invest/choose_your_investment/risk_profiles.pdf Date of access: 19 Aug. 2014.

Dohmen, T., Falk, A., Huffman, D., Sunde, U., Schupp, J. & Wagener, G.G. 2011. Individual risk attitudes: measurement, determinants and behavioural consequences. *Journal of the European Economic Association,* 9(3):522-550.

Drost, E.A. 2011. Validity and reliability in social science research. *Education Research and Perspectives,* 38(1):179-225.

Druckman, D. 2005. Doing research: methods of inquiry for conflict analysis. London: SAGE.

Dudovskiy, J. 2016a. Positivisim research philosophy. http://research-methodology.net/research-philosophy/positivism/ Date of access: 6 Apr. 2017.

Dudovskiy, J. 2016b. Convenience sampling. http://research-methodology.net/research-philosophy/positivism/ Date of access: 6 Apr. 2017.

Du Plessis, J. 2015. Volatility-myth, fact, effect. *MoneyMarketing:* 1, 28 Feb.

Eckel, C.C. & Grossman, P.J. 2002. Sex differences and statistical stereotyping in attitudes towards financial risk. *Evolution and Human Behaviour,* 23(1): 281-295.

Faff, R., Hallahan, T. & McKenzie, M. 2011. Women and risk tolerance in an aging world. *International Journal of Accounting and Information Management,* 19(2):100-117.

Financial Education. 2008. Investment constraints. http://financial-education.com/2008/01/29/investment-constraints/ Date of access: 4 Aug. 2014.

Financial Security. 2010. Asset classes. http://www.financialsecurity.com.au/images/stories/educational/asset_classes_feb_2011.pdf Date of access: 20 Sep. 2014.

Fink, A. 2003. How to ask survey questions. Thousand Oaks, London: Sage.

Finke, M.S. & Huston, S.J. 2003. The brighter side of financial risk: financial risk tolerance and wealth. *Journal of Family and Economic issues,* 24(3):233-256.

Flick, U. 2011. Introducing research methodology: a beginner's guide to doing a research project. London: SAGE Publications.

Fouché, C.B. & Bartley, A. 2011. Quantitative data analysis and interpretation. (*In* Read, J., *ed.* Research at grass roots. 4th ed. Pretoria: Van Schaik Publishers. p. 248-276).

Fouché, C.B. & Schurink, W. 2011. Qualitative research design. (*In* Read, J., *ed.* Research at grass roots. 4th ed. Pretoria: Van Schaik Publishers. p. 307-327).

Fredman, A.J. 1996. Wrestling with risk: a multiheaded concept with no single measure. *Associates of America Individual Investors*: 25-30.

Frels, R.K. & Onwuegbuzie, A.J. 2013. Administering quantitative instruments with qualitative interviews: a mixed research approach. *The American Counselling Association,* 91(1):184-194.

Friedman, B. 1974. Risk aversion and the consumer choice of health insurance option. *Review of Economics and Statistics,* 56(1):209-214.

Gerrans, P., Faff, R. & Hartnett, N. 2013. Individual financial risk tolerance and the global financial crisis. *Accounting & Finance*, 55(1):1-35.

Gilliam, J., Chatterjee, S. & Grable, J. 2010. Measuring the perception of risk tolerance: a tale of two measures. *Journal of Financial Counseling and Planning,* 21(2):30-43.

Glicken, M.D. 2003. Social research: a simple guide. Boston: Allyn & Bacon.

Goodall, B. 2005. Investment planning. Durban: LexisNexis Butterworths.

Grable, J.E. 1997. Investor risk tolerance: testing the efficacy of demographics as differentiating and classifying factors. Blacksburg:, VA: Virginia Polytechnic Institute and State University. (Thesis-PhD).

Grable, J.E. 2000. Financial risk tolerance and additional factors that affect risk taking in everyday money matters. *Journal of Business and Psychology,* 14(4):625-630.

Grable, J.E. 2016. Financial risk tolerance. (*In* Xiao, J.J., *ed.* Handbook of Consumer Finance Research. Switzerland: Springer International Publishing. p. 19-31).

Grable, J.E. & Joo, S. 1999. Factors related to risk tolerance: a further examination. *Consumer Interest Annual,* 45(1):53-58.

Grable, J.E. & Lytton, R.H. 1999. Assessing financial risk tolerance: do demographic, socioeconomic and attitudinal factors work. *Family Relations and Human Development/Family Economics and Resource Management Biennial,* 3(1):80-88.

Grable, J.E. & Lytton, R.H. 1999. Financial risk tolerance revisited: the development of a risk assessment instrument. *Financial Services Review,* 8(3):163-181.

Grable, J.E. & Lytton, R.H. 2001. Assessing the concurrent validity of the SCF risk tolerance question. *Association for Financial Counseling and Planning Education,* 12(2):43-53.

Grable, J.E. & Joo, S.H. 2004. Environmental and biopsychosocial factors associated with financial risk tolerance. *Journal of Financial Counseling and Planning Education,* 15(1):73-82.

Grable, J., Lytton, R. & O'Neil, B. 2004. Projection bias and financial risk tolerance. *Journal of Behavioural Finance,* 5(1):142-147.

Grable, J.E. & Roszkowzki. 2007. Self-assessments of risk tolerance by women and men. *Psychological Reports,* 100(1): 795-802.

Grable, J.E., Britt, S.L. & Webb, F.J. 2008. Environmental and biopsychosocial profiling as a means for describing financial risk-taking behaviour. *Journal of Financial Counseling and Planning Education,* 19(2):3-18.

Grable, J.E. & Roszkowski, M.J. 2008. The influence of mood on the willingness to take financial risks. *Journal of Risk Research,* 11(7):905-923.

Grable, J. E., McGill, S. & Britt, S. 2009. Risk tolerance esrimation bias: the age effect. *Journal of Business & Economic Research,* 7(7):1-12.

Gravetter, F.J. & Forzano, L.B. 2003. Research methods for the behavioural sciences. Belmont: Wadsworth/Thomson Learning.

Grinnell, R.M. & Unrau, Y.A. 2005. Social work research and evaluation: quantitative and qualitative approaches. 7th ed. New York: Oxford University Press.

Grinnell, R.M. & Unrau, Y.A. 2008. Social work research and evaluation: foundations of evidence-based practice. New York: Oxford University Press.

Guba, E.G. & Lincoln, Y.S. 1994. Competing paradigms in qualitative research. *Handbook of qualitative research,* 2(1):163-194.

Guillemette, M. & Nanigian, D. 2014. What determines risk tolerance? *Financial Services Review,* 23(1):207-218.

Gutter, M., Fox, J. & Montalto, C.P. 1999. Racial differences in investor decision making. *Financial Services Review,* 8(3):149-162.

Hakim, C. 2000. Research design: successful designs for social and economic research. London: Routledge.

Halek, M. & Eisenhauer, J.G. 2001. Demography of risk aversion. *The Journal of Risk and Insurance,* 68(1):1-24.

Haliassos, M. & Bertaut, C.C. 1995. Why do so few hold stocks? *The Economic Journal,* 105(432):1110-1129.

Hallahan, T., Faff, R.W. & McKenzie, M. 2003. An explanatory investigation of the relation between risk tolerance scores and demographic characteristics. *Journal of Multinational Financial Management,* 13(1):483-502.

Hallahan, T.A., Faff, R.W. & McKenzie, M.D. 2004. An empirical investigation of personal financial risk tolerance. *Financial Services Review,* 13(1):57-78.

Hanna, S.D. & Chen, P. 1997. Subjective and objective risk tolerance: implications for optimal portfolios. *Journal of Financial Counseling and Planning,* 8(2):17-26.

Hanna, S.D., Gutter, M.S. & Fan, J.X. 1998. A theory based on measure of risk tolerance. *Proceedings of the Academy of Financial Services,* 12(1):10-11.

Hanna, S.D., Gutter, M.S. & Fan, J.X. 2001. A measure of risk tolerance based on economic theory. *Association for Financial Counseling and Planning Education,* 12(2):53-60.

Hanna, S.D. & Lindamood, S. 2007. Risk tolerance: cause or effect. *Academy of Financial Services Proceedings*: 1-9.

Harty, N. 2014. Financial planning and the investor life cycle. http://www.jamaicaobserver.com/business/Financial-planning-and-the-investor-life-cycle-_15839917 Date of access: 24 Sep. 2016.

Hawley, C.B. & Fujji, E.T. 1993. An empirical analysis of preferences for financial risk: further evidence on the Friedman-Savage model. *Journal of Post Keynesian Economics,* 16(1):197-204.

Heiman, G.W. 2006. Basic statistics for the behavioural sciences. 5th ed. New York, NY: Houghton Mifflin.

Heron, J. & Reason, P. 1997. A participatory inquiry paradigm. *Qualitative Inquiry,* 3(3):274-294.

Hirt, G.A. & Block, S.B. 1986. Fundamentals of investment management. 2nd ed. United States: Richard D. Irwin, Inc.

Holton, G.A. 2004. Defining risk. *Financial Analysts Journal,* 60(6):19-25.

Hopkins, W.G. 2000. Quantitative research design. http://sportsci.org/jour/0001/wghdesign.html Date of access: 4 Apr. 2018.

Ingram, C. 2016. How and why you should you manage your research data: a guide for researchers. https://www.jisc.ac.uk/guides/how-and-why-you-should-manage-your-research-data Date of access: 18 May 2018.

Investment Management Association. 2014. Introducing investment. http://www.investinginfunds.org/introducing-investment/main-types-of-investment.html Date of access: 20 Sep. 2014.

InvestorGuide. 2013. Understanding asset allocation while building a portfolio. http://www.investorguide.com/article/11670/understanding-asset-allocation-while-building-a-portfolio-igu/ Date of access: 8 Oct. 2014.

Irwin, C.E. 1993. Adolescence and risk taking: how are they related? (*In* Bell, N.J. & Bell, R.W., *eds*. Adolescent risk taking. Newbury Park, CA: Sage. p. 7-28)

Irwin, C.E. & Millstein, S.G. 1986. Biopsychosocial correlates of risk-taking behaviours during adolescence: can the physician intervene? *Journal of Adolescent Health Care,7*(1):86-96.

Ivankova, N.V., Creswell, J.W. & Plano Clark, V.L. 2007. Foundation and approaches to mixed methods research. (*In* Maree, K., *ed.* First steps in research. Pretoria: Van Schaik. p. 253-282).

Jackson, S.L. 2003. Research methods and statistics: a critical thinking approach. London: Thomson Wadsworth.

Jacobsen, B.J., Speidel, P., Keshemberg, T.L. &Hodapp, R. 2014. Measure and manage risk tolerance more effectively. http://www.onefpa.org/journal/Pages/MAY14-Measure-and-Manage-Risk-Tolerance-More-Effectively.aspx Date of access: 27 Aug. 2017.

Johnson, R.B. & Onwuegbuzie, A.J. 2004. Mixed methods research: a research paradigm whose time has come. *Educational Research,* 33(7):14-26.

Johnson, R.B., Onwuegbuzie, A.J. & Turner, L.A. 2007. Toward a definition of mixed methods research. *Journal of Mixed Methods,* 1(1):112-133.

Kannadhasan, M. 2015. Retail investors' financial risk tolerance and their risk-taking behaviour: the role of demographics as differentiating and classifying factors. *IIMB Management Review,* 27(1):175-184.

Keller, G. 2014. Statistics for management and economics. 10th ed. United States: Cengage Learning.

Kierkegaard, K., Carl Lejon, C. & Persson, J. 2006. Practical application of Modern Portfolio Theory. http://www.diva-portal.org/smash/get/diva2:4384/FULLTEXT01.pdf Date of access: 6 Oct. 2014.

Kirk, S.A. 1999. Social work research methods: building knowledge for practice. Washington: NASW Press.

Klassen, A.C., Creswell, J.W., Plano Clark, V.L., Clegg Smith, K. & Meissner, H.I. 2012. Best practices in mixed methods for quality of life research. *Quality of Life Research,* 21(1):377-380.

Kolb, B. 2008. Marketing research: a practical approach. London: Sage.

Koller, M. 2011. Life insurance management essentials. Heidelberg: Springer.

Kothari, C.R. 2004. Research methodology: methods and techniques. 2nd ed. New Age International Publishers.

Kreuger, L.W. & Neuman, W.L. 2006. Social work research methods: qualitative and quantitative applications. Boston: Pearson Education.

Kuzniak, S., Rabani, A. Heo, W. Ruiz-Menjivar, J. & Grable, J.E. 2015. The Grable and Lytton risk-tolerance scale: a 15 year retrospective. *Financial Services Review,* 24(1):177-192.

Landau, S. & Everitt, B.S. 2004. A handbook of statistical analysis using SPSS. London: Chapman & Hall/ CRC Press.

Larkin, C., Lucey, B.M. & Mulholland, M. 2013. Risk tolerance and demographic characteristics: Preliminary Irish evidence. *Financial Services Review*, 22(1):1-26.

Lavrakas, P.J. 2008. Encyclopedia of survey research methods. Thousand Oaks, CA: SAGE Publications.

Lavrakas, P.J. 2008. Self-reported measure. (*In* Encyclopaedia of Survey Research Methods. http://methods.sagepub.com/reference/encyclopedia-of-survey-research-methods/n523.xml Date of access: 15 May 2018).

Lee, N. & Peters, M. 2016. Business statistics using excel and SPSS. London: SAGE Publications.

Leech, N.L. & Onwuegbuzie, A.J. 2009. A typology of mixed methods research designs. *The Qualitative Report,* 12(2):265-275.

Leedy, P. & Ormrod, J. 2001. Practical research: planning and design. 7th ed. Upper Saddle River, NJ: SAGE Publications.

Leedy, P.D., & Ormrod, J.E. 2005. Practical research: planning and design. 8th ed. Upper Saddle River, NJ: Prentice Hall.

Levišauskait, K. 2010. Investment analysis and portfolio management. http://www.bcci.bg/projects/latvia/pdf/8_IAPM_final.pdf Date of access: 8 Oct. 2014.

Liberty. 2009. Guide to asset classes. http://www.totrust.co.za/290509_liberty_2.htm Date of access: 20 Sep. 2014.

Lucarelli, C. & Brighetti, G. 2011. Risk tolerance in financial decision making. New York, NY: Palgrave Macmillan.

M&G Investments. 2014. Comparing asset classes. http://www.mandg.lu/private-investors/investment-knowledge/comparing-asset-classes/ Date of access: 20 Sep.2014.

Malhotra, N.K. 2010. Marketing research: an applied orientation. 6th ed. Upper Saddle River: Pearson.

Malkiel, B.G. 1996. A Random walk down Wall Street. New York, NY: W.W. Norton & Co.

Malmendier, U. & Nagel, S. 2011. Depression babies: do macroeconomic experiences affect risk-taking? *Quarterly Journal of Economics,* 126(1):373-416.

Mangram, M.E. 2013. A simplified perspective of the Markowitz portfolio theory*. Global Journal of Business Research*, 7(1):59-70.

Marais, H.T. 2013. Black Generation Y students' attitudes towards sales promotion techniques on low involvement products. Vanderbijlpark: North-West University: Vaal Triangle Campus (Dissertation-MCom).

Maree, K. & Pietersen, J. 2007. The quantitative research process. (*In* Maree, K. First steps in research. Pretoria: Van Schaik. p. 145-153).

Marlow, C.R. 2005. Research methods for generalist social work, London: Thomson Brooks/Cole.

Marshall, M.N. 1996. Sampling for qualitative research. *Family Practice,* 13(6):522-525.

Marx, J. 2009. Investment management. 3rd ed. Hatfield, Pretoria: Van Schaik.

Marx, J., de Swart, C., Beaumont-Smith, M. & Erasmus, P. 2009. Financial management in Southern Africa. 3rd ed. Cape Town: Pearson.

Massol, Y. & Molines, A. 2015. Determinants of risk tolerance and investment behaviour: a study of French and Swedish business school students. Umeå: Umeå School of Business and Economics (USBE) (Dissertation-MSc).

Masters, R. 1989. Study examines investors' risk-taking propensities. *Journal of Financial Planning,* 1(1):151-155.

Mayo, H.B. 1988. Investments: an introduction. 2nd ed. New York, NY: Dryden Press.

Mayo, H.B. 2000. Investments: An introduction. 6th ed. Orlando, FL: Harcourt.

Maxwell & Locke Ritter. 2018. Is investing in arts or antiques for you? https://www.mlrpc.com/articles/is-investing-in-art-or-antiques-for-you/ Date of access: 15 Apr. 2018.

Mazzucato, M., Lowe, J., Shipman, A. & Trigg, A. 2010. Personal investment: financial planning in an uncertain world. Hampshire, U.K.: Palgrave Macmillan.

McDaniel, C. & Gates, R. 2013. Marketing research. 9th ed. Singapore: John Wiley.

McGregor, S.L.T. & Murnane, J.A. 2010. Paradigm, methodology and method: intellectual integrity in consumer scholarship. *International Journal of Consumer Studies,* 34(4): 419-427.

McInish, T.H. 1982. Individual investors and risk-taking. *Journal of Economic Psychology,* 2(1):125-136.

Merriam-Webster Dictionary. 2017. Demographic. https://www.merriam-webster.com/dictionary/demographic Date of access: 6 Apr. 2017.

Miller, N. & Campbell, D.T. 1959. Recency and primacy in persuasion as a function of the timing of speeches and measurements. *Journal of Abnormal and Social Psychology,* 59(1):1-9.

Mitchell, M. & Jolley, J. 2001. Research design explained. London: Harcourt College.

Mittra, S. 1995. Practicing financial planning: a complete guide for professionals. Michigan: Mittra & Associates

Monette, D.R., Sullivan, T.J. & DeJong, C.R. 2005. Applied social research: a tool for the human services. 6th ed. Australia: Thomson Brooks/Cole.

Monette, D.R., Sullivan, T.J. & DeJong, C.R. 2008. Applied social research: a tool for the human services. 7th ed. Belmont, CA: Thomson Wadsworth.

Monevator. 2012. A quick guide to asset classes. http://monevator.com/asset-classes/ Date of access: 20 Sep. 2014.

Morin, R.A. & Suarez, A.F. 1983. Risk aversion revisited. *Journal of Finance,* 38(1):1201-1216.

Morse, J.M. 1991. Approaches to qualitative-quantitative methodological triangulation. *Nursing Research,* 40(1):120-123.

Morse, J.M. & Niehaus, L. 2009. Mixed methods design: principles and procedures. Walnut Creek, CA: Left Coast Press.

Muijs, D. 2010. Doing quantitative research in education with SPSS. 2nd ed. London: SAGE Publications.

Mutswenje, V.S. 2014. A survey of the factors influencing investment decisions: the case of individual investors at the NSE. *International Journal of Humanities and Social Science,* 4(4):92-102.

Narn, A. 2005. Beyond sandler: risk tolerance and the UK investment deficit. *Journal of Financial Services Marketing,* 9(1): 375-389.

Neuman, W.L. 2003. Social research methods: qualitative and quantitative approaches. 5th ed. Boston: Allyn & Bacon.

Neuman, W.L. 2006. Social research methods: qualitative and quantitative approaches. 6th ed. Boston: Pearson Education Inc.

NWU (North-West University). 2016. Manual for postgraduate studies. http://www.nwu.ac.za/files/images/manualpostgrad.pdf Date of access: 06 Apr. 2017.

Old Mutual. 2014. Premiums & problems. 109th ed. Cape Town: Old Mutual.

O'Neil, B. 1996. Baby boomers at mid-life: financial planning for 2000 and beyond. *Journal of Family and Consumer Sciences,* 88(4): 3-8.

Onwuegbuzie, A.J. & Leech, N.L. 2004. On becoming a pragmatic researcher: the importance of combining quantitative and qualitative research methodologies. *International Journal of Social Research Methodology,* 8(5):375-387.

Onwuegbuzie, A.J. & Leech, N.L. 2006. Linking research questions to mixed methods data analysis procedures. *The Qualitative Report,* 11(3):474-498.

Onwuegbuzie, A.J. & Collins, K.M.T. 2007. A typology of mixed methods sampling designs in social science research. *The Qualitative Report,* 12(2):281-316.

Oppenheim, A.N. 1966. Questionnaire design and attitude measurement. London: Heinemann.

Oppenheim, A.N. 1992. Questionnaire design, interviewing and attitude measurement. London: Printer Publishers.

Osborne, J.W. 1990. Some basic existential-phenomenological research methodology for counsellors. *Canadian Journal of Counselling,* 24(2):79-91.

Palsson, A.M. 1996. Does the degree of relative risk aversion vary with household characteristics? *Journal of Economic Psychology,* 17(1):771-787.

Patel. S. 2011. The research paradigm-methodology, epistemology and ontology-explained in simple language. http://salmapatel.co.uk/academia/the-research-paradigm-methodology-epistemology-and-ontology-explained-in-simple-language Date of access: 30 Apr. 2018

Patton, M.Q. 1990. Qualitative evaluation and research methods. 2nd ed. Newbury Park, CA: SAGE.

Pinches, G.E. 1996. Essentials of financial management. 5th ed. New York, NY: Harper Collins College Publishers.

Plath, D.A. & Stevenson, T.H. 2000. Financial services and the African-American market: what every financial planner should know. *Financial Services Review,* 9(1):343-359.

Plous, S. 1993. The psychology of judgement and decision making. New York, NY: McGraw-Hill.

Point Jewellery Exchange. 2016. Diamonds as an asset. http://pointjewels.co.za/diamonds-as-an-asset/ Date of access: 15 Apr. 2018.

Poole, J. 2014. What is your risk profile? http://online-stock-trading-review.toptenreviews.com/what-is-your-risk-profile.html Date of access: 18 Aug. 2014.

Powell, M. & Ansic, D. 1997. Gender differences in risk behaviour in financial decision-making: an experimental analysis. *Journal of economic Psychology,* 17(1):771-787.

Privitera, G.J. 2012. Statistics for the behavioural sciences. Thousand Oaks, CA: SAGE Publications.

Project Management Professionals. 2016. Risk management overview. https://www.greycampus.com/opencampus/project-management-professional/risk-management-overview Date of access: 4 Jun. 2017.

Punch, K.F. 2005. Introduction to social research: quantitative and qualitative approaches. 2nd ed. London: SAGE Publications.

Quinlan, C. 2011. Business research methods. Cheriton House: Cengage Learning EMEA.

Quinlan, C., Babin, B., Carr, J., Griffin, M. & Zikmund, W. G. 2015. Business research methods. United Kingdom: Cengage Learning.

Rachev, S.T., Stoyanov, S.V. & Fabozzi, F.J. 2011. Risk and uncertainty. Hoboken, N.J.: John Wiley and Sons Inc.

Reilly, F.K. 1989. Investment analysis and portfolio management. 3rd ed. Orlando, Florida: Dryden Press.

Reilly, F.K & Brown, K.C. 2012. Analysis of investments & management of portfolios. 10 th ed. Australia: South-Western, Cengage Learning.

Riley, W.B. & Chow, K.V. 1992. Asset allocation and individual risk aversion. *Financial Analyst Journal,* 48(1):32-37.

Risk and Insurance Management Society. 2012. Exploring risk appetite and risk tolerance. https://www.rims.org/resources/ERM/Documents/RIMS_Exploring_Risk_Appetite_Risk_Tolerance_0412.pdf Date of access: 5 Jul. 2017.

Rossman, G.B. & Wilson, B.L. 1985. Numbers and words: combining quantitative and qualitative methods in a single large-scale evaluation study. *Evaluation Review,* 9(5):627-643.

Roszkwoski, M.J., Snelbecker, G.E. & Leimberg, S.R. 1993. Risk tolerance and risk aversion. *The tools and techniques of financial planning,* 4(1):213-225.

Roszkowski, M.J. & Davey, G. 2010. Risk perception and risk tolerance changes attributable to the 2008 economic crisis: a subtle but critical difference. *Journal of Financial Service Professionals,* 64(4):42-53.

Royse, D. 2004. Research methods in social work. London: Thomson Brooks/Cole.

Rubin, A. & Babbie, E. 2005. Research methods for social work. 5th ed. Australia: Thomson Brooks/Cole.

Rutgers. 2014. Investment risk tolerance quiz. http://njaes.rutgers.edu/money/riskquiz/ Date of access: 27 Aug. 2016.

Ryack, K. 2011. The impact of family relationships and financial education on financial risk tolerance. *Financial Services Review,* 20(1):181-193.

Sahin, S. & Yilmaz, Ö. 2009. Measuring risk tolerance: does the methodology matter? Paper presented at the Anadolu International Conference in Economics, Eskişehir, Turkey, 17-19 June. https://www.researchgate.net/publication/241921171 Date of access: 4 Jun. 2017.

Salkind, N.J. 2000. Exploring research. Upper Saddle River, N.J.: Prentice Hall.

Salkind, N.J. 2006. Exploring research. 6th ed. New Jersey: Pearson Education.

Sanlam. 2013. Sim.sense: step-by-step financial planning. http://www.sanlam.co.za/wps/wcm/connect/a3c36c80447e691fad9dff7ab574febf/methodology_Eng_Final+.pdf?MOD=AJPERES Date of access: 24 Sep. 2016.

Sanlam. 2014. Step by step financial planning. http://www.sanlam.co.za/wps/wcm/connect/a3c36c80447e691fad9dff7ab574febf/methodology_Eng_Final+.pdf?MOD=AJPERES Date of access: 18 Aug. 2014.

Sarankotas, S. 2000. Social research. South Yarra: Macmillan Education Australia.

Savings Institute. 2014. Overview of asset classes. http://www.savingsinstitute.co.za/assetclasses.htm Date of access: 20 Sep. 2014.

Shaw, K.L. 1996. An empirical analysis of risk aversion and income growth. *Journal of Labor Economics, 1*4(1): 626-653.

Shemer, N. 2013. Required rate of return. http://strategiccfo.com/wikicfo/required-rate-of-return/ Date of access: 21 Jul. 2014.

Shipway, I. 2009. Modern portfolio theory. *Trust & Trustees,* 15(2):66-71.

Singleton, R., Straits, B.C., Straits, M.M. & McAllister, R.J. 1988. Approaches to social research. New York: Oxford University Press.

Slovic, P. 1966. Risk taking in children: age and sex differences. *Child Development,* 37(4):169-176.

Snelbecker, G.E., Roszkowski, M.J. & Cutler, N.E. 1990. Investors' risk tolerance and return aspirations and financial advisors' interpretations: a conceptual model and explanatory data. *The Journal of Behavioural Economics,* 19(4):377-393.

Spaulding, W.C. 2016. Modern portfolio theory: efficient and optimal portfolios. http://thismatter.com/money/investments/modern-portfolio-theory.htm Date of access: 27 Jun. 2017.

Stagnor, C. 2015. Research methods for the behavioural sciences. 5th ed. United States: Cengage Learning.

Stake, R.E. 1995. The art of case study research. Thousand Oaks, CA: SAGE.

Stevens, S.S. 1946. On the theory of scales measurement. *Science,* 103(2684):667-680.

Stewart, W. & Roth, P. 2001. Risk propensity differences between entrepreneurs and managers: a meta-analytic review. *Journal of Applied Psychology,* 86(1):145-153.

Strauss, A.L. & Corbin, J. 1990. Basics of qualitative research: grounded theory procedures and techniques. Newbury Park: SAGE.

Struwig, F.W. & Stead, G.B. 2001. Planning, designing and reporting research. Cape Town: Pearson Education.

Strydom, B., Christison, A. & Gokul, A. 2009. Financial risk tolerance: a South African perspective. Working paper no. 01-2009. Working papers in finance. University of Kwazulu-Natal.

Strydom, H. 2011a. Ethical aspects of research in the social sciences and human service professions. (*In* Read, J., *ed.* Research at grass roots. 4th ed. Pretoria: Van Schaik Publishers. p. 113-132).

Strydom, H. 2011b. Sampling in the quantitative paradigm. (*In* Read, J., *ed.* Research at grass roots. 4th ed. Pretoria: Van Schaik Publishers. p. 222-235).

Strydom, H. 2011c. Participatory action research (*In* Read, J., *ed.* Research at grass roots. 4th ed. Pretoria: Van Schaik Publishers. p. 491-506).

Subedar, Z., McCrae, M. & Gerace, D. 2006. The validity of financial advisor's heuristic risk tolerance categorisation: evidence from risk tolerance assessment tool. https://www.researchgate.net/publication/242220706_The_Validity_of_Financial_Advisor's_Heuristic_Risk_Tolerance_Categorisation_Evidence_From_a_Risk_Tolerance_Assessment_Tool Date of access: 25 Sep. 2017.

Sung, J. & Hanna, S.D. 1996. Factors related to risk tolerance. *Financial Counseling and Planning,* 7(1):11-19.

Tashakkori, A. & Teddlie, C. 1998. Mixed methodology: combining qualitative and quantitative approaches. Thousand Oaks, CA: Sage.

The Economic Times. 2014. Definition of risk-return trade off. http://economictimes.indiatimes.com/definition/risk-return-trade-off Date of access: 21 Jul. 2014.

Tools for Money. 2014. The five most commonly used investment risk tolerance categories. http://www.toolsformoney.com/investment_risk_tolerance.htm Date of access: 18 Aug. 2014.

Trone, D. B., Allbright, W. R. & Taylor, P. R. 1996. The management of investment decisions. Chicago: Irwin.

Unrau, Y.A., Gabor, P.A. & Grinnell, R.M. 2007. Evaluation in social work: the art and science of practice. London: Oxford University Press.

Valuation Academy. 2017. The capital asset pricing model (CAPM) and the security market line (SML). http://valuationacademy.com/capm-capital-asset-pricing-model-security-market-line-sml/ Date of access: 17 Jun. 2017.

Vanguard. 2013. Investment fundamentals: An introduction to the basic concepts of investing. https://www.vanguard.co.uk/documents/portal/literature/investment-fundamentals-guide.pdf Date of access: 5 Jul. 2014.

Van de Venter, G., Michayluk, D. & Davey, G. 2012. A longitudinal study of financial risk tolerance. *Journal of Economic Psychology,* 33(1):794-800.

Van den Berg, B. 2004. Understanding financial markets and instruments. 4th ed. Johannesburg: Eagle Rock Financial Services CC.

Van den Bergh, A. 2014. Analysis of risk tolerance for individual investors in different phases of the lifecycle. Vanderbijlpark:NWU. (Mini-dissertation).

Van Schalkwyk, C.H. 2012. Member choice in a defined benefit contribution pension plan: decision-making factors. Unpublished doctoral thesis. Johannesburg: University of Johannesburg.

Van Wyk, K., Botha, Z. & Goodspeed, I. 2012. Understanding South African financial markets. 4th ed. Hatfield, Pretoria: Van Schaik.

Vaughan, E.J. & Vaughan, T.M. 2008. Fundamentals of risk and insurance. 10th ed. Hoboken, NJ: John Wiley & Sons Inc.

Wang, H. & Hanna, S. 1997. Does risk tolerance decrease with age? *Financial Counseling and Planning Education,* 8(2):27-32.

Wallach, M.A. & Kogan, N. 1961. Aspects of judgement and decision making: interrelationships and changes with age. *Behavioural Science,* 6(1)23-26.

Weber, E.U., Blais, A. & Betz, N.E. 2002. A domain-specific risk-attitude scale: measuring risk perceptions and risk behaviours. *Journal of Behavioural Decision Making,* 15(1):263-290.

Welman, C., Kruger, F. & Mitchell, B. 2005. Research methodology. 3rd ed. Cape Town: Oxford University Press South Africa.

Wiid, J. & Diggines, C. 2013. Marketing research. 2nd ed. Cape Town: Juta.

Williams, C. 2007. Research methods. *Journal of Business & Economic Research,* 5(3):65-72.

Wilson, J. 2010. Investor constraints. http://personalwm.com/2010/07/09/investor-constraints/ Date of access: 4 Aug. 2014.

Yao, R, Hanna, S.D. & Lindamood, S. 2004. Changes in financial risk tolerance, 1983-2001. *Financial Services Review,* 13(1):249-266.

Yao, R. & Hanna, S.D. 2005. The effect of gender and marital status on financial risk tolerance. *Journal of Personal Finance,* 4(1):66-85.

Yao, R., Gutter, M.S. & Hanna, S.D. 2005. The financial risk tolerance of Blacks, Hispanics and Whites. *Association for Financial Counseling and Planning Education,* 16(1):51-62.

Yao, R., Sharpe, D.L. & Wang, F. 2011. Decomposing the age effect on risk tolerance. *The journal of Socio-Economics,* 40(1):879-887.

Yin, R.K. 2009. Case study research: design and methods. 4th ed. Thousand Oaks, CA: SAGE.

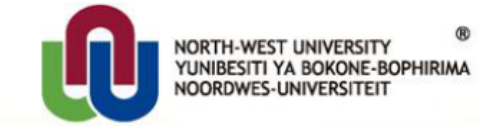
Yip, U.Y. 2000. Financial risk tolerance: a state or a trait. Sydney: University of New South Wales. (Thesis-PhD).

Zhong, L.X. & Xiao, J.J. 1995. Determinants of family bond and stock holdings. *Financial Counseling and Planning,* 6(1):107-114.

Zikmund, W.G. & Babin, B.J. 2013. Essentials of marketing research. 5th ed. Australia: South-Western Cengage Learning.

Zikmund, W.G., Babin, B.J., Carr, J.C. & Griffin, M. 2013. Business research methods. 9th ed. USA: Cengage Learning.

ANNEXURE A: INFORMED CONSENT



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Participant information leaflet and consent form

Title of the research project: Analysing risk tolerance during the investor lifecycle.

Principal Investigator: Anzel van den Bergh (082 457 2689)

Promoter(s): Ms SJ Ferreira; Dr Z Dickason

Reference numbers: ECONIT-2017-038

You are being invited to take part in a research project that forms part of a M. Com study. Please take some time to read the information presented here, which will explain the details of this project. Please ask the researcher any questions about any part of this project that you do not fully understand. It is very important that you are fully satisfied that you clearly understand what this research is about and how you could be involved. Also, your participation is **entirely voluntary** and you are free to decline to participate.If you say decline, this will not affect you negatively in any way whatsoever. You are also free to withdraw from the study at any point, even if you do agree to take part.

This study has been approved by the **Social and Technological Sciences Research Ethics Committee of the Faculty of Economic Sciences & IT of the North-West University** (ECONIT-2017-038) and will be conducted according to the ethical guidelines and principles of the international Declaration of Helsinki and the ethical guidelines of the National Health Research Ethics Council. It might be necessary for the research ethics committee members or relevant authorities to inspect the research records to make sure that we (the researchers) are conducting research in an ethical manner.

What is this research study about?

The role of financial planners in the South African context is becoming more important. Most individuals need the assistance of financial planners to help them with their financial and investment planning. Financial planners and investment companies in South Africa assume that individual investors behave rationally when

making investment decisions. This is due to the fact that risk tolerance is measured by means of risk assessment forms that incorporate risk tolerance and risk personalities. However, these forms are not comprehensive enough to take into account what market risk individual investors cannot tolerate. Furthermore, in reality, the level of risk tolerance individual investors' are willing to take differs from theory and largely depends on their personal traits and attitudes towards risk. The difficulties that financial planners, investment companies as well as individual investors face in recognising and implementing suitable investment strategies often take on preferences that relate to how individual investors recognise risk and behave towards risk. This study aims to analyse risk tolerance during the investor lifecycle. You have been invited to participate in this study.

Why have you been invited to participate?

You have been invited to participate because your company represents the sample population under study.

What will your responsibilities be?

The questionnaire should take approximately 15-20 minutes to complete.

Who will have access to the data?

Anonymity (that is, in no way will the results be linked to the company) will be ensured as the researchers do not have direct access to the company's client database. Confidentiality (that is, we assure you that we will protect the information we have about the company) will be ensured by the way the data will be captured, and no mention of the company will be included in the study or any research projects related to the study. Only the researchers will have access to the data. Data will be stored for 5 years before being confidentially destroyed.

What will happen to the data?

The data from this study will be reported on in the following ways: in an academic study and research articles. In all of this reporting, you will not be personally identified. This means that the reporting will not include the company name or details that will help others identify that the company participated (e.g. the company's name or physical description). Only researchers affiliated with the NWU will have access to the data.

Will you be paid/compensated to take part in this study and are there any costs involved?

No, you will not be paid/compensated to take part in the study.

How will you know about the findings?

The general findings of the research will be shared with you electronically in article form, after completion of the study.

Is there anything else that you should know or do?

Should you have any queries please contact Anzel van den Bergh at 082 457 2689 or v.anzel2@yahoo.com. Alternatively, you can contact Ms SJ Ferreira at (016) 910-3365 or 23261048@nwu.ac.za; Dr. Z Dickason at (016) 910-3377 or Zandri.Dickason@nwu.ac.za.

If you have any concerns or complaints that have not been adequately addressed by the researcher you can contact the chair of Social and Technological Sciences Research Ethics Committee (Prof Dawid Jordaan) at (016) 910-3260 or Dawid.Jordaan@nwu.ac.za.

Declaration by participant

By signing below, I Jean Dommisse agree to take part in the research study.

I declare that:

- I have read and understood this information and consent form and it is written in a language with which I am fluent and comfortable.
- I have had a chance to ask questions to both the person obtaining consent, as well as the researcher (if this is a different person), and all my questions have been adequately answered.
- I understand that taking part in this study is **voluntary** and I have not been pressurised to take part.
- I understand that what I contribute (what I report/say/write/draw/produce visually) could be reported publically and/or quoted, but without reference to my personal identity.
- I may choose to leave the study at any time and will not be penalised or prejudiced in any way.
- I may be asked to leave the study before it has finished, if the researcher feels it is in my best interest, or if I do not follow the study plan, as agreed to.

Signed at (*place*) Bellville on (*date*) 04 August 2017

Signature of participant **Signature of witness**

ANNEXURE B: ETHICAL CLEARANCE

NORTH-WEST UNIVERSITY
YUNIBESITI YA BOKONE-BOPHIRIMA
NOORDWES-UNIVERSITEIT
VAAL TRIANGLE CAMPUS

FACULTY OF ECONOMIC SCIENCES AND INFORMATION TECHNOLOGY

ETHICS CLEARANCE DOCUMENT

Dissertation (M)	X
Thesis (PhD)	
Article	
Hons	

SUPERVISOR							
Study Leader / Promoter / Author(s)	Dr D Viljoen						
STUDENT / AUTHOR							
Name	A van den Bergh						
Student / Staff Number	22983120						
Registered Title of Dissertation or Thesis or Project Title of Article							
School	Accounting		Economics	X	Information Technology		
ETHICAL CLEARANCE							
Ethics clearance number	ECONIT-2017-038						
Date (of Ethics Sub Committee Meeting)	5 May 2017						

.....
CHAIRPERSON: ETHICS COMMITTEE

10 May 2017.....
DATE

.....
RESEARCH DIRECTOR

10 May 2017.....
DATE

ANNEXURE C: QUESTIONNAIRE

SECTION A: DEMOGRAPHICAL INFORMATION

Age	16 - 24	1
	25 -34	2
	35 - 49	3
	50+	4

Gender	Male	1
	Female	2

Race	African	1
	White	2
	Coloured	3
	Asian	4
	Other	5

Other:_____

Marital status	Never married	1
	Married	2
	Divorced	3
	Other	4

Other:_____

Nationality	South African	1
	Other	2

Other:_____

What is your home province (if you live in South Africa?)	Gauteng	1
	Kwazulu-Natal	2
	Western Cape	3
	Northern Cape	4
	Eastern Cape	5
	Free State	6
	Mpumalanga	7
	Limpopo	8
	North West	9
	I live outside South Africa	10

What language do you mostly speak at home?	English	1	isiZulu	4	Sepedi	7
	Afrikaans	2	Xitsonga	5	Sesotho	8
	IsiXhosa	3	SiSwati	6	IsiNdebele	9
	Setswana	10	Tshivenda	11	Other	12

What is your annual income?	Below R 100 000	1	R 500 001-600 000	6
	R 100 001-200 000	2	R 600 001-700 000	7
	R 200 001-300 000	3	R 700 001-800 000	8
	R 300 001-400 000	4	R 800 001-900 000	9
	R 400 001-500 000	5	R 900 001-R 1 million	10
			More than R 1 million	11

SECTION B: INVESTMENT INSTRUMENTS

What investments do you have?	1	Banked cash savings
	2	Burial scheme
	3	Education policies
	4	Endowments
	5	Funeral policies
	6	Government bonds
	7	Guaranteed annuities
	8	Living annuities
	9	Money market
	10	Offshore investments
	11	Pension or provident fund
	12	Property
	13	Retirement annuities
	14	Saving money in your home loan
	15	Shares
	16	Stokvels
	17	Unit trusts
	18	Other

How long have you had each of these investments/portfolios?						
	Less than 6 months	**6 - 12 months**	**1 - 3 years**	**4 - 6 years**	**7 - 9 years**	**10 years or more**
Banked cash savings	1	2	3	4	5	6
Burial scheme	1	2	3	4	5	6
Education policies	1	2	3	4	5	6
Endowments	1	2	3	4	5	6
Funeral policies	1	2	3	4	5	6
Government bonds	1	2	3	4	5	6
Guaranteed annuities	1	2	3	4	5	6
Living annuities	1	2	3	4	5	6
Money market	1	2	3	4	5	6
Offshore investments	1	2	3	4	5	6
Pension or provident fund	1	2	3	4	5	6

Property	1	2	3	4	5	6
Retirement annuities	1	2	3	4	5	6
Saving money in your home loan	1	2	3	4	5	6
Shares	1	2	3	4	5	6
Stokvels	1	2	3	4	5	6
Unit trusts	1	2	3	4	5	6
Other	1	2	3	4	5	6

SECTION C: SUBJECTIVE MEASURES OF RISK TOLERANCE

Where would you describe yourself to be in the investor lifecycle?	1	Accumulation phase – accumulating net worth to satisfy short term needs (e.g. house) and long-term goals (retirement). High risk portfolios.
	2	Consolidation phase – Concerned with long term needs (retirement). Equity exposure is reduced and portfolios contain moderate risk.
	3	Spending phase – Typically retires. Spends retirement savings.
	4	Gifting phase – Excess amounts in portfolios are gifted to family, etc. Focus on estate planning and tax minimisation.

Which of the following statements comes closest to the amount of financial risk that you and your spouse/partner are willing to take when making an investment?	1	Take substantial financial risks expecting to earn substantial returns
	2	Take above average financial risks expecting to earn above average returns
	3	Take average financial risks expecting to earn average returns
	4	Not willing to take any financial risks

SECTION D: GRABLE AND LYTTON RISK TOLERANCE SCALE

Indicate the degree to which you agree or disagree with this statement					
		Strongly disagree	**Disagree**	**Agree**	**Strongly agree**
1	It's hard for me to win a bargain/argument	1	2	3	4
2	When travelling, I like to take new routes	1	2	3	4
3	I like to try new foods, new places and totally new experiences.	1	2	3	4
4	When driving a car, I would always obey the traffic rules and avoid dangerous situation	1	2	3	4

FINANCIAL RISK					
1.	When you hear "financial risk", what do you think of?	**Loss**	**Uncertainty**	**Opportunity**	**Adventure**
2. How would you describe yourself as a financial risk taker? (E.g. Gambling, investing, saving etc.) (Choose 1 option only)					
	Willing to take as much risk as possible to get desired profit				
	Willing to take calculated risks				
	Cautious				
	Avoid loss as much as possible				
3. What influences your financial decisions such as saving, spending, investing or loaning money to a friend? (Choose 1 option only)					
	Personal preferences/comfort/pleasure				
	Financial return/profit associated with the decision				
	Financial risk (loss) associated with the decision				
	Both risk and return				
4. Which situation would make you the happiest?		**(Choose 1 option only)**			
	You win R 5 000 in a competition				
	You inherit R 5 000 from a rich relative				
	You earn R 5 000 by risking R 1 000 in an investment				
5. Assume you are to buy a car in the near future, which of the following financing options would you choose? (Choose 1 option only)					
	Save money and buy an affordable pre-owned car for cash (second hand car)				
	Borrow money from a friend or relative to buy a good new affordable car **(Note: you can negotiate repayment terms)**				
	Ask for a loan from a bank or financial institution and pay monthly instalments as long as you buy the car of your dreams **(Note: Repayment terms set by bank)**				
SPECULATIVE RISK					
1. Suppose a relative left you an inheritance to the value of R 300 000, however you are required to choose a way in which this inheritance is to be presented to you. Given the following options, which would you choose? (Choose 1 option only)					
	R300 000 cash				
	A house worth R300 000				
	Shares to the value of R 300 000 at a company which is very close to your heart				
2. You have just taken a job at a small fast growing company. After your first year you are offered the following options, which one would you choose? (Choose 1 option only)					
	A once off bonus of R 300 000				
	A 3 year employment contract earning R10 000 a month (i.e. It will be R360 000 in 3 years)				
	Shares in the company to the value of R300 000 with the hope of selling them later at a				

	larger profit	
3. Assume you are in a TV game show or any other game show offering different options, which of the following options would you choose? (Choose 1 option only)		
	R1 000 in cash	
	A 50% chance to win R5 000	
	A 25% chance to win R10 000	
	A 5% chance to win R100 000	
4. Suppose a company you invested R 3 000 in is about to close down. They offer you the following options (each with 2 possible outcomes) and you can only choose one option, which would you choose? (Choose 1 option only)		
	Take your R3 000 and loose R0	
	Possibility of gaining R5 000 or losing your R1 000	
	Possibility of gaining R8 000 or losing R2 000	
	Possibility of gaining R12 000 or losing all your R3 000	
INVESTMENT RISK		
1. Should you decide to invest, which of the following options regarding the management of investments would you choose? (Choose 1 option only)		
	Manage them yourself	
	Hire a manager	
	Ask a friend	
2. Should you get employed today on a permanent basis with a sTable salary, how much % of your monthly income (after paying for all expenses) would you be interested to invest/save? (Choose 1 option only)		
	Nothing (0%)	
	Less than 10%	
	10%-20%	
	25%-35%	
	More than 40%	
3. Which of the following investment opportunities do you find appealing? (Choose 1 option only)		
	60% in low risk with low return, 30% in medium risk with medium return, 10% in high risk with high return	
	30% in low risk with low return, 40% in medium risk with medium return, 30% in high risk with high return	
	10% in low risk with low return, 40% in medium risk with medium return, 50% in high risk with high return	
4. If you unexpectedly received R20 000 to INVEST, what would you do? (Choose 1 option only)		
	Deposit it into a bank account	
	Invest in fixed income investments where you will get low constant returns with minimal risk	

	of loss
	Invest in shares where it will be exposed to high risk of loss but with high return possibilities
5. As you probably know that investing comes with risks of losing your money. Suppose that you have R 50 000 invested, what % of loss in your investment would make you feel uncomfortable to an extent that you end up withdrawing your money? (Choose 1 option only)	
	Nothing (0%)
	Less than 5%
	5%-15%
	15%-25%
	25%-40%
	More than 40%

THANK YOU!