

Measuring student investment potential: a mixed methods approach

RW Masenya

 orcid.org/0000-0002-6436-4677

Thesis submitted for the degree *Magister Commercii* in Risk Management at the North-West University

Supervisor: Prof D. Viljoen

Co-supervisor: Dr. H. Lues

Graduation: May 2018

Student number: 24176370

PREFACE (TOC_HEADING)

And acknowledgements

ABSTRACT (TOC_HEADING)

And key terms

OPSOMMING (TOC_HEADING)

En sleutelterm

TABLE OF CONTENTS (HEADING 0)

PREFACE (TOC_HEADING)	I
ABSTRACT (TOC_HEADING)	II
OPSOMMING (TOC_HEADING)	III
CHAPTER 1 NAME OF CHAPTER (CHAPTER)	1
...OR NAME OF CHAPTER (TOC_HEADING)	ERROR! BOOKMARK NOT DEFINED.
1.1 Heading 2	1
1.1.1 Heading 3	1
1.1.1.1 Heading 4	1
1.1.1.1.1 Heading 5	1
CHAPTER 2 NAME OF CHAPTER (CHAPTER)	2
...OR NAME OF CHAPTER (TOC_HEADING)	ERROR! BOOKMARK NOT DEFINED.
2.1 Heading 2	2
2.1.1 Heading 3	2
2.1.1.1 Heading 4	2
2.1.1.1.1 Heading 5	2
CHAPTER 3 NAME OF CHAPTER (CHAPTER)	3
...OR NAME OF CHAPTER (TOC_HEADING)	ERROR! BOOKMARK NOT DEFINED.
3.1 Heading 2	3
3.1.1 Heading 3	3
3.1.1.1 Heading 4	3
3.1.1.1.1 Heading 5	3

CHAPTER 4 NAME OF CHAPTER (CHAPTER)	4
...OR NAME OF CHAPTER (TOC_HEADING)	ERROR! BOOKMARK NOT DEFINED.
4.1 Heading 2	4
4.1.1 Heading 3	4
4.1.1.1 Heading 4	4
4.1.1.1.1 Heading 5	4
CHAPTER 5 NAME OF CHAPTER (CHAPTER)	5
...OR NAME OF CHAPTER (TOC_HEADING)	ERROR! BOOKMARK NOT DEFINED.
5.1 Heading 2	5
5.1.1 Heading 3	5
5.1.1.1 Heading 4	5
5.1.1.1.1 Heading 5	5
CHAPTER 6 NAME OF CHAPTER (CHAPTER)	6
...OR NAME OF CHAPTER (TOC_HEADING)	ERROR! BOOKMARK NOT DEFINED.
6.1 Heading 2	6
6.1.1 Heading 3	6
6.1.1.1 Heading 4	6
6.1.1.1.1 Heading 5	6
BIBLIOGRAPHY (TOC_HEADING)	7
ANNEXURES (TOC_HEADING)	8
LAST UPDATED: 12 DECEMBER 2014	8

LIST OF TABLES (HEADING 0)

Table 1-1: This is the title of the table. (CaptionTop_Tbl_Fig) 1

Table 2-1: This is the title of the table. (CaptionTop_Tbl_Fig) 2

Table 3-1: This is the title of the table. (CaptionTop_Tbl_Fig) 3

Table 4-1: This is the title of the table. (CaptionTop_Tbl_Fig) 4

Table 5-1: This is the title of the table. (CaptionTop_Tbl_Fig) 5

Table 6-1: This is the title of the table. (CaptionTop_Tbl_Fig) 6

LIST OF FIGURES (HEADING 0)

Figure 1-1: This is the title of the figure. (CaptionBot_Tbl_Fig) 1

Figure 2-1: This is the title of the figure. (CaptionBot_Tbl_Fig) 2

Figure 3-1: This is the title of the figure. (CaptionBot_Tbl_Fig) 3

Figure 4-1: This is the title of the figure. (CaptionBot_Tbl_Fig) 4

Figure 5-1: This is the title of the figure. (CaptionBot_Tbl_Fig) 5

Figure 6-1: This is the title of the figure. (CaptionBot_Tbl_Fig) 6

CHAPTER 1 NAME OF CHAPTER (CHAPTER)

1.1 Heading 2

1.1.1 Heading 3

1.1.1.1 Heading 4

1.1.1.1.1 Heading 5

Figure 1-1: This is the title of the figure. (CaptionBot_Tbl_Fig)

Table 1-1: This is the title of the table. (CaptionTop_Tbl_Fig)

CHAPTER 2 NAME OF CHAPTER (CHAPTER)

2.1 Heading 2

2.1.1 Heading 3

2.1.1.1 Heading 4

2.1.1.1.1 Heading 5

Figure 2-1: This is the title of the figure. (CaptionBot_Tbl_Fig)

Table 2-1: This is the title of the table. (CaptionTop_Tbl_Fig)

CHAPTER 3 NAME OF CHAPTER (CHAPTER)

3.1 Heading 2

3.1.1 Heading 3

3.1.1.1 Heading 4

3.1.1.1.1 Heading 5

Figure 3-1: This is the title of the figure. (CaptionBot_Tbl_Fig)

Table 3-1: This is the title of the table. (CaptionTop_Tbl_Fig)

CHAPTER 4 NAME OF CHAPTER (CHAPTER)

4.1 Heading 2

4.1.1 Heading 3

4.1.1.1 Heading 4

4.1.1.1.1 Heading 5

Figure 4-1: This is the title of the figure. (CaptionBot_Tbl_Fig)

Table 4-1: This is the title of the table. (CaptionTop_Tbl_Fig)

CHAPTER 5 NAME OF CHAPTER (CHAPTER)

5.1 Heading 2

5.1.1 Heading 3

5.1.1.1 Heading 4

5.1.1.1.1 Heading 5

Figure 5-1: This is the title of the figure. (CaptionBot_Tbl_Fig)

Table 5-1: This is the title of the table. (CaptionTop_Tbl_Fig)

CHAPTER 6 NAME OF CHAPTER (CHAPTER)

6.1 Heading 2

6.1.1 Heading 3

6.1.1.1 Heading 4

6.1.1.1.1 Heading 5

Figure 6-1: This is the title of the figure. (CaptionBot_Tbl_Fig)

Table 6-1: This is the title of the table. (CaptionTop_Tbl_Fig)

BIBLIOGRAPHY (TOC_HEADING)

Bibliography Bibliography Bibliography Bibliography Bibliography Bibliography Bibliography
Bibliography

Bibliography Bibliography Bibliography Bibliography Bibliography Bibliography Bibliography
Bibliography

Bibliography Bibliography Bibliography Bibliography

ANNEXURES (TOC_HEADING)

LAST UPDATED: 13 MARCH 2018

“See ... I *knew* I could do it.”

- R.W. Masenya

DECLARATION

I declare that:

“MEASURING STUDENT INVESTMENT POTENTIAL: A MIXED METHODS APPROACH”

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.

RW Masenya
November 2017
Vanderbijlpark

EDITING LETTER

Ms Linda Scott
English language editing
SATI membership number: 1002595
Tel: 083 654 4156
E-mail: lindascott1984@gmail.com

21 November 2017

To whom it may concern

This is to confirm that I, the undersigned, have language edited the **dissertation** of

RW Masenya

for the degree

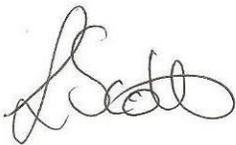
Magister Commercii: Risk Management

entitled:

Measuring student investment potential: a mixed methods approach

The responsibility of implementing the recommended language changes rests with the author of the dissertation.

Yours truly,



Linda Scott

ACKNOWLEDGEMENTS

With the submission of this dissertation, I acknowledge with gratitude the assistance, encouragement, and support of all the people involved in this study. In particular, I would like to sincerely thank the following:

- My parents, Nthabiseng and Josias Masenya, for their love, encouragement, support, and tolerance during the past year. I hope I have done you proud.
- My dogs, Boogie Boogs and Dabbi Dabs, for their cuddles and for never failing to cheer me up or make me laugh.
- My friends for their encouragement, support, and their odd senses of humour that kept me entertained throughout the year.
- My supervisor, Dr. Diana Viljoen, I do not have the words to explain how proud and happy I am to have had you as my supervisor. I sincerely thank you for your guidance, patience, and endless support.
- My co-supervisor, Dr Heleneze Lues, for her encouraging and kind words. I appreciate your help a lot.
- Aldine Oosthuyzen of the North-West University (Vaal Triangle Campus) for her patience and assistance with the statistical aspects of this study.
- To Linda Scott for her professionalism in the language editing of this study. I appreciate your assistance.
- And lastly, to the students who participated in the study and the lecturers who made it possible, thank you for your help and kindness.

Rearabetswe Winnie Masenya

Vanderbijlpark

2017

ABSTRACT

This study aimed at measuring non-investing students' potential to invest. The study also aimed at determining what current student investors are invested in, what their sense of risk tolerance is, and what their overall perception towards investment is.

A brief literature review was conducted on several topics. These topics include investment and the importance thereof; risk tolerance and how it can be influenced by demographics; as well as risk perception and its effect on an individual's investment behaviour.

Thereafter, the study implemented a mixed methods research approach wherein a qualitative phase and a quantitative phase were implemented. First, the qualitative phase was implemented wherein the researcher interviewed 21 student investors. The purpose of these interviews was to explore student investor's investment activities, sense of risk tolerance, and overall perception towards investment. The main results from the qualitative phase of the study was that student investors invest in high risk instruments, are high risk tolerant, lack investment knowledge, and have an overall good perception of investment.

Also, the transcripts from the interviews were analysed by using the Atlas.ti qualitative analysis software. From the analysis, the researcher used the main themes to create a questionnaire that could be used to measure students potential to invest, as well as to test whether or not the findings from the qualitative study could be generalised.

The quantitative phase of the study made use of self-administered questionnaires which were distributed to a sample of 396 students. These questionnaires helped the researcher to determine whether or not the findings of the qualitative study can be generalised. A statistical analysis was conducted on the questionnaires by using SPSS for Windows. The quantitative phase of the study found that students are low risk tolerant, which was a contradictory finding to the risk tolerance of student investors from the qualitative study. However, in line with the qualitative study, it was found that students also have a lack of investment knowledge and have an overall perception

towards investment risk and investments. Therefore the study met all of its objectives. Students have the potential to invest; however, there are many factors, such as financial knowledge and awareness of risk tolerance, that need to be improved first.

Keywords: investment; investment risk perception; investor risk tolerance; subjective investment knowledge; mixed methods

TABLE OF CONTENTS

DECLARATION.....	i
EDITING LETTER	ii
ACKNOWLEDGEMENTS.....	iii
ABSTRACT	iv
TABLE OF CONTENTS	vi
LIST OF FIGURES	xiii
LIST OF TABLES.....	xv
LIST OF ACRONYMS	xvii
CHAPTER 1: INTRODUCTION, PROBLEM STATEMENT AND OBJECTIVES OF THE STUDY	1
1.1 INTRODUCTION	1
1.2 PROBLEM STATEMENT	2
1.3 OBJECTIVES OF THE STUDY.....	3
1.3.1 Primary objective	3
1.3.2 Theoretical objectives	4
1.3.3 Empirical objectives	4
1.4 RESEARCH DESIGN AND METHODOLOGY	4
1.4.1 Literature review	7
1.4.2 Empirical study.....	7
1.4.2.1 Target population	7
1.4.2.2 Sampling frame	7
1.4.2.3 Sampling method	9
1.4.2.4 Sample size	9
1.4.2.5 Measuring instrument and data collection method	10

1.4.3	Statistical analysis.....	12
1.5	ETHICAL CONSIDERATIONS.....	12
1.6	CHAPTER OUTLINE	13
CHAPTER 2: INVESTMENT, INVESTMENT KNOWLEDGE, INVESTOR RISK TOLERANCE AND RISK PERCEPTION.....		14
2.1	INTRODUCTION	14
2.2	INVESTMENT	14
2.2.1	Defining investment	14
2.2.2	Investment risk.....	17
2.2.3	The importance of diversification.....	19
2.3	INVESTMENT KNOWLEDGE	20
2.3.1	Defining investment knowledge.....	20
2.3.2	Importance of investment knowledge	22
2.4	RISK PERCEPTION	23
2.4.1	Defining risk perception.....	24
2.4.2	Risk perception and investment decision making	24
2.5	INVESTOR RISK TOLERANCE.....	25
2.5.1	Demographics and investor risk tolerance.....	27
2.5.1.1	Race and risk tolerance	28
2.5.1.2	Gender and risk tolerance	29
2.5.1.3	Age and risk tolerance.....	30
2.5.1.4	Education level and risk tolerance.....	31
2.5.1.5	Income and risk tolerance.....	32
2.5.1.6	Summary on demographics and risk tolerance.....	34
2.6	SUMMARY	35
CHAPTER 3: RESEARCH DESIGN AND METHODOLOGY		36
3.1	INTRODUCTION	36
3.2	STUDY DESIGN.....	36

3.2.1	Qualitative study design	36
3.2.2	Quantitative study designs	38
3.2.3	Mixed methods study designs	39
3.3	STUDY PARADIGMS	42
3.3.1	Positivist paradigm	42
3.3.2	Constructivist paradigm.....	43
3.3.3	Participatory paradigm	44
3.3.4	Pragmatic paradigm.....	45
3.3.5	Study paradigm applied to study	46
3.4	SAMPLING STRATEGIES	47
3.4.1	Target population	47
3.4.2	Sampling frame and sample.....	48
3.4.3	Sampling method	48
3.4.3.1	Probability sampling methods	49
3.4.3.2	Non-probability sampling	50
3.4.4	Sampling size	51
3.5	DATA COLLECTION METHODS.....	52
3.5.1	Qualitative data collection methods.....	52
3.5.1.1	Qualitative observations.....	53
3.5.1.2	Interviews	54
3.5.1.2.1	Interview design	56
3.5.1.2.2	Conducting the interview.....	58
3.5.2	Quantitative data collection methods.....	59
3.5.2.1	Quantitative observations	59
3.5.2.2	Surveys.....	60
3.5.2.2.1	Questionnaire design.....	60
3.5.2.2.2	Questionnaire format.....	61
3.5.2.2.3	Questionnaire content and layout.....	62
3.6	PRE-TEST AND PILOT TEST OF DATA COLLECTION INSTRUMENTS	64

3.6.1	Pre-testing interview questions	65
3.6.2	Pilot testing questionnaire	65
3.7	INTERVIEW AND QUESTIONNAIRE ADMINISTRATION	66
3.7.1	Qualitative interview administration	66
3.7.2	Quantitative questionnaire administration.....	67
3.8	DATA PREPARATION.....	68
3.8.1	Qualitative data preparation	68
3.8.1.1	Transcribing	68
3.8.1.2	Coding.....	69
3.8.2	Quantitative data preparation	69
3.8.2.1	Editing	70
3.8.2.2	Coding.....	70
3.9	DATA ANALYSIS.....	70
3.9.1	Qualitative data analysis	71
3.9.2	Quantitative data analysis	74
3.10	SUMMARY	79
CHAPTER 4: QUALITATIVE ANALYSIS OF THE INTERVIEWS		80
4.1	INTRODUCTION	80
4.2	QUALITATIVE ANALYSIS OF THE MAIN THEMES.....	80
4.2.1	Theme 1: The importance of investment knowledge	81
4.2.1.1	Sub-theme 1: Origin of investment knowledge.....	81
4.2.1.2	Sub-theme 2: Motivation to start investing.....	85
4.2.1.2.1	Financial wellbeing	85
4.2.1.2.2	Personal emotion	87
4.2.1.2.3	Role models.....	88
4.2.1.3	Sub-theme 3: Investment knowledge as a barrier	89
4.2.1.4	Conclusion on Theme 1: The importance of investment knowledge	90
4.2.2	Theme 2: Participants are highly risk tolerant.....	91
4.2.2.1	Sub-theme 1: Demographics and risk tolerance.....	91

4.2.2.1.1	Race and risk tolerance	92
4.2.2.1.2	Gender and risk tolerance	93
4.2.2.1.3	Age and risk tolerance.....	96
4.2.2.1.4	Education level and risk tolerance.....	98
4.2.2.1.5	Investing experience and risk tolerance	99
4.2.2.1.6	Source of income and risk tolerance.....	102
4.2.2.2	Sub-theme 2: Personal emotions and risk tolerance.....	104
4.2.2.3	Conclusion on Theme 2: Participants are highly risk tolerant.....	105
4.2.3	Theme 3: Participants' perception towards investment.....	106
4.2.3.1	Sub-theme 1: Overall positive perception on investing.....	106
4.2.3.2	Sub-theme 2: Recommendations from participants to future participants	107
4.2.3.2.1	Conduct research.....	107
4.2.3.2.2	Practice.....	108
4.2.3.2.3	Start as soon as possible.....	109
4.2.3.2.4	Start small	110
4.2.3.2.5	Persevere	111
4.2.3.3	Conclusion on Theme 3: Participants' perception towards investment is positive	112
4.3	SUMMARY	113
CHAPTER 5: QUANTITATIVE ANALYSIS OF THE QUESTIONNAIRES		114
5.1	INTRODUCTION	114
5.2	RESULTS OF THE PILOT STUDY	114
5.3	PRELIMINARY DATA ANALYSIS	116
5.3.1	Coding	116
5.3.2	Cleaning of the data.....	119
5.3.3	Data gathering process	119
5.3.4	Tabulating of the results.....	120
5.4	DEMOGRAPHICS AND PARTICIPATION IN INVESTMENT ANALYSIS	123
5.4.1	Sample description	123
5.4.2	Participants' saving and investing habits.....	131

5.4.3	Participants' perception on investment risk	137
5.4.4	Participants' investment risk tolerance	139
5.4.5	Participants' subjective investment knowledge.....	142
5.5	DESCRIPTIVE STATISTICS AND RELIABILITY OF THE SCALES	145
5.5.1	Descriptive statistics of the scales.....	145
5.5.2	Reliability of the scales.....	146
5.6	CORRELATION TEST RESULTS.....	147
5.6.1	Checking the information about the sample	148
5.6.2	Determining the direction of the relationship	148
5.6.3	Determining the strength of the relationship	149
5.6.4	Assessing the significance level.....	149
5.7	SYNTHESISING THE QUALITATIVE AND QUANTITATIVE RESULTS	151
5.8	SUMMARY	153
CHAPTER 6: CONCLUSION AND RECOMMENDATIONS		154
6.1	INTRODUCTION	154
6.2	OVERVIEW OF THE STUDY.....	155
6.2.1	Primary objective	155
6.2.2	Theoretical objectives	155
6.2.3	Empirical objectives	155
6.3	MAIN FINDINGS OF THE STUDY.....	157
6.3.1	Students do invest	157
6.3.2	Students have a lack of investment knowledge.....	157
6.3.3	Students have a low risk tolerance.....	158
6.3.4	Students have a positive perception towards investment	158
6.3.5	Correlation of students' demographics and their risk tolerance	159
6.4	RECOMMENDATIONS.....	160
6.5	CONTRIBUTIONS OF THE STUDY	162

6.6	LIMITATIONS AND FUTURE RESEARCH	162
6.6.1	Study limitations.....	162
6.6.2	Areas for future research	163
6.7	CONCLUDING REMARKS	164
	LIST OF REFERENCES.....	165
	ANNEXURE A: FINAL INTERVIEW SCHEDULE.....	196
	ANNEXURE B: QUESTIONNAIRE.....	197

LIST OF FIGURES

Figure 1.1: Procedural diagram for study	6
Figure 3.1: Sampling methods	49
Figure 3.2: The four stages of data analysis.....	70
Figure 3.3: Approaches for assessing reliability	75
Figure 3.4: Approaches to test validity	76
Figure 5.1: Participants' age.....	123
Figure 5.2: Participants' gender	124
Figure 5.3: Participants' race.....	124
Figure 5.4: Participants' marital status	125
Figure 5.5: Participants' nationality.....	125
Figure 5.6: Participants' home province	126
Figure 5.7: Participants' home language	126
Figure 5.9: Participants' degree	128
Figure 5.10: Participants' academic year.....	128
Figure 5.11: Participants' current study situation.....	129
Figure 5.12: Participants' monthly income/allowance	129
Figure 5.13: Participants' source of income/allowance	130
Figure 5.14: Participants' dependents	130
Figure 5.15: Participants' number of dependents	131
Figure 5.16: Participants who save	132

Figure 5.17: Participants' type of savings account.....	132
Figure 5.18: Participants who invest.....	133
Figure 5.19: Participants' investment types	133
Figure 5.20: Participants' percentage income invested	134
Figure 5.21: Participants' investment period.....	134
Figure 5.22: Participants' reasons for not investing	135
Figure 5.23: Participants who are willing to invest.....	136
Figure 5.24: Percentage income non-investing participants are willing to invest.....	136
Figure 5.26: Participants' risk tolerance (SCF question).....	141

LIST OF TABLES

Table 2.1: Investment instruments	15
Table 2.2: Types of investment risks	18
Table 2.3: Assumed relationships between demographics and risk tolerance	34
Table 3.1: Qualitative research types	37
Table 3.2: Mixed methods research types	40
Table 3.3: Different types of observations	53
Table 3.4: Predetermined interview themes and questions	57
Table 3.5: Descriptive statistics techniques	78
Table 4.1: Demographics of participants	91
Table 4.2: Participants' investing experience	100
Table 4.3: Source of participant income	103
Table 5.1: Description of items and constructs	115
Table 5.1: Coding of the questionnaire	117
Table 5.2: Frequency table on participant' responses on saving and investing	120
Table 5.3: Frequencies of participants' responses on investment risk perception, risk tolerance, and subjective investment knowledge	122
Table 5.4: Participants' perception of investment risk	137
Table 5.5: Financial risk perception statistics	139
Table 5.6: Participants' risk tolerance (13-item scale) statistics	140
Table 5.7: Participants' perceived investment knowledge	142

Table 5.8: Statistics on the subjective investment knowledge scale	144
Table 5.9: Descriptive statistics of the scales	145
Table 5.10: Reliability of scales	146
Table 5.11: Students' demographics' correlation with Grable and Lytton (1999) 13-item risk tolerance scale.....	147

LIST OF ACRONYMS

DHET	: Department of Higher Education and Training
DOSPERT	: Domain-Specific Risk-Taking (scale)
ETF	: Exchange-Traded Fund
FOREX	: Foreign exchange
GLRT	: Grable and Lytton risk tolerance (scale)
HEI	: Higher Education Institution
IRP	: Investment risk perception
NWU	: North-West University
PT/FT	: Part-time/Full-time (job)
Qual	: Qualitative (phase/study)
Quan	: Quantitative (phase/study)
SCF	: Survey of Consumer Finance
SIK	: Subjective investment knowledge
SPSS	: Statistical Package for Social Sciences

CHAPTER 1: INTRODUCTION, PROBLEM STATEMENT AND OBJECTIVES OF THE STUDY

1.1 INTRODUCTION

Individuals in South Africa face an increasingly complex financial environment. Many individuals are confronted by endless financial stressors, which include large amounts of debt, high levels of inflation and increased financial risk in both financial and economic environments (Lusardi *et al.*, 2010:353; Van Deventer, 2013:1). Additionally, individuals who do not adequately manage their finances through appropriate saving and investing will be affected by severe credit card usage, high levels of stress and low financial security (Sabri *et al.*, 2010:456). In South Africa, economic factors such as high unemployment, poverty and inequality, together with the abovementioned financial stressors, intensify the financial strain young individuals undergo (Edigheji, 2010). Furthermore, these factors hinder young individuals' intent to save and invest for their futures. Therefore, in order to avoid personal financial crises, individuals have to be proactive by way of investing.

Investing refers to the activity of committing one's savings (Reilly & Brown, 2011) to real and/or financial assets for a certain timeframe in order to accumulate wealth in the future (Marx *et al.*, 2013:3). Swart (2012:5) states that individuals invest in order to guarantee financial wellbeing during their employed life and after retirement. A wide variety of investment vehicles exist in which individuals can choose to invest. These include low risk investments such as treasury bills and bonds, through to high risk investments such as equity (Hoevenaars *et al.*, 2008:2942). Ultimately, it is important for the chosen investments to complement each individual's specific investment goals.

The investor's investment goals are heavily dependent on the level of risk to which they are willing to be exposed. Therefore, it is vital that individuals are aware of and understand the level of risk associated with each investment vehicle. Hanna and Lindamood (2004:27) found that some individuals are not fully knowledgeable or understanding of investment risk and are expected to make complex investment decisions with little to no understanding of the nature of the underlying instrument.

Grable and Joo (1999:54) state that factors such as financial knowledge can contribute significantly to the type of investment choices individuals make, which ultimately builds a foundation for lifelong financial well-being (Xiao *et al.*, 2009:64).

In order to increase one's success in investing, it is recommended to start investing as early as possible. Lee and Hanna (1995) state that the earlier one invests and the longer one stays invested, the better the potential is for the investments to grow. As Berger and James (2002:9) mention, individuals' early investment years are significantly worth more than their later investment years.

Today's youth, specifically those from ages 18 to 29, are considered to be in the beginning phase of their investor life cycle (Chen & Volpe, 1998:109). These individuals include those who are studying at tertiary institutions, or who are in their first few years of working. According to Van Deventer (2013), today's youth are positioned to become the wealthiest generation thus far. In South Africa, the youth are considered to have great potential to accumulate high future earnings (Bevan-Dye & Surujlal, 2011:49) and are, therefore, a lucrative target market as potential investors.

1.2 PROBLEM STATEMENT

Students enrolled in tertiary institutions are exposed to great levels of student and credit card debt, which can hinder their future financial wellbeing greatly. For most of these students, university represents the first opportunity to make independent financial decisions. During this phase of their lives, students learn how to independently manage their funds, which are primarily obtained through sources such as their parents, credit cards, bursaries and part-time employment (Van Deventer, 2013:6).

Mottola (2014:9) found that some students save their financial resources to participate in investing activities. McLendon (2016:12) discovered that, when it comes to investing, students tend to either follow their own instinct or go with what investment choices their peers are making. This increases the chance of students making bad investment decisions. Negative investment experiences may discourage individuals from participating in future investment activities (Kuhnen & Knutson, 2011). Also, through word-of-mouth, those who have experienced losses can influence others' perception of

investment (Charlett *et al.*, 1995; Baker & Ricciardi, 2015). This can result in potential investors losing their interest in future investing.

Visa conducted a study in which the attitudes of individuals between the ages of 18 and 28 towards finance was analysed (Visa, 2012:1). The study found that out of 11 countries (Singapore, Philippines, Indonesia, Hong Kong, Taiwan, China, Korea, India, Russia, South Africa and the United Arab Emirates) less than two thirds (62%) of the youth invest for their futures (Visa, 2012). In addition, Visa (2012:13) found that Chinese and Hong Kong youth invest strongly in stocks (43% and 62% respectively), while Singaporean and Indian youth invest most avidly in insurance (63% and 59% respectively). Furthermore, Joo *et al.* (2003) and Norvilitis *et al.* (2006) found that student credit card debt affects the youths' ability to save and invest for the future and found that students' future financial decisions are weighed down by excessive debt.

Despite this abundance of knowledge regarding student investors in Asia, North America and Europe, there is a dearth of knowledge with regard to student investing habits and their willingness to participate in future investment activities in the South African context. In particular, limited empirical evidence is available to demonstrate what investment knowledge students have, what their perception of investment is and what investment vehicles they are in, or show interest investing in. This study measured student investment potential by identifying and analysing the extent of South African students' investing behaviour. Investing, in the context of this study, refers to a wide range of investment activities including participation in savings accounts, society schemes such as stokvels or investment clubs (ABSA, 2017; Capitec Bank, 2017; FNB, 2017a; Nedbank, 2017; Standard Bank, 2017) and the stock market (JSE, 2017).

1.3 OBJECTIVES OF THE STUDY

A number of objectives were formulated for this study.

1.3.1 Primary objective

The primary objective of the study is to measure student investment potential.

1.3.2 Theoretical objectives

To achieve the primary objective the study, the following theoretical objectives have been identified:

- Construct a theoretic framework for investment in the South African context; and
- Conduct a theoretical analysis of investment knowledge, risk tolerance, and risk perception.

1.3.3 Empirical objectives

To achieve the primary objective the study, the following empirical objectives have been identified:

- Determine students' involvement in investment activities (including their motivations to invest and the underlying instruments);
- Based on the results of the initial exploration, develop a survey instrument for gathering data on the extent of student engagement in investment activities;
- Determine the relationship between the extent of student engagement in investment activities and underlying demographic factors.
- Testing the students' investment knowledge, risk tolerance, and investment perception.

1.4 RESEARCH DESIGN AND METHODOLOGY

The study followed a fixed exploratory sequential mixed method approach. An exploratory design starts with qualitative exploration of a topic, which can be generalised to a larger sample of individuals during the quantitative phase (Creswell & Plano Clark, 2011). This approach provides pragmatic advantages when exploring the study's complex research questions (Driscoll *et al.*, 2007:26). The qualitative phase was conducted to explore the following points: the level of student participation in investment activities, students' motivations to invest and the underlying instruments in which they invested. Subsequently, the quantitative phase was implemented to investigate the

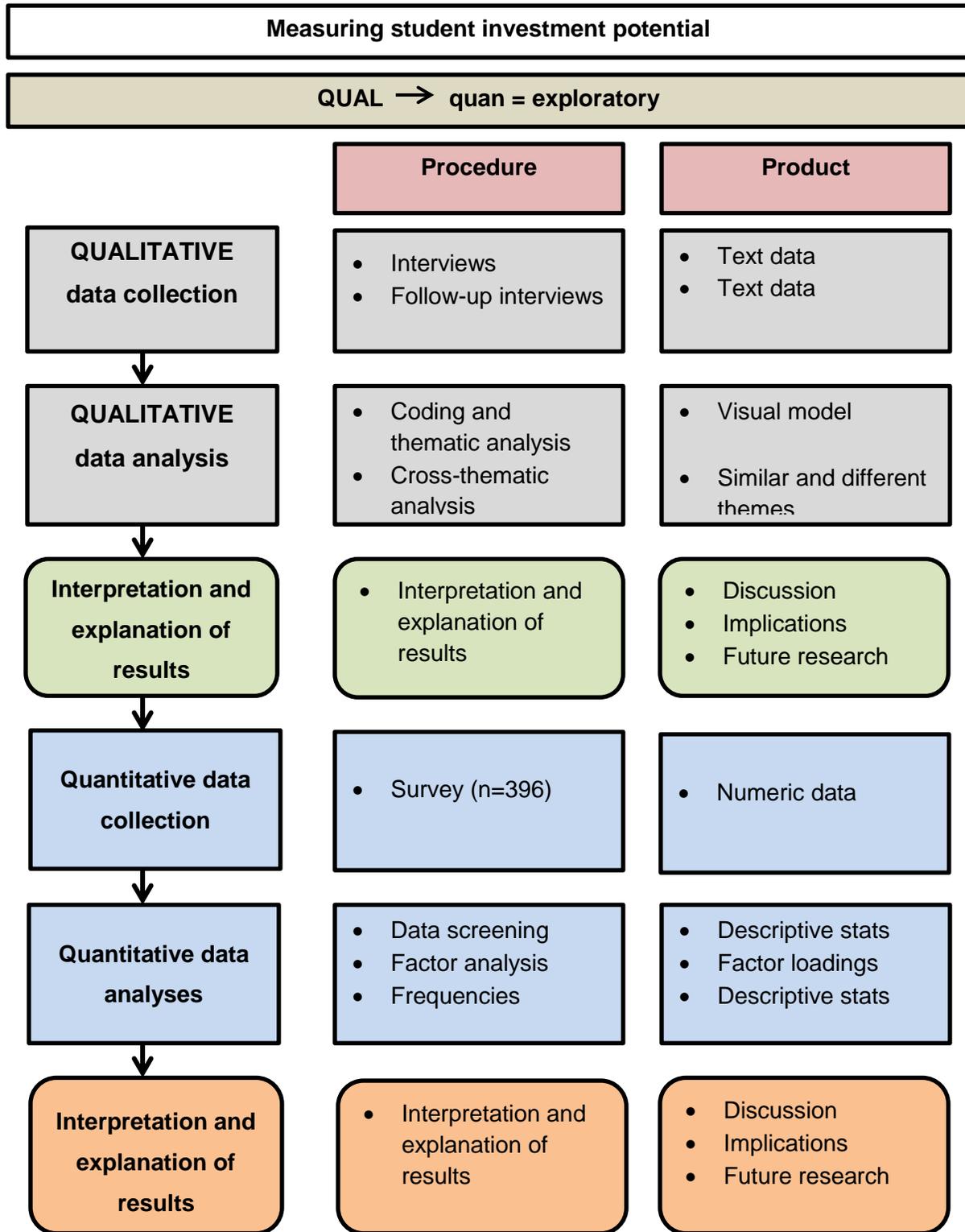
extent of student investment activities. The procedural diagram for the study is illustrated in Figure 1.1.

Creswell and Plano Clark (2010) support the use of numerous paradigms for mixed method studies. Thus, two different research paradigms were applied to the qualitative and quantitative phases of the study. The qualitative phase followed the constructivist paradigm in which reality is socially constructed (Guba & Lincoln, 1994:106). In other words, the subjective reasons and meanings that lie behind participants' social action were explained (Creswell *et al.*, 2003:5). Additionally, information was produced through interface between the interviewer and the participants (Krauss, 2005:764).

On the other hand, the quantitative phase followed a positivist research paradigm in which knowledge is objective and quantifiable. The positivist view makes it possible to use instruments (e.g. questionnaires) based on measures to collect specific information about the participants (Creswell *et al.*, 2003:5).

Ultimately, the methodological approach constitutes a literature review and an empirical study, which establishes numerous methodological subsections.

Figure 1.1: Procedural diagram for study



Source: Author's construction

1.4.1 Literature review

In order to support the empirical study, the necessary literature was obtained using secondary data sources such as textbooks, newspaper articles, journal articles and the Internet.

1.4.2 Empirical study

The following subsections form part of the empirical portion of the study.

1.4.2.1 Target population

For the purpose of this study, the target population are students who are enrolled at South African universities that are registered as higher education institutions (HEIs).

1.4.2.2 Sampling frame

As illustrated in Table 1.1, the sampling frame consisted of 26 (20 traditional and 6 technology) universities, which are registered as South African HEIs (DHET, 2017). A judgement sample of two South African HEIs was selected, of which one is a traditional university and the other, a university of technology. As stated by StatsSA (2016:1), Gauteng comprises the largest share (24%) of the South African population, therefore, the two selected HEIs are from this region. The overall sampling frame for both phases of the study is students who are enrolled at HEIs

Name of University	Location
Cape Peninsula University of Technology	Western Cape
Central University of Technology	Free State
Durban University of Technology	KwaZulu-Natal
Nelson Mandela University	Eastern Cape and Western Cape
North-West University	North-West and Gauteng
Rhodes University	Eastern Cape

Sefako Makgatho Health Sciences University	Gauteng
Sol Plaatje University	Northern Cape
Tshwane University of Technology	Gauteng, Mpumalanga, Limpopo, and North-West
University of Cape Town	Western Cape
University of Fort Hare	Eastern Cape
University of the Free State	Free State
University of KwaZulu-Natal	KwaZulu-Natal
University of Johannesburg	Gauteng
University of Limpopo	Gauteng and Limpopo
University of Mpumalanga	Mpumalanga
University of Pretoria	Gauteng
University of South Africa	All provinces
Stellenbosch University	Western Cape
University of Venda	Limpopo
University of the Western Cape	Western Cape
University of the Witwatersrand	Gauteng
University of Zululand	KwaZulu-Natal
Vaal University of Technology	Gauteng, Northern Cape, North-West, and Mpumalanga
Walter Sisulu University	Eastern Cape
Mangosuthu University of Technology	KwaZulu-Natal

Table 1.1: List of South African HEIs

The following section focusses on the sampling methods that were used in this study.

1.4.2.3 Sampling method

Both qualitative and quantitative phases of the study use two different types of non-probability sampling techniques. Non-probability sampling is a sampling technique where the chance, or probability, of selecting a specific sample participant is unknown (Tansey, 2007).

For the qualitative phase, snowball sampling was implemented to obtain a student investor sample, which consisted of a combination of undergraduates and postgraduates. Snowball sampling refers to the process where the initial participants are asked to identify additional participants who have similar characteristics to participate (willingly) in the study (Marais, 2013:54).

For the quantitative phase, a convenience sample of full-time undergraduates and postgraduates were drawn. The convenience sampling technique allowed for data to be collected from individuals who the researcher had easy access to (Kitchenham & Pfleeger, 2002:19). In addition, the non-probability convenience sampling technique is recommended for exploratory studies (Tansey, 2007).

1.4.2.4 Sample size

The sample size for the qualitative studies usually are much smaller than those used in quantitative studies (Mason, 2010). Creswell (2012) states that a sample between five and 25 participants is sufficient, while Guest *et al.* (2006:72) state that there needs to be at least six participants. According to Morse (1994:35), 15 is the smallest acceptable sample size for a qualitative study. The final qualitative sample size for this study was 21 participants, which allowed for quick data saturation (Charmaz, 2006:116). This small sample size contributed to obtaining a richer description of the phenomenon in question.

For the quantitative phase, a sample size of 396 participants was used. The sample size of similar studies included 94 to 128 participants (Larson *et al.*, 2016; Sabri, 2016), 350 participants (Falahati *et al.*, 2011) and 400 to 500 participants (Volpe *et al.*, 1996;

Lai & Tan, 2009; Sam & Geetha, 2012). Therefore, this study's sample size, compared to that of similar studies, is adequate.

1.4.2.5 Measuring instrument and data collection method

Qualitative data were collected by means of semi-structured interviews. The data were collected until data saturation was reached. The study's quantitative data were collected by means of self-administered questionnaires. Apart from the ensuing items indicated, additional items from the qualitative phase of the study were included in the final questionnaire. The questionnaire consists of four sections, which comprise of the following items: demographic information, investment knowledge, investment risk perception and financial risk tolerance. Each section of the questionnaire was structured to include existing, validated scales. The scales used in this study include the subjective knowledge scale (Flynn & Goldsmith, 1999), the domain-specific risk-taking (DOSPERT) scale (Blais & Weber, 2006), as well as the 13-item financial risk tolerance assessment instrument (Grable & Lytton, 2001). These are discussed in the sections to follow.

- **Subjective knowledge scale**

The subjective knowledge scale is a short, reliable and validated self-report measure of subjective knowledge that is applicable to a variety of data collection methods and subject areas (Flynn & Goldsmith, 1999). Multiple studies have shown that the scale is unidimensional, internally consistent, free from methodological cofounds and easy to use (Raju *et al.*, 1995; Moorman *et al.*, 2004; Hadar *et al.*, 2013). The items included in the scale for this study focus specifically on the domain of investment. Furthermore, the items were structured according to the scale development guidelines and ensured to be logical and semantically consistent (Flynn & Goldsmith, 1999:59). All items of the subjective knowledge scale are rated on a seven-point Likert scale (Joshi *et al.*, 2015) that ranges from one (strongly disagree) to seven (strongly agree).

- **DOSPERT scale**

Weber *et al.* (2002) developed the DOSPERT scale, which allows researchers and practitioners to measure both conventional and perceived risk attitudes. This validated psychometric scale measures risk attitudes in five commonly encountered content domains, namely ethical, financial, health/safety, social and recreational decisions (Rule, 2015:4). For the purpose of this study, only the items from the financial domain were used. The participants' risk perception, which reflects their 'gut-level' assessment of the riskiness of financial behaviours, was evaluated using a seven-point Likert scale ranging from one (not at all) to seven (extremely risky). The ratings of the financial domain items of each participant were added up. Higher scores suggest perceptions of greater risk in the specific domain (Blais & Weber, 2006).

- **Grable and Lytton's risk tolerance scale**

Grable and Lytton (1999) 13-item financial risk tolerance assessment instrument allows for quick and accurate testing of participants' risk tolerance level. The multidimensional scale provides 13 items of which each has multiple choice options that have ratings, which range from one to four, allocated to them. For example:

1. "In general, how would your best friend describe you as a risk taker?"
 - a. A real gambler
 - b. Willing to take risks after completing adequate research
 - c. Cautious
 - d. A real risk avoider

The scale provides the following scoring for the abovementioned example's multiple choice answers: a=4, b=3, c=2 and d=1. Not all the scale's items have the same amount of multiple choice options or the same scoring allocated to each item's options. Ultimately, the scale's items cover three main factors that are relevant to this study: investment risk, risk comfort and experience, as well as speculative risk (Grable & Lytton, 1999:177). The scores of each factor for each participant were added up and interpreted accordingly. High scale scores represent a greater willingness to take risks (Kuzniak *et al.*, 2015:177).

1.4.3 Statistical analysis

Qualitative data were analysed using Atlas.ti, Version 7. The data were analysed thematically in order to visualise theoretical thinking (Konopásek, 2007). In addition, the data were analysed and interpreted through use of coding and annotating services.

On the other hand, the quantitative data were analysed using the IBM Statistical Package for Social Sciences (SPSS) Version 23. The scores from the scales used in the quantitative phase were added up and tested for correlation. The factors, which were identified in the qualitative phase and tested for in the quantitative phase were analysed according to relationships they have. Descriptive statistic tests were implemented and analysed in order to explain the validity and reliability of the data.

1.5 ETHICAL CONSIDERATIONS

The research complies with the ethical standards of academic research prescribed by the North-West University (NWU, 2017:23). The necessary permission to perform the study was obtained from all participating lecturers and institutions.

For both qualitative and quantitative phases of the study, individuals were informed that participation is voluntary. Participants were free to decline participation and could have withdrawn at any point during the research process without fear of repercussions. The anonymity of the participants is guaranteed and their responses will remain confidential.

Participants recruited for the qualitative phase were informed of the procedure to be followed during their one-on-one interviews. Upon mutual understanding of the procedure, participants were asked for their permission to be recorded throughout the interview session. The interview transcripts and the signed information consent documents are kept separate. Participants for the quantitative portion of the study were instructed not to include any identifying marks or personal details on the returned questionnaires.

Both phases of the study sought ethical clearance from the Social and Technological Sciences Research Ethics Committee of the Faculty of Economic Sciences and IT at

North-West University (Vaal Triangle Campus). The ethics clearance number received is included on the questionnaire.

1.6 CHAPTER OUTLINE

This study comprises of the following chapters:

Chapter 1: Introduction, problem statement and objectives of the study. This chapter provides a brief introduction to the study. The problem statement, theoretical and empirical objectives and methodology are covered.

Chapter 2: A theoretical analysis of investment. Through a literature review, this chapter provides background on and insight into investment and the importance thereof. Aspects such as the investor risk tolerance and the importance of early investing are discussed.

Chapter 3: Study design, data and methodology. This chapter provides a discussion of the methodological aspects of the study. The details surrounding the research design, methodological approach and data collection techniques applied in the empirical portion of the study are discussed.

Chapter 4: Qualitative analysis of the interviews. This chapter provides an analysis of the results and the findings of the interviews that were implemented in the qualitative phase of the study.

Chapter 5: Quantitative analysis of the questionnaires. This chapter provides a discussion on the results and findings of the questionnaires that were conducted in the quantitative phase of the study.

Chapter 6: Conclusion and recommendations. This chapter concludes the study with a summary. The findings of the study are outlined and relevant recommendations provided. The limitations of the study are discussed and future research opportunities outlined.

CHAPTER 2: INVESTMENT, INVESTMENT KNOWLEDGE, INVESTOR RISK TOLERANCE AND RISK PERCEPTION

2.1 INTRODUCTION

In Chapter 1, an overview of this study's research topic, problem statement and research objectives was provided. Chapter 2 focusses on the literature that surrounds the main topic under study. The main topics of this study are investment, investment knowledge, investor risk tolerance and the perception that investors have on the field of investment. Each of these will be discussed in the sections to follow.

2.2 INVESTMENT

One of the most important factors of personal finances is investment. The main purpose of investment is to provide an individual with financial independence. Before an individual starts investing they need to analyse their financial situation. Thereafter, an individual should set their investment objectives and goals they would like their investments to reach. It is important that the individual determines what level of investment risk he/she is willing to take on before investing. Another important aspect that can help an individual make appropriate investment choices is investment knowledge. For many individuals, deciding where and how to invest their money is a challenging decision to make. However, with sufficient knowledge on investments, this decision is made less intimidating. Ultimately, investments are a way for individuals to make contributions to securing their financial wellbeing and improving their quality of life. This section will focus on defining investment as well as discussing a few of the main investment instruments that are available for individuals to start investing in.

2.2.1 Defining investment

Simply stated, investment is the commitment of current financial resources in order to achieve higher gains in the future (Antoni, 2014:28). More specifically, investment can be defined as the process wherein the purchasing of financial instruments takes place, with the expectation that the value of the financial instruments purchased will increase

in the long run (Vanguard, 2016). According to Reilly and Brown (2011), investment is the activity wherein an individual commits their money to real and/or financial assets, over a certain period of time with the goal of accumulating wealth in the future (Marx *et al.*, 2013:3). In terms of this study, investment is defined as (Berger & James, 2002; Reilly & Brown, 2011; Vanguard, 2016):

- the current commitment of money;
- in financial and/or non-financial assets;
- regardless of whether it is formal or informal;
- with the goal that the value of the investment will increase; and
- and contribute to securing one’s future financial wellbeing.

Individuals can invest in many types of investment instruments. Table 2.1 provides a few types of investment instruments available in the market. Furthermore, a short definition is provided as well. It is noteworthy to mention that all investment instruments have a certain level of investment risk associated to them (Section 2.2.2).

Table 2.1: Investment instruments

Investment instrument	Definition
Money market accounts	A money market account is a type of savings account that typically earns a higher amount of interest than a standard savings account (Berger & James, 2002:15).
Bonds	In simple terms, a bond is a long-term debt that is sold to investors. It is less risky than stocks and accumulates capital within a fixed period (Reilly & Brown, 2011:52).
Stocks	Stocks are shares of ownership in a company. Stocks are also known as equity securities (Xiao, 2008:58).
Mutual funds	Mutual funds are one of the most popular investment instruments. A

	mutual fund is an investment that pools an investor's money with the money of other investors and invests it bonds, stocks and other investment instruments (Statman, 2000:32).
Annuities	An annuity is a contract in which the investor pays an insurance company a series of payments or a lump-sum payment. In return, the insurer agrees to make period payments to the investor at some future date (Reilly & Brown, 2011:218).
Stokvels	A <i>stokvel</i> is an investment instrument unique to South Africa. A <i>stokvel</i> is a savings or investment society in which members regularly contribute an agreed amount and from which they receive a lump-sum as a payment (Antoni, 2014).

Source: Author's compilation.

Before individuals decide to invest, they should assess their financial situation first. Secondly, after determining how much money they will be able to invest, individuals should determine their financial goals (Gedmintiene & Visockaite, 2016:121). Thereafter, individuals can analyse the different types of investment instruments available on the market. Subsequently, if certain investment instruments are aligned with the individual's financial situation and goals, the individual can then decide for how long they want to invest in the instrument (Vanguard, 2016).

Therefore, investment can help individuals create and preserve their wealth. Individuals who take on an appropriate level of investment risk may have the opportunity to earn potentially higher long-term returns (CMA, 2016). However, individuals should keep in mind that the value of investments, as well as the income from them, might fall or rise over time. Therefore, individuals should keep in mind that there is a possibility that they may get back less than what they had initially invested (Vanguard, 2016). Ultimately, investments can be viewed as an additional source of income. Investment allows a regular capital inflow, which individuals can use to meet their needs and implement other strategies that will help them obtain their financial goals (Gedmintiene &

Visockaite, 2016:119). Thus, investment is a way in which individuals can obtain financial independence. Since investments are not without risk, the section to follow provides a discussion on investment risk and the importance thereof.

2.2.2 Investment risk

When an individual decides to take his/her money and commit it to any type of investment, the individual does so with the expectation that he/she is going to receive a return on his/her money (Campbell Wealth, 2013). At some point in time in the future, the individual expects to obtain the initial amount of the investment as well as an additional amount the investment earned over time. The possibility that the investment will earn less than what the individual expected to earn, can be viewed as investment risk (Campbell Wealth, 2013).

In terms of investment risk, the greater the risk an individual is willing to take on, the greater the potential reward (Gorter & Bikker, 2011:1). Conversely, if an individual is willing to take on a small amount of investment risk, the potential reward for the individual is also low. In general, the younger an individual is, the more investment risk the individual can afford to take over long periods of time (Berger & James, 2002:3). According to Lawrence (2013:8), this is because the individual has more time to recover any losses that they might have suffered in the short term or in the term that the market was volatile. Individuals can analyse certain factors of themselves to guide them in determining what amount of risk they are willing to take on. Some of the factors include (Lawrence, 2013:7):

- the individual's age;
- the individual's financial goals and timeline for meeting them;
- the individual's financial duties; and
- the individual's other financial resources.

Furthermore, a number of different types of risks can affect an individual's investments. Table 2.2 provides a few of the main risks that can affect investments as well as a short definition thereof.

Table 2.2: Types of investment risks

Risk type	Definition	Source(s)
Country risk	Risk that occurs due to domestic events that include political upheaval, financial troubles, or natural disasters. This risk can weaken a country's financial market as well as the value of certain investments.	(Radcliffe, 1990; Gorter & Bikker, 2011)
Inflation risk	Inflation risk occurs when changes in inflation levels start eroding the value of purchasing power of investments.	(Reilly & Brown, 2011; Marx <i>et al.</i> , 2013)
Market risk	Risk associated with the majority of asset classes is viewed as market risk. This risk occurs when an investment's returns fluctuate across the market in which the instrument is invested.	(Radcliffe, 1990; Vanguard, 2016)
Liquidity risk	Liquidity risk is a risk that occurs when a certain investment is difficult to buy or sell.	(Reilly & Brown, 2011; Marx <i>et al.</i> , 2013)
Interest rate risk	A risk in which there is a possibility that a change in interest rates will have a negative effect on an investment.	(Lee & Hanna, 1995; Reilly & Brown, 2011)

Source: Author's compilation.

As indicated in Table 2.2, some of the investment risks that individuals should be aware of include interest rate risks, credit risk and tax risk (Reilly & Brown, 2011). Changes in these types of risks have different effects on different types of investments. Therefore, it is essential that individuals who invest or are interested in investing familiarise themselves with these investment risks in order to know how they should handle their

investments through financially stressful conditions (Winger & Frasca, 2006; Lusardi *et al.*, 2010).

When individuals are considering investing in certain investments instruments, they should always be aware of what level risk is associated with that certain type of investment (Markiewicz & Weber, 2013). In order to minimise their potential of financial losses, individuals can diversity their portfolios. Individuals can invest in low risk investments such as bonds while also investing in high risk investments such as shares. As an example, in case the market is volatile and the shares are negatively affected, then the returns on the bonds can offset the returns on the shares and vice versa.

2.2.3 The importance of diversification

When an individual starts investing, there are methods that can be implemented to minimise investment risk. One of the most effective ways to manage investment risk is to diversify (Reilly & Brown, 2011:36). Individuals should invest in various types of investment instruments. Tse *et al.* (2010:7) defines diversification as spreading one's investments over a variety of assets and securities in order to avoid excessive exposure to any singular source of risk. Thus, a range of investments should reduce the risk of each of the investments that experience a drop in performance at the same time. According to CMA (2016), this is because one investment instrument might perform better than another during certain financial situations. The returns from better performing investment instruments are helping to offset weak returns from investments that are underperforming. In other words, the risks that are associated to the investments are reduced and protected against sudden falls in any particular market, sector, or individual investment (Vanguard, 2016).

It is important to mention that diversification does not ensure that an individual will make a profit or fully protect the individual from losses in a declining market. However, diversification will help the individual to reduce their risk of experiencing serious financial losses as the result of being overly committed to a single investment. Ultimately, individuals should have the desired knowledge of investments in order to be able to make informed investment decisions and diversify appropriately. The section to

follow focusses on investment knowledge and also provides a literature review of the studies that have been conducted in terms of individuals' investment knowledge.

2.3 INVESTMENT KNOWLEDGE

This section presents a background on investment knowledge. First, a definition of investment knowledge is provided and subsequently the importance of investment knowledge is discussed. The discussion on investment knowledge lays the foundation for investor risk tolerance to be discussed. Therefore, the discussion on investment knowledge will follow in this section.

2.3.1 Defining investment knowledge

Investment knowledge is important in helping consumers interact effectively in the financial market, to choose investment instruments and to manage their available finances (Rootman & Antoni, 2015:475). Investment knowledge is defined by Antoni (2014:53), as investment education, investment skills and the risk perception that individuals create in terms of investment. In other words, investment knowledge can be viewed as a means to improve one's investment education, skills and investment perception, which may ultimately change individuals' investment behaviour (Antoni, 2014:54).

This means that, in general, individuals should be knowledgeable about managing their money and their debt and be up to date in terms of managing their investments (Bajtelsmit & Rastelli, 2008). In addition, individuals should also be knowledgeable about risk management and insurance (Xiao *et al.*, 2009:124). Individuals who implement their investment knowledge and start investing will over time improve their investment skills and their overall perception that they have towards investing (Xiao, 2008:81).

In terms of this study, investment knowledge refers to three main factors. First, investment knowledge represents the financial education that individuals have obtained from school, universities, or other platforms (Volpe *et al.*, 2002). In terms of financial education, the focus is specifically on basic, intermediary and senior levels of

investment concepts obtained. Secondly, investment knowledge comprises the perception, which individuals have created for themselves towards the process of investment (Roszkowski & Davey, 2010). This perception includes the perception that individuals have on investment risk and the process of investment. Lastly, investment knowledge includes the factor that investors are aware of their risk tolerance (Grable, 2000; Grable *et al.*, 2009). In other words, an individual who has appropriate levels of investment knowledge is aware of their risk tolerance and the risk that they are willing to take on in terms of investments.

Many benefits that come with having the appropriate investment knowledge; individuals with investment knowledge are able to enquire about investment opportunities that might increase their likelihood of securing a financial future (Antoni, 2014:52). In addition, individuals with investment knowledge are able to handle complex investment instruments better than those with little to no investment knowledge (Radcliffe, 1990; Xiao, 2008). Furthermore, investment knowledge is a way in which individuals can stay up to date with the changes in the financial market (Markovich & DeVaney, 1997). Thus, in the case of an economic downturn, individuals with investment knowledge will be able to control their money, be able to choose to investment in instruments that suit their investment goals and implement investment plans that will get them through the economic downturn (Grable & Joo, 2006; Xiao *et al.*, 2009). As such, individuals with investment knowledge take a proactive step in securing their financial wellbeing in an unstable economy.

It is also noteworthy to mention that investment knowledge can be either objective or subjective. Objective investment knowledge refers to an actual knowledge construct on investment and can be measured by some sort of test (Flynn & Goldsmith, 1999:57). On the other hand, subjective investment knowledge reflects the knowledge that individuals think they have on investment (Aren & Zengin, 2016). In research, subjective knowledge has been shown to be a stronger motivation of investment behaviours than objective knowledge (Flynn & Goldsmith, 1999:59). In conclusion, the impact of having investment knowledge may lead to an individual increasing their savings, reducing their debts, increasing their investments and reaching their financial goals (Antoni, 2014:42).

(Antoni, 2014:42) is of the opinion that all these factors contribute towards reducing poverty in communities and in the country. Therefore, the importance of investment is undeniable. Section 2.3.2 discusses the importance of investment knowledge in more detail and refers to studies that have tested investment knowledge on young individuals who are in colleges and universities.

2.3.2 Importance of investment knowledge

The importance of investment knowledge is undeniable. Investment knowledge can help individuals to decide to take proactive action and start preparing for their financial futures by investing (Chen & Volpe, 1998). Specifically, it is important that young adults start investing as soon as possible. Many young adults begin their university careers without ever having been solely responsible for their own personal finances (Markovich & DeVaney, 1997). According to Archuleta *et al.* (2013), the lack of experience exposes them to the tactics of financial institutions, which increases their likeliness of mismanaging their money and making debt. This, in turn, could lead to students being depressed due to their financial situations, which will lead to a decrease in the quality of their lives (Joo *et al.*, 2008).

There is a large and growing body of the literature that has found that individuals, specifically college and university students, lack investment knowledge, which is needed for them to be able to make appropriate investment decisions.

In a study conducted by Volpe *et al.* (1996), college students' knowledge of personal investment and the relationship between the level of investment literacy and gender as well as academic discipline and experience were analysed. The results of the study indicated that college students did not have adequate knowledge of personal investment. In later years, Chen and Volpe (1998) conducted a study wherein they analysed the personal financial literacy among college students. More specifically, the study examined students' personal financial literacy; the association between literacy and students' characteristics; as well as the effect that literacy had on students' perceptions and decisions. Chen and Volpe (1998) also found that college students are not knowledgeable about personal finance. In a study conducted in South Africa,

Rootman and Antoni (2015) found that students, specifically black students, needed to improve their financial knowledge, which includes concepts on savings, debt control and investments.

The amount of literature that has indicated that young individuals do not take advantage of their situation to be able to gain more knowledge and information on investment is concerning (Winger & Frasca, 2006; Bajtelsmit & Rastelli, 2008; Rootman & Antoni, 2015). Since many of the students in colleges and universities come from poor backgrounds, it is essential that they learn about financial practices as soon as possible (Archuleta *et al.*, 2013; Antoni, 2014). By gaining more knowledge of investments and by applying that knowledge in practice, these students will be able to form good investment behaviours from a young age (Joo *et al.*, 2003). In the long run, these young individuals would be able to improve their financial futures and earn more money on their investments than individuals who start investing at a later stage in life (Sam & Geetha, 2012).

Investment knowledge is suggested to have an influence on risk perception and investment decisions. Investment knowledge can motivate individuals to start investing and can influence what level of investment risk they are willing to take on (Grable & Joo, 1999). When individuals are motivated to start investing, they can take control of their finances and will be able to capitalise on the investment opportunities that are available to them (Berger & James, 2002; Marx *et al.*, 2013). Risk perception is another important factor that should be taken in when discussing investment. The way in which individual perceive investments and investment risk plays an important part in whether or not they decide to invest. As a result, risk perception has been linked to the way individuals behave in terms of investment (Bajtelsmit & Rastelli, 2008; Davidson, 2017). The following section, Section 2.4, will focus on risk perception.

2.4 RISK PERCEPTION

As mentioned in Section 2.3.2, risk perception has an influence on the behaviours that individuals display when it comes to making investment decisions. In this section, risk perception and the effect that risk perception has on investor behaviour is discussed.

2.4.1 Defining risk perception

Risk perception refers to the subjective judgement that individuals make regarding the characteristics and severity of a risk (Aaronson, 2013). In the case of this study, risk perception specifically refers to the subjective judgement that individuals make regarding the severity of investment risk (Davidson, 2017). In other words, it is the way in which individuals perceive the risk that is involved with investments.

Lennart *et al.* (2004:8) state that risk perception is the subjective assessment wherein the probability as well as the consequences of a probable negative outcome is analysed. Roszkowski and Davey (2010) are of the opinion that risk perception is the manner in which individuals perceive risk based on their experiences and concerns but not necessarily on objective data.

According to Lennart (2000), risk perception is related to conceptions of knowledge. In other words, the continuous gaining of knowledge regarding a certain topic, in this case investment, contributes to creating the perception an individual has on that topic. Ultimately, investment knowledge has an influence on risk perception, which in turn, has an influence on the investment decisions an individual makes.

2.4.2 Risk perception and investment decision making

The risk perceptions of investors and individuals who want to invest is a vital factor that influences investment decisions. There are a number of factors that have an effect on risk perception. According to Sindhu and Kumar (2014:18), these factors are chance for incurring loss, unpredictability of returns, diversification of portfolios, dependence on professional investment advice and knowledge about financial assets. For the purpose of this study, the discussion of this section will focus on risk perception and how it influences investment decision making.

Risk perception varies from individual to individual. In addition, the analysis of investment risk is complicated by the fact that individuals have their own risk tolerance (Section 2.5) and perception towards risk. Furthermore, risk perception is an important

factor, which influences an individual's investment decisions (Bajtelsmit & Rastelli, 2008; Xiao, 2008).

Investment decisions typically mean the determination that individuals make to where, when and how much money will be invested in different types of investment instruments (Sindhu & Kumar, 2014:16). Furthermore, investment decisions can be influenced by psychological and emotional factors as well. If individuals make the effort into better understanding these factors, individuals will increase their likeliness of making better investment decisions (Lennart *et al.*, 2004). In turn, these individuals will also have a better idea on why they perceive investment risk the way they do. Additionally, when an investor is assessing a risk and return of an investment instrument, their decision is influenced by their attitude towards risk (Sindhu & Kumar, 2014:16). Thus, at different perceptions of risk, individuals make different kinds of investment decisions. As an example, if a young individual thinks trading in stock is high risk, the individual might decide rather to invest in bonds, which are lower risk. However, another young individual might perceive bonds as safe and rather invest in stocks. Thus, individuals take risks according to their interpretation and perception of risk, which ultimately affects their behaviour towards risky investment decisions. Therefore, it is important for individuals to obtain the appropriate investment knowledge in order for their perception of investment risks to be positively influenced (Aren & Zengin, 2016). In return, individuals would be much more comfortable taking on investment risk which can influence their future financial wellbeing positively (Xiao, 2008).

However, when individuals decide to start investing, it is important for them to be aware of their risk tolerances. Individuals should determine what level investment risk they are willing to take on when they start investing.

2.5 INVESTOR RISK TOLERANCE

Investor risk tolerance is regarded as a vital factor that influences a wide range of an investor's personal financial decisions (Snelbecker *et al.*, 1990). Therefore, investor risk tolerance is presumed to be a principal determinant of choice behaviour in an investment situation such as asset allocation, retirement plans, wealth accumulation

and insurance (Hanna & Lindamood, 2004). According to Grable and Lytton (1999:61), a modern investment decision making model has four central inputs for creating financial and investment plans. The first three are goals, time horizon and financial stability. These three inputs tend to be objective and relatively easy to measure. The fourth input, investor risk tolerance, tends to be misunderstood in investing and is a multifaceted psychological concept Anbar and Eker (2008:504).

Irwin Jr (1993) defines investor risk tolerance as an individual's willingness to participate in behaviours in which the outcomes remain uncertain with the likelihood of an identifiable negative outcome. Many researchers have defined risk tolerance in a similar manner to Irwin Jr (1993). Grable (2000) is of the opinion that investor risk tolerance is the maximum amount of uncertainty that an individual is willing to take on when faced with making a financial decision. Furthermore, Grable (2000:626) views investor risk tolerance as an underlying factor within financial planning models, consumer decision framework and investment suitability analysis. In this study, the terms, risk tolerance and investor risk tolerance are used interchangeably, however, they still have the same meaning, as explained by Irwin Jr (1993) and Grable (2000).

Investor risk tolerance affects the manner in which individuals invest their resources for short- and long-term goals, such as saving and investing to secure their future wellbeing (Grable, 2000:19). Also, it is reasonable to state that individuals with varying levels of investor risk tolerance are expected to act differently when making investment decisions. In general, it is expected that individuals with low investor risk tolerance behave differently to individuals with high investor risk tolerance (Grable & Lytton, 1999). Specifically, high risk tolerant individuals tend to take on higher levels of investment risk than those with low levels of risk tolerance (Grable, 1997:13). Furthermore, those with high levels of risk tolerance levels are expected to take on higher levels of investment risk without the necessary information on the investment (MacCrimmon & Wehrung, 1990). Pålsson (1996) is of the opinion that individuals who have a higher risk tolerance than other individuals, tend to accumulate greater wealth over time. Thus, it is important for investment managers to measure their investor's risk

tolerances appropriately so that they can help the investor invest in instruments that will help them obtain their financial goals.

The importance of assessing financial risk tolerance is well documented; however, in practice the assessment thereof tends to be difficult. The reason therefore is that the nature of risk taking is subjective. However, there are multiple methods that researchers and investment managers can use in order to measure investor risk tolerance, namely assessing actual behaviour; asking about investment choices; asking a combination of investment and subjective questions; or asking hypothetical questions (Roszkowski *et al.*, 1993; Wang & Hanna, 1997; Hallahan *et al.*, 2004). According to Anbar and Eker (2008:505), the most commonly used method is an experimental questionnaire in which questions about hypothetical scenarios and/or investment choices are asked. According to Snelbecker *et al.* (1990), researchers and financial planners generally accept that it is crucial to make an effort to establish an investor's risk tolerance level. It is important to note that investor risk tolerance is a complex ideology and that it can be influenced by many factors.

Some researchers have found that the investigation of factors that have an influence on financial risk taking and risk tolerance can be expanded on beyond the testing of factors that are purely psychological (Grable & Joo, 1997; Carducci & Wong, 1998). In other words, demographic, socioeconomic and attitudinal factors should also be examined in order to determine how those factors affect an individual's level of risk taking in everyday financial situations. Previous studies have found that factors such as gender, age, occupation, income and marital status can have an influence on the level of risk that an individual is willing to take on (Bakshi & Chen, 1994; Zhong & Xiao, 1995; Bajtelsmit & Bernasek, 1996). These factors will be discussed in the sections to follow.

2.5.1 Demographics and investor risk tolerance

It is well known that demographic factors can influence investor risk tolerance (Grable, 1997). The following sections discuss how race, gender, age, education, experience and income can have an influence on the risk tolerances of investors. The literature regarding the literature of these factors is discussed as follows: research studies that

found a relationship between the demographics; studies that did not find a relationship; and studies whose results were inconclusive.

2.5.1.1 Race and risk tolerance

There are few empirical studies, which concern the relationship between race and investor risk tolerance. According to Grable (1997), Lefcourt (1965) was the first researcher to conduct a study to explore risk-taking differences between black and white individuals. This study implemented a risk-taking experiment involving 30 black and 30 white individuals. The findings of the study concluded that black individuals choose fewer low probability bets. Thus, it was concluded that white individuals were more risk tolerant than their black counterparts.

During the 1990s, many studies were conducted and also found that white individuals were more risk tolerant than individuals of other races. Lee and Hanna (1995) as well as Sung and Hanna (1996) made use of the Survey of Consumer Finance (SCF) in order to conduct analyses of multistage area-probability samples. Both of these studies had established that white participants had a higher likeliness of taking investment risks. In addition, Zhong and Xiao (1995) also made use of the SCF to conduct an analysis, which showed that white participants were more likely than their non-white counterparts to hold investment instruments such as bonds and stocks. Zhong and Xiao (1995) added that the reason that non-white participants were less risk tolerant than white participants was because non-white participants tend to focus on the past or the present and not the future. Therefore, non-white participants tend to make investment decisions that will benefit them in the present and not necessarily in the future.

Contrarily, a study by Leigh (1986) found that non-white participants were more risk tolerant than white participants. In the study, Leigh (1986) had used a combination of correlation techniques as well as econometric models, which concluded that non-white participants were more probable to take on more risk than white participants were. In general, researchers and investment managers accept the view that there is a relationship between race and risk tolerance. Researchers accept that, if other factors

are controlled, white participants are considered to have higher risk tolerances than non-white participants.

2.5.1.2 Gender and risk tolerance

Gendered studies have seen a growing occurrence in the field of financial research. Previous studies have found that there is an existing relationship between gender and investor risk tolerance. In general, it is assumed that males are more risk tolerant than women when it comes to taking on investment risk (Anbar & Eker, 2008:506).

Hanna and Sung (1996) conducted a study wherein the influences of financial and demographic variables on risk tolerance for households with an employed respondent in the 1992 Survey of Consumer Finances were determined. Their findings indicated that female-headed households were less risk tolerant than similar households which had a male head or a married couple. Bajtelsmit and Bernasek (1996) report on findings from the literature and conclude that women tend to opt for pensions that are more conservative, whereas men tend to opt for riskier pensions. A study by Grable and Lytton (1999) also found that men expressed more confidence in taking risks during financial situations. In their study, they analysed gender differences in financial attitudes from a sample of taxpayers and also found that men tend to have higher risk-taking propensities than females.

In later research, Grable and Roszkowski (2007) conducted a study wherein they used a 12-item financial risk tolerance questionnaire to test the risk tolerances of men and women. The 12-item scale tested their risk tolerances by making use of a four-point rating scale. Therefore, participants were forced to choose a certain extreme. The questionnaire did not allow for participants to indicate neutral answers to the questions that were provided. Grable and Roszkowski (2007) found that men tend to overestimate their risk tolerances, whereas women underestimate their tolerance of risk. One explanation for men being more risk tolerant than women is that, in society, women take on the role of child bearers and mothers, which contributes to women being less risk tolerant and less sensation seeking individuals (Anbar & Eker, 2008:506). Batelsmit and Bernasek (1996:5) are of the opinion that other explanations should be focused on

women's economic and social factors, which include income, career and investment knowledge.

Some studies did not find any significant influence of gender on risk tolerance. Pålsson (1996) implemented a regression analysis wherein a Swedish cross-sectional database on tax returns was used in order to determine whether risk tolerance varied with household characteristics. In her study, Pålsson (1996) found that from a sample of more than 7000 households, risk tolerance did not systematically change according to gender. Furthermore, later studies by Lee and Hanna (1995) and Grable and Joo (1999) also found that gender did not play a significant role in predicting investor risk tolerance.

Lastly, some studies found that there were inconclusive results between gender and risk tolerance (Grable & Lytton, 1999). A study conducted by Bonoma and Schlenker (1978) found that both men and women displayed similar behaviour when faced with risky choices. According to Grable (1997), their findings suggested that risk tolerance is not only multidimensional but may be sub-dimensional as well. Specifically, when investor risk tolerances are to be determined, it is suggested that participants are provided with an assembly of investment situations, which require risk-taking choices. In conclusion, it is generally accepted that men are more risk tolerant than women; however, not all researchers are in consensus thereof.

2.5.1.3 Age and risk tolerance

Wallach and Kogan (1961) were among the first researchers to conduct a study on the relationship between age and risk tolerance. In their study, they experimented with the use of choice dilemmas, which indicated that older participants were less risk tolerant than younger participants. According to Grable (1997), this finding was the reason for the many age and risk tolerance studies that were conducted subsequently.

During the 1990s, researchers conducting studies on risk tolerances continued to explore the relationship between risk tolerance and age by using survey methods, objective measures and life-cycle effects (Dahlbäck, 1991; Bakshi & Chen, 1994; Sung & Hanna, 1996). Dahlbäck (1991) conducted a study using cross-sectional data from a

survey of 443 unmarried Swedish citizens between the ages of 22 and 64 to test the relationship between age and risk tolerance. In this study, Dahlbäck (1991) found that older participants tend to be less risk tolerant than younger participants. A study by Sung and Hanna (1996) , wherein the willingness to take on financial risk was used as a dependent variable, also concludes that older participants are less risk tolerant than younger individuals. One of the reasons that can explain why older investors are less risk tolerant than younger investors is that older investors have less time to recover potential losses from their risky investments (Grable & Lytton, 1999:64).

Contrarily, some studies found that older participants are more risk tolerant than young participants. Grable and Lytton (1999) found that the relationship between age and risk tolerance is not inversely related. In conjunction with Grable and Lytton's (1999) findings, Jianakoplos and Bernasek (2006:981) found that there is a negative relationship between age and risk tolerance. Hallahan *et al.* (2004:57) found a negative, non-linear relationship between age and risk tolerance. In other words, Hallahan *et al.* (2004:499) found that risk tolerance decreased with age until a certain point at which risk tolerance starts to rise with age again. Grable and Lytton (1999) suggest that the reason for older participants being more risk tolerant than younger counterparts is that older participants are more knowledgeable about investments.

Ultimately, the consensus in the literature is that older individuals are less risk tolerant than younger individuals. According to Kannadhasan and Nandagopal (2010), younger individuals have the capability to recover investment losses and the other reason is that younger individuals have more time to accumulate their wealth and protect it in the long run. Another factor that has been analysed in terms of having an influence on risk tolerance is an individual's education level.

2.5.1.4 Education level and risk tolerance

In terms of investor risk tolerance research, education can be defined as the level of formal education completed by an individual (Grable, 1997). Many researchers have come to the conclusion that high risk tolerance levels are mostly associated with individuals who have attained greater levels of education (Zhong & Xiao, 1995; Sung &

Hanna, 1996). Haliassos and Bertaut (1995) conducted a study wherein they determined that education was a vital factor in overcoming the obstacles to stockholding. Furthermore, Haliassos and Bertaut (1995) found that individuals who have not attended college were significantly less likely to hold stocks than individuals who at least have a college degree. In addition, Lee and Hanna (1995), who made use of the SCF, also found that the proportion of individuals willing to take on risks significantly increased with education. Another study that found similar results is that of Sung and Hanna (1996) wherein they determined that education was statistically significant in establishing an individual's willingness to assume greater risk. One of the reasons that can explain why there is a positive relationship between education and risk tolerance is that education is needed in order for an individual to understand risks that are inherent to certain investments. Therefore, higher levels of education encourage individuals to take on more investment risks (Grable & Lytton, 1999:65).

Although a lot of researchers and investment managers have found that increased levels of education is associated with increased levels of investor risk tolerance, there have been studies that have suggested the opposite. McInish (1982) conducted a study wherein a regression analysis in terms of risk tolerance and demographic variables was applied. The study found that educational levels had indicated a positive relationship with risk tolerance, but that education coefficients were not significant in any of the regressions (McInish, 1982). Hallahan *et al.* (2004:499) found that education was not a significant determinant of an individual's attitude towards risk.

Ultimately, the literature suggests that there is a positive relationship between the level of education attained and increased investor risk tolerance. However, as with the relationships that some demographic relationships have with risk tolerance, this relationship is not definite.

2.5.1.5 Income and risk tolerance

Earlier research by Cohn *et al.* (1975) as well as Schooley and Worden (1996), found that participants who earn higher incomes are willing to take on more financial risk than those earning low incomes. Over the years, many studies have found similar results.

Therefore, it commonly has been accepted that individuals who earn higher incomes are those that tend to be highly risk tolerant (Anbar & Eker, 2008:507). A study conducted by Cohn *et al.* (1975) used a combination of regression analysis, multiple discriminant and chi-square analyses to test the relationship between income and risk tolerance. The results concluded that relative investor risk tolerance increases with wealth and income. In later research, Schooley and Worden (1996), who made use of a multivariate regression of multiple inputted data, also found that risk tolerances changed when income levels changed. Anbar and Eker (2008:507) are of the opinion that the reason that individuals with higher incomes are more risk tolerant than individuals with lower incomes is because those with higher incomes can afford to incur the losses resulting from a risky investment. Also, individuals with low levels of income would find it harder to recover their losses given the time it may have taken to accrue the money required for the investment.

In contrast, Hawley and Fujii (1993) found that there was a negative relationship between income and risk tolerance. In other words, high levels of income are associated with low risk tolerance; and alternatively, low levels of income are associated with high risk tolerance. On the other hand, some studies found that the effects of income on risk tolerance were not certain. Friend and Blume (1975) conducted a regression analysis of which the results concluded that when income and wealth were increased, risk tolerance remained constant. In addition, Pålsson (1996) used a regression analysis to determine the extent to which risk tolerances changed given varied household characteristics. Based on the analysis thereof, Pålsson (1996) found that changes in income did not cause systematic changes in risk tolerance. According to Grable (1997), these findings suggest that the development of hypotheses concerning income as a differentiation factor in establishing levels of risk tolerance should be done cautiously. Nevertheless, based on previous findings, it is still appropriate to set a hypothesis which suggests that income is positively associated with investor risk tolerance (Grable, 1997).

2.5.1.6 Summary on demographics and risk tolerance

There is a persistent belief among financial investors and investment managers that (a) white individuals are more risk tolerant than non-white individuals, (b) males are more risk tolerant than females, (c) younger individuals are more risk tolerant than older individuals, (d) individuals with higher levels of education are more risk tolerant than individuals with lower levels of education, (e) individuals with more investment experience are more risk tolerant than individuals with less investment experience and lastly, that (f) individuals with higher levels of income are more risk tolerant than individuals with lower levels of income.

Table 2.3 provides a summary of the assumed relationships between demographics and risk tolerance.

Table 2.3: Assumed relationships between demographics and risk tolerance

Characteristic	High risk tolerance	Low risk tolerance	Source(s)
Race	White individuals	Non-white individuals	(Lefcourt, 1965; Lee & Hanna, 1995; Zhong & Xiao, 1995)
Gender	Males	Females	(Bajtelsmit & Bernasek, 1996; Anbar & Eker, 2008)
Age	Younger individuals	Older individuals	(Wallach & Kogan, 1961; Sung & Hanna, 1996)
Education	Higher education levels	Lower education levels	(Haliassos & Bertaut, 1995; Lee & Hanna, 1995; Zhong & Xiao, 1995)
Income	Higher income levels	Lower income levels	(Cohn <i>et al.</i> , 1975; Schooley & Worden, 1996)

Source: Author's compilation.

2.6 SUMMARY

In terms of Chapter 2, three main topics regarding this study were discussed, namely investment knowledge, investment perception and investor risk tolerance. Investment knowledge was discussed as it has an influence on how individuals perceive investment and investment risk. Investor risk tolerance was discussed as it has an influence on the type of instruments individuals invest in and how they choose to invest. Ultimately, all three topics have an influence on an individual's investment behaviour.

Chapter 3, the succeeding chapter, focusses on the study design and methodology that was applied to this study. The sections in Chapter 3 cover concepts such as study design, study paradigm, sampling techniques, data collection and data analysis methods.

CHAPTER 3: RESEARCH DESIGN AND METHODOLOGY

3.1 INTRODUCTION

In this chapter, the focus is on the research methodology that was applied throughout this study. Specifically, the research methodology is discussed in terms of the study design (Section 3.2), study paradigms (Section 3.3); sampling strategies (Section 3.4), data collection methods (Section 3.5), pre-test and pilot test of data collection instruments (Section 3.6), interview and questionnaire administration (Section 3.7), data preparation (Section 3.8), as well as data analysis (Section 3.9).

3.2 STUDY DESIGN

Study designs refer to the type of strategies and procedures that research studies follow for collecting, analysing, interpreting and reporting data in pursuit of fulfilling its analytical objectives (Creswell & Plano Clark, 2007). Fouché *et al.* (2011) indicate that study designs are important because they guide researchers in making logical methodological decisions and interpretations for their study. According to Creswell and Plano Clark (2011) there are three different designs that studies can apply: qualitative, quantitative and mixed methods.

3.2.1 Qualitative study design

A qualitative study design, in its broadest sense, refers to unstructured research that analytically aims to yield unique insights and provide direction for future research (Stebbins, 2001). According to Kumar (2005:12) and de Vos *et al.* (2011b:65) qualitative studies explore, observe and describe the nature of a certain event, issue, or phenomenon. In addition, Bricki and Green (2002) state that qualitative studies are designed specifically to observe social interaction, in which individuals' experiences, understandings and perceptions regarding a certain issue are elicited (Quinlan *et al.*, 2015:124).

According to Fouché and Delport (2011:65), as well as Ritchie *et al.* (2013:72), qualitative studies include only a small group of participants in order to obtain a richer

description of the phenomenon in question. Furthermore, qualitative studies typically collect data through procedures such as interviews and focus groups (Denzin & Lincoln, 2011; Quinlan, 2011:286). Alternative data collection procedures, such as qualitative surveys (Moller *et al.*, 2009) and case studies (Malhotra, 2010:104), can also be used.

Kondracki *et al.* (2002) and Quinlan *et al.* (2015) indicate that the collected data are non-numerical (textual, visual, or verbal) and emphasise meaningful characterisations, interpretations and other expressive descriptions. Subsequently, qualitative researchers analyse the data through methods such as thematic analysis (Clarke *et al.*, 2015:222) and findings are used to develop a complex and holistic view of a social phenomenon (Creswell, 2012).

Moreover, qualitative research can be classified into various types, depending on which methodologies are applied throughout the study (Quinlan, 2011; Creswell, 2013). There is a broad range of qualitative research types, however, this study only briefly discusses the five most commonly used methodologies in Table 3.1 (Charmaz, 2006; Quinlan, 2011).

Table 3.1: Qualitative research types

Qualitative type	Brief discussion
Grounded theory	Grounded theory refers to a qualitative research method that applies a structured set of procedures to construct and inductively develop grounded theory about a phenomenon. Alternatively stated, researchers build theory regarding the phenomenon under study, based on data captured from the participants' experiences of the phenomenon.
Ethnography	A methodology that is used when a researcher is concerned with the in-depth examination of a culture. In other words, the shared patterns of beliefs, behaviour and language within a cultural group are examined through observation by the researcher.
Phenomenology	Phenomenological qualitative research is applied if a researcher wants to examine unique lived experiences. Individuals' experiences

Qualitative type	Brief discussion
	are analysed and interpreted in an attempt to capture the essence of the phenomenon.
Narrative	Narrative research is applicable when the researcher gathers, examines and interprets spoken information that is known as narratives. These narratives are considered a biographical representation of an individual's life which researchers use to explore the individual's personal reflection of events.
Case study	Qualitative case studies intensively describe and analyse a phenomenon or a social unit such as an institution, community, an individual, or a group. The focus of this qualitative study type lies on an entity or single phenomenon (the case).

Source: Author's compilation.

Ultimately, in the context of this study, qualitative study designs can be defined as: exploratory research with the purpose of gaining better understanding (Leedy & Ormrod, 2005) of the perspectives, experiences and understandings of individuals (Quinlan *et al.*, 2015) by conducting an interview (Tracy, 2013) wherein a small, non-representative sample of participants (Fouché & Delport, 2011) are used to capture non-numeric data (Kumar, 2005), which is analysed in an effort to find clarity over an unclear social event, issue, or phenomenon (Zikmund & Babin, 2013).

3.2.2 Quantitative study designs

Quantitative study designs, on the other hand, aim to precisely examine numerical data or data that can readily be coded numerically (Quinlan *et al.*, 2015). According to Cooper and Schindler (2014) quantitative studies quantify and measure individuals' opinions, knowledge and attitudes. Furthermore, quantitative study designs are applied when relationships of the measured variables need to be established, confirmed or validated (Leedy & Ormrod, 2005). In addition, Fouché and Delport (2011) and Kumar (2005) state that quantitative studies are structured in nature, which makes them

appropriate for determining the extent of a certain issue. Furthermore, the findings of quantitative studies can be generalised to larger populations (Mahoney & Goertz, 2006).

de Vos *et al.* (2011b) state that quantitative researchers use tools such as questionnaires in order to collect numerical data, which are analysed through statistical procedures. The findings of quantitative studies provide answers to questions regarding the who, what, when, where and how of certain issues (Grimes & Schulz, 2002); therefore, quantitative studies can be classified as descriptive studies.

Thus, in the context of this study, quantitative study designs can be defined as: descriptive research with the purpose to test predictive and cause-effect hypotheses about a social issue (Fouché & Delpont, 2011) by providing a large, representative sample with self-administered questionnaires in an effort to capture numeric data (Creswell, 2013) that are used to measure and examine the relationships between variables (Creswell & Plano Clark, 2010; Struwig & Stead, 2013) and describe individuals' characteristics with objectivity and completeness (Zikmund & Babin, 2013).

Thus, the main differences between qualitative and quantitative studies lies in the: research type; analytical objectives; data collection methods; forms of data; and the sample size of the study (Creswell *et al.*, 2003; Mack *et al.*, 2005:2). Regardless of the differences, qualitative and quantitative studies are not mutually exclusive (Fouché & Delpont, 2011). Researchers have found that in some studies there is a need to combine elements of both studies in order to create what is known as a mixed methods study (Kumar, 2005; Bergman, 2008; Monette *et al.*, 2013).

3.2.3 Mixed methods study designs

According to Creswell (2014:22), mixed methods research as a field of methodology is approximately 25 years old. The value and importance of mixed methods study designs has increasingly been recognised over the years (Östlund *et al.*, 2011). Greene (2008) argues that the reason for this is that mixed methods studies have the potential to capitalise on respective strengths from both qualitative and quantitative study designs. In addition, Johnson and Onwuegbuzie (2004) state that mixed methods are able to

produce clearer and holistic answers to questions of phenomena that are complex in nature.

According to Azorín and Cameron (2010), mixed methods studies can be classified into two groups, namely fixed and emergent. Fixed mixed methods studies are those where both qualitative and quantitative phases are predetermined and planned procedures are implemented accordingly (Creswell *et al.*, 2011). Alternatively, emergent mixed methods studies are those where a second phase (qualitative or quantitative) is added after the initial study design delivered inadequate findings (Morse & Niehaus, 2009).

These classifications of mixed methods can either run concurrently, where both qualitative and quantitative phases are applied at the same time, or sequentially, where one phase is applied first and the other is applied after (Hanson *et al.*, 2005; Azorín & Cameron, 2010). There are six major different types of approaches that mixed methods can follow and are summarised in Table 3.2 (Creswell & Plano Clark, 2011).

Table 3.2: Mixed methods research types

Mixed methods type	Brief discussion
Convergent parallel design	Both qualitative and quantitative phases are implemented at the same time the study process is started. Thus, both qualitative and quantitative phases run concurrently, yet independently, during the study.
Explanatory sequential design	This design starts with the implementation of a quantitative phase, which builds up to the sequential implementation of a qualitative phase. The qualitative phase assists the researcher with the analysis and explanation of the findings of the initial quantitative phase.
Exploratory sequential design	In contrast to the explanatory sequential design, the exploratory sequential design starts with the implementation of a qualitative phase in order to explore a certain phenomenon. A quantitative phase is implemented sequentially, in order to test the extent of a

	phenomenon or generalise the results of the initial qualitative phase.
Embedded design	The embedded design occurs when both quantitative and qualitative data are collected (and analysed) within a traditional quantitative or qualitative study. The embedded design can occur in two ways, either a qualitative phase can be added within a quantitative study (e.g. experiment) or a quantitative phase can be added within a qualitative study (e.g. case study).
Transformative design	A transformative design is a mixed methods design that is created within a transformative theoretical framework. A transformative theoretical framework allows researchers to challenge their basic assumptions of the world through a process of self-reflection, which is stimulated by people, events, or changes (Brown, 2004). The framework suggests that researchers first apply qualitative data collection in order to learn about the people, events, or changes (Mertens, 2012). Additionally, quantitative data collection can be applied to capture data from available extant data sources.
Multiphase design	The multiphase design combines both concurrent and sequential phase designs. It uses an iteration of connected quantitative and qualitative studies that are aligned sequentially, with each new phase building on what was learned during the previous phase in order to fulfil the study's main objective.

Source: Author's compilation.

For the purpose of this study, a fixed exploratory sequential mixed methods design was followed. First, a qualitative phase was applied in order to explore and identify students' level of participation in investment activities; students' motivations to invest; and the underlying instruments in which students invest. Subsequently, a quantitative phase was implemented to investigate the extent to which the general student population is involved in investment activities.

3.3 STUDY PARADIGMS

Study paradigms represent the ways in which researchers understand reality, build knowledge and gather information about the phenomenon in question (Tracy, 2013:38). Also, paradigms can be referred to as a framework, viewpoint, or worldview that is based on researchers' assumptions and philosophies about the social world (de Vos *et al.*, 2011a:513). Paradigms differ based on how reality and knowledge are defined; what assumptions are upheld in terms of the research and theorising; and which strategies are used to gather, collect and analyse data (Feilzer, 2010; Creswell & Plano Clark, 2011; Tracy, 2013). The four main paradigms, namely positivism, constructivism, participation and pragmatism, are discussed in the sections to follow.

3.3.1 Positivist paradigm

Positivism is defined by Denscombe (2008:14) as a social research approach that applies natural science methods to investigate and explain social phenomena. According to Creswell (2012), this paradigm represents the traditional form of research and is usually linked to quantitative studies. Other studies refer to positivism as empirical research, science research, or postpositivism (Phillips & Burbules, 2000; Ryan, 2006; Creswell, 2012). The latter term reflects the thinking after positivism wherein the traditional notion of the absolute truth of knowledge is challenged (Phillips & Burbules, 2000). According to de Vos *et al.* (2011c), the positivist paradigm can be discussed in terms of the beliefs that positivist researchers uphold.

First, positivists believe that methods and procedures of the natural sciences are appropriate for and can be applied to phenomena in social sciences (Denscombe, 2008:14). In other words, investigation and explanation of human experiences are conducted through the use of scientific methods and language in order to maintain the research objective (Ryan, 2006). Furthermore, this belief involves the conviction that reality is objective, singular and separate from human consciousness (Quinlan *et al.*, 2015). Thus, it is essential that positivists adopt a distant, neutral and non-interactive position when conducting research.

The second belief that positivists uphold is that concepts and knowledge can only be validated if phenomena can be observed through experiments and interpretations or with the aid of instruments (de Vos *et al.*, 2011c). The third notion implies that knowledge is the result of facts that are established through the observation and examination of a social phenomenon (Krauss, 2005). Thus, knowledge can only be obtained through the accumulation of verified facts (de Vos *et al.*, 2011c).

The fourth notion states that theory cannot be separated from practice. Therefore, the top-down approach is applied to positivist research (Ryan, 2006). This notion suggests that hypotheses are deductively derived from scientific theory and then subjected to empirical testing (Ritchie *et al.*, 2013). Lastly, positivists are of the view that research should be constructed free from any of the researcher's passions, values, politics and ideologies. As such, the validity of the knowledge presented in the research will not be undermined by factors that could impair the researcher's objectivity (Guba & Lincoln, 1994; de Vos *et al.*, 2011c).

Ultimately, positivism can be summed up as research that focuses on variables in an attempt to reveal the cause-effect relationships that are present in social phenomena through the use of scientific methods (Creswell, 2012). Also, the results from positivist research are generalised to larger populations (Mahoney & Goertz, 2006).

3.3.2 Constructivist paradigm

Creswell (2013:65) simply defines constructivism as a research approach in which participants seek better understanding of the world they live and work in. The constructivist paradigm is argued for by qualitative purists who believe that studies should encompass detailed, rich and empathetic descriptions of what reality is (Johnson & Onwuegbuzie, 2004). These studies apply inductive reasoning in which general theoretical explanations are created after society's interactions are observed (Delpont & de Vos, 2011:49).

Ultimately, the constructivist paradigm can be discussed in terms of certain assumptions. The first assumption is that individuals and groups create their own

realities to better understand the world (Ponterotto, 2005). Since individuals do not share the exact same realities, it is accepted that reality is not singular and can be viewed from multiple perspectives (Creswell, 2013). Quinlan *et al.* (2015) state that the interpretivist paradigm can be linked to constructivism due to its assumption that reality is subjective. Furthermore, both paradigms are based on individuals' interaction during and interpretation of a social phenomenon (Quinlan, 2011:96). In other words, the participants construct reality. Therefore, this paradigm can be referred to as constructivism (de Vos *et al.*, 2011c; Ashworth, 2015), interpretivism (Schwandt, 2000; Williams, 2000), or constructivism-interpretivism (Ponterotto, 2005).

The second assumption is that knowledge is obtained through individuals' extrapolated meaning from their interactions with the world (Schwandt, 2000). Therefore, individuals' meaning represents new, subjective knowledge, which provides insight into the phenomena in question (Kim, 2001). Lastly, constructivists believe individuals should play an active role during the research process. Their perspectives significantly contribute to learning about social phenomena (Bednar *et al.*, 1991; Ertmer & Newby, 2013).

In conclusion, it is clear that constructivists are largely dependent on individuals to fully participate in their studies (Glicken, 2003). Participants are empowered during the course of the study and this is reflected in the enhanced outcome and accurate results of constructivist studies (de Vos *et al.*, 2011c:8).

3.3.3 Participatory paradigm

Creswell (2013) refers to the participatory paradigm as the transformative paradigm. The latter indicates that this paradigm is change-oriented (Heron & Reason, 1997:278) and can be discussed according to underlying assumptions. First, participatory researchers believe that individuals should directly be involved in the research process (Strydom, 2011a:492). According to Chesler (1991:761), as well as Riley and Reason (2015:170), the participants are usually from local communities who are affected by issues such as poverty, racism, or gender discrimination. These people should be

involved during every step of the research process, from problem formulation, to inquiry, to creating solutions (Park, 1992:30; Chambers, 1994:2).

The second assumption is that participatory paradigm objectives are political in nature (Mouton & Babbie, 2001). Heron and Reason (1997:285) interpret this political objective as people having the right to participate in a study that seeks to gather knowledge about them. Alternatively, Strydom (2011a:492) argues that these objectives can also seek project management, organisational change, community development, or personal growth.

Lastly, researchers who apply this paradigm view reality as both objective and subjective (Frels & Onwuegbuzie, 2013). In other words, reality is subjective because it is based on the different perceptions individuals create regarding a social phenomena; and reality is objective because the phenomena is based on factual incidences (Heron & Reason, 1997). Chesler (1991) states participatory researchers apply both deductive and inductive reasoning in order to interpret the subjective-objective reality of the phenomena investigated. Therefore, a universal view of reality can be extrapolated and the multifaceted phenomena can be better understood.

According to Strydom (2011a:496), participatory research is usually associated with mixed methods studies, depending on what the objectives of the study are. Ultimately, the purposes of participatory paradigms are to encourage community members to take initiative (Park, 1992); learn about their community's issues (Chesler, 1991); and create problem-solving strategies that will positively influence the community (Strydom, 2011a).

3.3.4 Pragmatic paradigm

According to Creswell and Plano Clark (2011), pragmatism is a set of notions that include mixing study designs and implementing unconventional approaches to analyse and understand a multifaceted phenomenon. The pragmatic paradigm is discussed in terms of four of its main assumptions. First, pragmatic researchers uphold that reality should be viewed from multiple views (Creswell, 2012). Feilzer (2010:13) states that

realities are both singular and multiple; and that these realities are open to inquiry and orient themselves to solving practical problems in the real world. Cherryholmes (1992) argues that pragmatists view reality as both dependent on and independent from the mind. Thus, in order to gain a holistic view of the phenomena in question, pragmatists take both biased and unbiased perspectives into account when they analyse reality (Johnson & Onwuegbuzie, 2004).

Secondly, pragmatic research abandons the forced-choice dichotomy between positivism and constructivism (Creswell & Plano Clark, 2011). In other words, researchers are free to choose the methods, techniques and procedures that best suit their research. Thus, pragmatists have full freedom to apply whatever methods work (Creswell, 2013), regardless of whether they are quantitative or qualitative (Hanson *et al.*, 2005; Denscombe, 2008). Hence, pragmatic research is usually associated with mixed method studies (Creswell, 2012; Frels & Onwuegbuzie, 2013).

Thirdly, the importance of the study's research question surpasses that of the methods implemented to answer the research question (Feilzer, 2010). Thus, when combining the second and third assumption, it is clear that the objective of pragmatism is to implement whatever method works to best answer the research question (Creswell, 2012). Lastly, both inductive and deductive reasoning can be used to obtain knowledge through pragmatic research (Creswell & Plano Clark, 2011). The use of both reasoning approaches contributes to the researchers creating a holistic perspective of the phenomena questioned. Ultimately, as Feilzer (2010) states, pragmatism is a commitment to uncertainty wherein the knowledge obtained is considered relative and not absolute.

3.3.5 Study paradigm applied to study

For this study, the lone application of either the positivist or constructivist paradigm is not sufficient. Moreover, the participatory paradigm can also not be applied to this study because its assumptions do not complement the objectives of this study.

The pragmatic paradigm, on the other hand, is argued by many to be appropriate to use with mixed method studies. However, the controversy that surrounds the use of pragmatism in research is too great to ignore. Morgan (2007) states pragmatists take a broad approach to an issue, which leads to the loss of critical information during the study. Furthermore, Johnson and Onwuegbuzie (2004:19) state the usefulness or workability of what methods pragmatists apply can be vague, unless the researcher explicitly addresses it. According to Johnson and Onwuegbuzie (2004), many researchers reject pragmatism due to its logical failure as a solution to many philosophical arguments.

Alternatively, Mackenzie and Knipe (2006) as well as Creswell and Plano Clark (2011) support the use of numerous paradigms for mixed method study designs. In other words, both the qualitative phase and the quantitative phase of the mixed methods study design can separately be assigned a paradigm that best suits its objectives. Therefore, both the constructivist and positivist paradigms will be applied to this study. The constructivist paradigm will be applied during the qualitative phase of the study in order to richly interpret student investors' overall perception of investment. Furthermore, the positivist paradigm will be applied during the quantitative phase of the study in order to objectively quantify and measure the extent to which students invest.

3.4 SAMPLING STRATEGIES

Sampling strategies explain how the decisions relating to the study's samples were applied (Cant *et al.*, 2005:165). Sampling strategy is discussed in the sections to follow with reference to the target population, sampling frame, sampling methods and sample size.

3.4.1 Target population

A target population refers to individuals or groups to whom the study applies (Kitchenham & Pfleeger, 2002:17). These individuals or groups share a general set of characteristics and are in possession of information that the researcher requires (Zikmund & Babin, 2013:312). According to Sudman and Blair (1998), if a study's target

population is inadequately defined, the researcher's gathered data and the study's required information will not correspond. Thus, the research would be considered ineffective and misleading (Berndt & Petzer, 2011:171). For the purpose of this study, the target population is students enrolled at South African universities, which are registered as HEIs.

3.4.2 Sampling frame and sample

A sampling frame can be defined as a smaller section of a defined target population (Unrau *et al.*, 2007:279). Researchers analyse sampling frames since it is unpractical and inefficient to study whole populations (Marshall, 1996:522). Thus, sampling frames make it feasible for researchers to analyse and better understand a population (Sarantakos, 2012). Also, the information yielded from a sampling frame, rather than an entire population, is considered more accurate (Strydom, 2011b:224).

The sampling frame for both qualitative and quantitative phases of this study consists of 26 universities which are registered as South African HEIs (DHET, 2017). Furthermore, out of the 26 universities, 20 are traditional universities and six are universities of technology. A judgement sample of two South African HEIs (one a traditional university and the other a university of technology) was selected from Gauteng. The Gauteng province comprises the largest share (24%) of the South African population (StatsSA, 2016:1), hence, the HEIs were selected from this region.

Ultimately, both qualitative and quantitative samples obtained from the sampling frame consist of undergraduate and postgraduate students. Nonetheless, students used in the qualitative sample are those that are involved in investment activities. Conversely, students used in the quantitative sample were a sample that included both investing and non-investing students.

3.4.3 Sampling method

Sampling methods refer to the manner in which the study sample will be obtained (Cant *et al.*, 2005:165). According to Berndt and Petzer (2011), sampling methods can be classified into two main categories, namely probability and non-probability sampling.

Both probability and non-probability sampling method categories are further divided into sub-categories. Figure 3.1 illustrates the various sampling methods and their sub-categories (McDaniel & Gates, 2010:335; Quinlan, 2011:210; Strydom, 2011b:228).

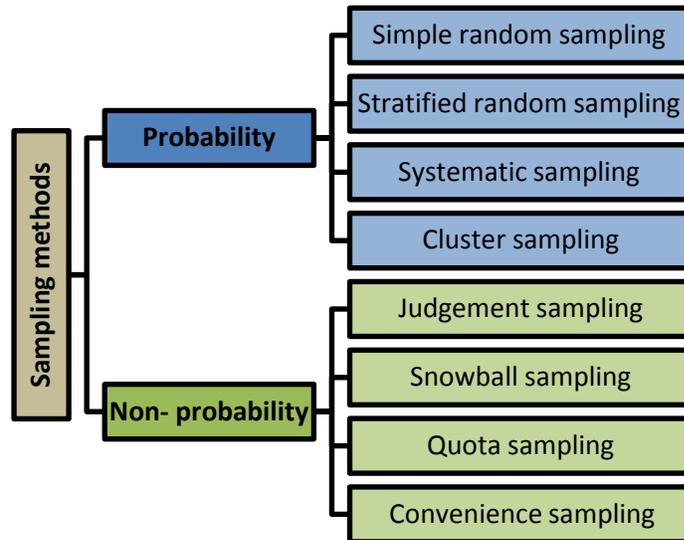


Figure 3.1: Sampling methods

Source: McDaniel & Gates, (2010:335); Quinlan, (2011:210); Strydom, (2011b:228)

3.4.3.1 Probability sampling methods

In probability sampling, each individual in a population has the same known likelihood to be included in the study sample (Strydom, 2011b:228). In other words, the likelihood of a certain individual being selected from the population is known and can be calculated (Gravetter & Forzano, 2003:118). As illustrated by Figure 3.1, the best-known sub-categories of probability sampling are simple random sampling, systematic sampling, stratified random sampling and cluster sampling.

Simple random sampling is considered the easiest sampling method as each individual from the population theoretically has an equal likelihood of being chosen for the sample (Quinlan, 2011:210). In systematic sampling, only the first individual from the population is selected randomly (Jackson, 2003:15). Babbie and Rubin (2008) state that subsequent individuals are selected based on a certain interval, which is reliant on the

required sample percentage. Alternatively, a researcher can predetermine to use a particular interval at the start of the sample selection from the population (Strydom, 2011b:230).

With stratified random sampling, the population is divided into mutually exclusive groups (Glicken, 2003:180; Berndt & Petzer, 2011:174). Therefore, the sample will have a fair representation of the different groups from the population (Creswell *et al.*, 2003:229). Lastly, cluster sampling refers to a two-stage procedure wherein a random sample of clusters is drawn (Grinnell & Unrau, 2005:162). Subsequently, a random sample of elements within each cluster is drawn. According to Strydom (2011b:231), the more clusters included in the sample, the more the sample will be reflective of the population.

3.4.3.2 Non-probability sampling

In contrast, non-probability sampling refers to sampling techniques in which an individual's likelihood of being selected for participation in the sample is unknown (Tansey, 2007; Zikmund & Babin, 2013:322). Figure 3.1 illustrates the main non-probability sampling methods include judgement sampling, quota sampling, snowball sampling and convenience sampling.

Judgment sampling refers to a sample that has been selected purely based on the researcher's judgement of what elements best reflect the attributes and characteristics of the population (Luborsky & Rubinstein, 1995; Grinnell & Unrau, 2005:153). Judgement sampling is also known as purposive sampling (Barreiro & Albandoz, 2001; Strydom, 2011b:232). Cant *et al.* (2005:166) state quota sampling is usually used by marketing researchers who aim to identify different subgroups that closely resemble a population's characteristics. Quota sampling takes place when representative individuals are chosen out of a specific subgroup.

In snowball sampling, initial participants are asked to identify additional individuals who have similar characteristics and are willing to participate in the study (Strydom, 2011b:233). According to Quinlan (2011:214) and Creswell (2012:784), participants should be sampled until data is saturated or until no other individuals with similar

characteristics to the participants are found. Finally, convenience sampling refers to data collection from individuals that the researcher has easy access to (Kitchenham & Pfleeger, 2002:19). McDaniel and Gates (2010) as well as Malhotra (2010:377) argue convenience sampling is considered less expensive and less time consuming compared to the other sampling methods. Furthermore, Blackstone (2016:4) notes that convenience sampling is best used in exploratory research.

Due to time constraints, the target population could not be randomly sampled. As a result, this study applied non-probability sampling methods to both qualitative and quantitative phases. First, the qualitative phase applied the snowball sampling method. In other words, throughout the qualitative phase student investors were asked to identify additional student investors who were willing to participate in the study. Subsequently, the quantitative phase of the study implemented the convenience sampling method. Thus, quantitative data were collected from students the researcher had easy access to. Also, the sample is depended on the lecturers' willingness to allow their students to participate in the study.

3.4.4 Sampling size

The sample size refers to the quantity of individuals extracted from the target population to participate in a study (Chuan, 2006:78), in order to draw conclusive findings (Berndt & Petzer, 2011:182). Qualitative samples typically include a small number of participants in order to obtain extensive detail of the phenomenon studied (Creswell, 2012:662). According to Marshall (1996:523), a qualitative sample is considered appropriate when it adequately answers the study's research question. Thus, the final size of qualitative samples are determined once data saturation is reached (Leedy & Ormrod, 2005).

Alternatively, quantitative samples are typically much larger than qualitative samples. Marlow and Boone (2005) state that quantitative samples should have a representative distribution of characteristics similar to the population from which they were drawn. The reason for this is that representative samples allow researchers to generalise their findings to the larger population (Strydom, 2011b:226).

The study's qualitative sample size of 21 student investors was determined when new insights no longer emerged from the data collected. Also, this sample size is in the range of sample sizes of previous research that included six (Guest *et al.*, 2006), 10 (Xiao *et al.*, 2009) and 15 to 18 (Constantine *et al.*, 2005; Teddlie & Yu, 2007), participants to answer the research question. Therefore, the study's qualitative sample is considered adequate.

Conversely, a quantitative sample size of 396 university students was obtained. Once more, this sample size is similar to those of previous studies that included approximately 200 (Archuleta *et al.*, 2013), 300 to 400 (Flynn & Goldsmith, 1999; Nabi *et al.*, 2008) and 500 (Markovich & DeVaney, 1997; Joo *et al.*, 2008), students to participate in their research. Therefore, the study's quantitative sample is considered sufficient.

3.5 DATA COLLECTION METHODS

Data refers to the information or evidence that researchers collect in order to obtain a better understanding of social phenomena (Fraenkel & Wallen, 2003). The method in which a researcher collects data from participants of a specified sample is known as data collection (Struwig & Stead, 2013). Both qualitative and quantitative data collection methods are covered in the ensuing sections.

3.5.1 Qualitative data collection methods

Qualitative data collection involves obtaining permissions; implementing a good qualitative sampling strategy; developing a means for recording information; storing the data; and anticipating any ethical issues that may occur (Creswell, 2012:331; Quinlan *et al.*, 2015:16). Researchers state the main data collection methods that are used in qualitative studies are observations and interviews (Ritchie & Lewis, 2003; Mack *et al.*, 2005; Cooper & Schindler, 2014).

3.5.1.1 Qualitative observations

Qualitative observation means a researcher records observations and takes field notes on the behavioural patterns as well as activities of individuals, objects and occurrences as they unfold (Angrosino, 2007; Creswell, 2013). In addition, Creswell and Plano Clark (2011:1029) state the observer chronicles reflective notes regarding emerging codes, themes and concerns that arise during the observation. An observer is usually participating in that which they are observing, however, only to a certain degree (Creswell, 2012:375). Daymon and Holloway (2010:262) categorised the observations into four different types, as mentioned and briefly discussed in Table 3.3.

Table 3.3: Different types of observations

Observation type	Description
Complete participant	The researcher is fully involved with the individuals that are being observed.
Participant as observer	The researcher is participating in the task at the site to obtain subjective data from insider views. However, this observation type can distract the researcher from appropriately recording the data when they are integrated into the task.
Observer as participant	The researcher is excluded from the group that are under study. The researcher observes and takes field notes from a distance. Thus, the data are obtained without the researcher having any direct contact with the individuals or activity that is being studied.
Complete observer	The researcher is neither seen nor noticed by the individuals that are being studied.

Source: Author's compilation.

Based on the nature of a study, researchers can implement either a structured observation or an unstructured observation (Mulhall, 2003:306). Observations that are structured consist of an observation list, which is used alongside a fixed number of points (Bentley *et al.*, 1994:5). The observation list is then implemented in a pre-determined number of situations, or with a pre-determined number of individuals (Blandford, 2013). Structured observations are usually used when researchers want to obtain information, which includes the frequency, intensity and duration of the observed behaviours (Bentley *et al.*, 1994:5). In contrast, unstructured observations are unorganised and are usually implemented when researchers want to understand behaviours in their physical and socio-cultural context (Creswell, 2012).

Like any other data collection methods, there are some challenges that are associated with the observation method. According to Carson *et al.* (2001), these challenges may include deciding which type of observation role the researcher is going to assume during the study; remembering to take field notes; and to accurately quote the recordings. However, Creswell (2012:376) is of the opinion that a good qualitative observer will be able to change their role during an observation. In other words, the researcher can start by observing as a non-participant and subsequently move into the participant role and vice versa.

3.5.1.2 Interviews

Qualitative interviews can be defined as the exploration of individuals' perceptions, experiences and motivations in an attempt to understand a phenomenon (DePoy & Gilson, 2008). During interviews, the researcher obtains information through direct interchange with individuals or a group of individuals (Greeff, 2011:342). According to Gill *et al.* (2008), qualitative interviews are most appropriate where there is little knowledge regarding a social phenomenon, or when intricate detail is required from individual participants. Greeff (2011:342) states that interviews are the predominant method of data or information collection in qualitative studies. These qualitative interviews can be divided into two groups, namely individual interviews and focus groups (Kaplowitz & Hoehn, 2001; Creswell & Plano Clark, 2011:305).

Individual interviews are one-to-one interviews that occur between a researcher and a willing participant (Quinlan *et al.*, 2015:133). An individual interview reflects a social relationship that was designed to allow the exchange of information between the researcher and the participant (Greeff, 2011:342). An interview can also be referred to as a conversation that occurs between the interviewer and an interviewee wherein the attitude of the interaction is captured (Morse, 1991:61). According to Seidman (1998), the conversation has a central focus and is not one-sided. However, the participant must do 90 percent of the talking as the purpose of the interview is to capture the participant's perspective on an issue (Jarbandhan & Schutte, 2006:674). The interviewer is allowed to ask probing questions in order to deepen the participant's response and to encourage the participant to follow their line of thought (Holstein & Gubrium, 1995:46).

Conversely, focus groups are group interviews where the researcher interviews a group of six to ten willing participants (Zikmund & Babin, 2013:142). Researchers collect data through group interaction on a topic that was determined by the researcher (Morgan, 1997:6). Often, focus groups are used in order to screen and refine certain concepts (Zikmund & Babin, 2013:143). According to DiCicco-Bloom and Crabtree (2006:314), both individual and focus group interviews come in different forms, namely structured, semi-structured and unstructured interviews.

Structured interviews refer to a situation where a researcher asks each participant a series of pre-determined questions that have a limited set of answer categories (Fontana & Frey, 1994:363). In addition, the responses of the participants generally have little room for variation except where an infrequent open-ended question is asked. In contrast, unstructured interviews are interviews in which conversation is merely extended and formalised. In other words, individuals that are interviewed are allowed to respond in their own words and the researcher allows the interview to occur spontaneously, much like a conversation (Bentley *et al.*, 1994:5). Unstructured interviews capture individuals' perceptions, judgements and experiences regarding a certain issue (Halcomb & Davidson, 2006:39).

Lastly, semi-structured interviews refer to interviews that have the characteristics of both structured and unstructured interviews. A guided set of questions are asked in the exact wording and order as they have been written down (Bentley *et al.*, 1994:6). Participants' answers are still open-ended, thus, the participant is still allowed to respond using their own words, thoughts and insights.

Researchers select a form of interview based on the nature and purpose of their study. For the purpose of this study, semi-structured individual interviews were used, given that the aim was to capture the participant's perspective through their choice of response, rather than reducing the responses to quantitative categories (Greeff, 2011:360). Participants' answers aligned with the general themes the researcher had identified before the interviews. Also, the opportunity to introduce new issues to the studied phenomenon had presented itself.

Participants' demographic factors including gender, age and field of study were recorded prior to the interview in order to contextualise the responses. These factors are discussed in the qualitative data analysis section (Section 4.1). The following sections discuss the procedure that was followed during the design of the interview.

3.5.1.2.1 Interview design

Prior to the interview, an interview schedule along with themes were predetermined in order to guide each interview (Schurink *et al.*, 2011). The themes determined were specifically in line with the central topic of the study. Once the themes were determined, and the questions were created, the interview schedule was asked to the participants. Furthermore, a degree of consistency across all the interviews was created which facilitated the comparative qualitative analysis of the data (Nell, 2005:168).

One problem that may occur in terms of the predetermining themes is that they are based on existing theories and the literature on the subject, which might impede attempts to gain the participant's perspective on the issue (Greeff, 2011). Thus, the identified themes were kept as general as possible. General themes allow the researcher to compensate for any possible disconnect between the themes and the

participant's response (Nell, 2005:159). Table 3.4 provides a list of themes that were explored during the interviews as well as examples of typical questions that were asked of the participant in order to obtain their thoughts on that specific theme. Annexure A provides the final interview schedule for the qualitative phase of this study.

Table 3.4: Predetermined interview themes and questions

Themes	Question number	Typical questions
Investment knowledge	1	Where did you learn about investing?
	2	What motivated you to start investing?
	3	What were some of the barriers or difficulties you faced when you first started investing?
	5	Why did you decide to invest your money instead of saving it?
	12	In your opinion, what are some of the advantages of being a student investor?
Risk tolerance	4	What is the source of the money you use to invest?
	6	Could you tell me about what you are investing in?
	7	How long have you been investing in those instruments?
	8	What is your investment structure?
	10	What do you enjoy about investing apart from making money?
	11	What do you dislike about investing apart from losing money?
Investment perception	9	What do you think about investing now compared to before you began investing?
	12	In your opinion, what are some of the advantages of being a student investor?
	13	What would you say does investing mean to you?
	14	If you could start over in terms of investing, what would

		you do differently?
	15	Are there any recommendations you have for students who want to start investing?
	16	Is there anything else you'd like to share about being a student investor?

Source: Author's compilation.

The questions were formulated with caution in order to avoid any leading or ambiguous questions. All questions asked were open-ended and stated as clearly as possible. Additionally, questions were kept simple, sensitive and understandable (Gill *et al.*, 2008).

3.5.1.2.2 Conducting the interview

The interviews were conducted privately in a quiet setting. Participants were informed prior to the interview that any information they provided would be kept confidential and private (Carson *et al.*, 2001). Furthermore, permission to record the interview was obtained from each participant before the commencement of the interview. The interview started with the researcher explaining the aims of the study and the role the participant was fulfilling in the process (DiCicco-Bloom & Crabtree, 2006). Additionally, the researcher assured the participant that there were no wrong answers and their responses could be subjective.

Once the participant was at ease, the researcher asked the questions listed on the interview schedule. The interviews were scheduled for 60 minutes each (Gill *et al.*, 2008); however, the length of each one depended on the length and breadth of the participant's responses, as well as the necessity of covering all the predetermined themes (Nell, 2005). After the interviews, the participants were thanked for their willingness to participate in the study. Also, the participants were allowed to ask any questions they might have had.

Each of the interviews was digitally recorded and transcribed verbatim (refer to Section 3.8). Once the data reached saturation, the final number of participants for the qualitative phase of this study could be determined. A total of 23 participants were interviewed from end-May 2017 to the beginning of July 2017. Out of the study's 23 participants, the first two were used to test the qualitative interview questions (refer to Section 3.6) and were excluded from the main study. Ultimately, there were 21 participants' interviews, which formed part of the main study (refer to Section 3.7). Each interview lasted less than one hour. In conclusion, approximately four hours and 36 minutes of audio material was collected and transcribed for detailed analysis.

3.5.2 Quantitative data collection methods

Quantitative data collection methods utilise numerical measurement to address the study's empirical objectives (Zikmund & Babin, 2013:134). Delpont and Roestenburg (2011:171) state that such numerical measurements include structured observations, structured interviews, questionnaires, scales, indexes and checklists. According to Marais (2013:56), there are two main data collection methods that quantitative studies use, namely observations and the survey method.

3.5.2.1 Quantitative observations

Quantitative studies use structured observations in order to collect data (Delpont & Roestenburg, 2011:182). According to Zikmund and Babin (2013), a structured observation refers to a data collection method wherein the researcher does not question or communicate with the individuals under study. Instead, the researcher observes and records information about unfolding events (Grinnell & Unrau, 2005); or takes advantage of a tracking system such as Internet activity records or record information scanners (Zikmund & Babin, 2013:236). Thus, structured observations are systematic data collection methods, which allow a researcher to generate numerical data from the observations (Cohen *et al.*, 2013).

According to Malhotra (2010:237), observation methods are often criticised for gathering data which are biased. This is due to researchers gathering data without knowing the

observed individual's motive, attitude, or preferences (Marais, 2013:56). Ultimately, data gathered through the observation method are considered biased (Delpont & Roestenburg, 2011:182). Therefore, the observation method should be used to support surveys rather than being utilised independently (Malhotra, 2010:237).

3.5.2.2 Surveys

Zikmund and Babin (2013:185) state that surveys reflect a snapshot of a scenario at a given point. The survey method consists of using a structured questionnaire to gather quantitative data from a certain population sample (Marais, 2013:56). Questionnaires can be defined as a document that contains questions as well as other types of items, which were designed to solicit information that can be used for analysis (Babbie & Rubin, 2008). According to Delpont and Roestenburg (2011:186), questionnaires are likely one of the most generally used instruments in quantitative research. The objective of a questionnaire is to obtain information on participants' attitude, knowledge and motivation as well as other information regarding the researcher's study topic (Malhotra, 2010:211).

For the quantitative phase of this study, self-administered questionnaires were used to obtain information about the participants' knowledge, perceptions and risk tolerance regarding investments. First, permission from the selected HEIs was obtained. Thereafter, the questionnaires were delivered to the participating academic staff to distribute the questionnaires at an appropriate time during their classes. Once the questionnaires had been filled in, they were collected from the participating academic staff for data preparation. The creation of the questionnaire used in this study is discussed in the successive section.

3.5.2.2.1 Questionnaire design

A questionnaire is considered to be the anchor of most surveys and thus a lot of time needs to be dedicated to the strategic thinking of the design thereof (Roets, 2013:37). Churchill and Iacobucci (2010) are of the opinion that the look of a questionnaire greatly impacts a participant's willingness to answer the questionnaire. When self-administered

questionnaires are used, a cover letter should be included as it serves as an introduction to the study, provides assurance and motivates the participant to complete it (Monette *et al.*, 2013).

Malhotra (2010:336) states that a good questionnaire design can be ensured by setting well-defined goals that specify what kind of information the study requires. Also, the words used in the questions of the questionnaire should be selected carefully so that participants are able to understand what is being asked (Welman *et al.*, 2005:176). Thus, the use of ambiguous words should be avoided. In addition, in order to ensure reliable feedback, the time of the questionnaire should not exceed 20 minutes when administered (Struwig & Stead, 2013).

The objectives of the questionnaire used in this study were brief and simple. Therefore, it was possible to keep the questionnaire clear, concise and easy to follow (Quinlan *et al.*, 2015:273). The questionnaire was accompanied by a cover letter, which explained the purpose of the questionnaire and the reason the study was being conducted. Procedures were followed to ensure that the phrasing of the questions included in the questionnaire were appropriate (Pallant, 2007:10). Thus, the language used in the questionnaire was kept straightforward in order to ensure participants whose first language is not English, could understand the nature of the question. The questionnaire used in this study can be completed within 15 to 20 minutes. Ultimately, the questionnaire (refer to Annexure B) includes a combination of structured and semi-structured questions

3.5.2.2.2 Questionnaire format

The format of the questionnaire depends on what type of questionnaire it will be as well as where it will be administered and by whom it will be completed (Delpont & Roestenburg, 2011:193). According to Babbie and Rubin (2008), the format of the questionnaire is just as important as the nature and phrasing of the questions asked. Questions asked in the questionnaire can either be structured or unstructured in nature (Parasuraman, 1991:367).

According to Marais (2013:58), structured questions refer to closed questions, which provide a set of responses. Moreover, the participant is expected to choose one or sometimes more than one response, which best reflects the participant's view or attitude. According to McDaniel and Gates (2010:201), structured questions are effective to be used in self-administered questionnaires. Contrarily, unstructured questions are open-ended and allows a participant to respond by writing any answer in the open space provided on the questionnaire (Malhotra, 2010:333).

Moreover, a questionnaire can be classified as either undisguised or disguised (Marais, 2013). An undisguised questionnaire refers to a questionnaire whose study purpose is evident to the participant (Churchill & Iacobucci, 2010). Conversely, a disguised questionnaire refers to a questionnaire whose purpose of study is not clearly evident.

The different question formats discussed above were taken into consideration during the question formulation of the questionnaire. For the purpose of this study, an undisguised, self-administered questionnaire was utilised during the quantitative data collection process. Ultimately, the questionnaire (refer to Annexure B) used a combination of being structured and unstructured.

3.5.2.2.3 Questionnaire content and layout

The main content of the questionnaire was obtained from the data of the qualitative phase of this study. Ultimately, the questionnaire consists of the following six sections:

- **Section A: Demographic information**

Section A aimed at obtaining demographic information. This information included characteristics such as age, gender, race, home language and nationality. Furthermore, participants had to indicate what field of study they are enrolled in and their academic year of study. Based on the results of the qualitative study, it deemed necessary to add a question on income source.

- **Section B: Saving and Investment**

Section B aimed at determining whether participants save and if so, what type of savings account they have. Furthermore, participants were asked whether they invest since the topic of investment plays a crucial part in the overall study.

- **Section C: Investment instruments**

In Section C, students that indicated that they invest were asked to indicate the instruments they invest in; what percentage of income they invest; and how long they had invested in those instruments. Section C provides a snapshot of the investment instruments in which students invest.

- **Section D: DOSPERT scale**

Another important theme that occurred during the qualitative study was the participant's perception of financial risk. The DOSPERT scale allows researchers to measure both conventional and perceived risk attitudes (Weber *et al.*, 2002). The scale is a validated psychometric scale, which measures five commonly encountered domains. The five domains are ethical, financial, health/safety, social and recreational decisions (Rule, 2015:4). Due to the nature of this study, only the items from the financial domain were included in the questionnaire (Markiewicz & Weber, 2013; Wang & Chartrand, 2015).

In total, there were five questions from the DOSPERT scale's financial domain that were asked in a Likert scale question format. A Likert scale contains a line of favourable and unfavourable statements that relate to the each item of a construct (McDaniel & Gates, 2010:274). The participants are expected to indicate their level of agreement or disagreement based on each statement made (Burns & Bush, 2010:101). For this specific scale, a seven-point Likert scale was used, where the statements were interrelated to numerical numbers that range from one (extremely unlikely) to seven (extremely likely). As Pallant (2007:10) suggested, a midpoint was included in this scale to accommodate those participants who were not sure what they would do in a situation that was presented in the statement.

- **Section E: Grable and Lytton's risk tolerance scale**

One of the themes that occurred from the qualitative study is the risk tolerance. Therefore, in order to test the risk tolerance of the general student population, the 13-item financial risk tolerance of Grable and Lytton (1999) was included in the questionnaire. The validated, multidimensional scale provides 13 items, which consist of multiple choice options. All of the multiple choice options have ratings assigned to them. However, not all of the scale's items have the same number of multiple choice options or ratings assigned to them. Ultimately, the 13-item financial risk tolerance scale covers three important factors that are relevant to this study, namely investment risk, risk comfort and experience, and speculative risk (Grable & Lytton, 1999:177).

- **Section F: Subjective knowledge**

Investment knowledge is one of the themes that occurred during the qualitative phase of this study. Since the investment knowledge theme was tested on the general student population, it was determined that the use of a subjective knowledge scale would produce a better quality of quantitative data. A reliable and validated self-report measure of subjective knowledge, created by Flynn and Goldsmith (1999), was used in the questionnaire. Furthermore, the items were structured accordingly to the scale development guidelines and was ensured to be presented in a logical and semantically consistent manner (Raju *et al.*, 1995; Hadar *et al.*, 2013). The scale was adapted to focus on the financial domain in order to complement the purpose of this study.

All the items of the subjective knowledge scale were rated on a six-point Likert scale that ranges from one (extremely unlikely) to six (extremely likely). With this scale, the midpoint choice was removed in order to force the participant to think about whether or not they know much about the statement relating to investment.

3.6 PRE-TEST AND PILOT TEST OF DATA COLLECTION INSTRUMENTS

Quinlan *et al.* (2015) argue that all data collecting instruments should be subjected to a pre-test or a pilot test in order to find out how, in reality, participants will respond. Both this study's qualitative and quantitative data instruments were subjected to a pre-test.

3.6.1 Pre-testing interview questions

Researchers are encouraged to pre-test their interview questions prior to the actual interview (Creswell, 2013). Pre-testing interview questions helps ensure that the questions are understood in the manner that was intended (Shukla, 2008:91; Silver *et al.*, 2013:149). Furthermore, any potential obstacles that may occur are identified and either corrected or eliminated (Churchill & Iacobucci, 2010; Zikmund & Babin, 2013:302).

According to Churchill (1995:437), a pre-test should always be conducted using personal interviews. In that way, the researcher is able to observe and record the participant's reaction and attitude towards the interview questions (Marais, 2013:65). According to Parasuraman (1991:397), participants whom the interview questions are pre-tested on should share the same characteristics as those from the study's target population. Additionally, the feedback from those who partake in the pre-test should not be included in the main sample (Dillion *et al.*, 1994:532).

For the purpose of this study, the interview questions were pre-tested on an experienced academic researcher and two participants, namely Participant A and Participant B. Both participants are student investors and representative of the target population as suggested by Parasuraman (1991). The feedback received from the pre-test stage was used to make certain questions are more understandable. Furthermore, the feedback obtained from the experienced academic researcher and the two participants was excluded from the main sample.

3.6.2 Pilot testing questionnaire

The process of testing a questionnaire on a sample in order to identify and eliminate potential problems is known as pilot testing (Quinlan *et al.*, 2015:279). Creswell (2013:373) as well as Yin (2009) are of the opinion that pilot tests refine and develop research instruments, frame questions and adjust research procedures. Additionally, pilot tests help researchers evaluate question difficulty as well as the questionnaire's wording, sequence, form and layout (Malhotra, 2010:345). According to Churchill

(1995), pilot tests help estimate how the questionnaire will perform under real circumstances.

During a pilot test, data are gathered from a small group of participants similar to those who will be used in the actual study (Quinlan, 2011). Depending on the size of the study, pilot testing is usually conducted by using six to 12 participants (Zikmund & Babin, 2013:63). According to Malhotra (2010:346) sample sizes used during pilot tests vary from 15 to 30 participants.

In this study, the self-administered questionnaire was piloted on a convenience sample of 13 postgraduate students. These individuals were asked to complete the questionnaire and to notify the researcher of any problems they experienced during completion of the questionnaire. In addition, these individuals were asked to indicate any possible errors on the questionnaire. After completion, the questionnaires were analysed and all the necessary modifications were made. The data from the participants involved in the pilot of the questionnaire were not included in the data collected from main sample of the study. The final questionnaire, combined with its cover letter (refer to Annexure B), was then sent to the relevant lecturers of the two HEIs for the distribution of the questionnaire to the students.

3.7 INTERVIEW AND QUESTIONNAIRE ADMINISTRATION

3.7.1 Qualitative interview administration

The procedure implemented during qualitative interviews is vital to the data captured for the study (Quinlan, 2011:245). This section describes the procedure that was followed throughout the administration of interviews for the qualitative phase of the study. Each participating student investor was identified through the snowball sampling method (Section 3.4.3.2) and was asked to fill in a recruitment form. The researcher emailed the participants an invitation to an interview. Furthermore, the invitation included a brief background of the study and the researcher's contact details. The participants were encouraged to schedule a date and time they were willing to meet the researcher for the

interview. The researcher contacted each participant to confirm the date, time and place of the scheduled interview.

At the interview, the researcher first introduced herself and gave a brief background of the purpose and nature of the study. The participant was then asked to fill in a recruitment form (had they not filled one in yet) as well as a consent form. The participant was provided with copies of the completed forms. Once the paperwork was completed, the researcher explained to the participant the procedure to be followed during the interview.

The participant was then asked for their permission to be recorded during the interview. Once permission was obtained, the researcher explained to the participants that their recordings would be transcribed. The researcher also informed the participants that an email of their transcriptions would be sent to them in order for the participant to confirm the content of their transcripts. Also, participants were ensured that their recordings and transcripts would be kept confidential. Thereafter, the researcher started the recording and began the interview.

When the participant finished answering the last question of the interview, the researcher informed the participant that the interview had been concluded. The participant was thanked for their contribution and asked whether they could be contacted in the event of follow-up questions. The researcher then stopped the recordings, expressed gratitude towards the participant again and concluded the interview.

3.7.2 Quantitative questionnaire administration

For this study's quantitative phase, self-administered questionnaires were utilised to gather the necessary data from the participants. A cover letter was attached to each questionnaire, in which the following aspects were briefly discussed:

- the nature and purpose of the study;
- the study's ethical clearance;
- voluntary participation and confidentiality of data;

- participant's consent for researcher to use the data; and
- instructions on how to complete the questionnaire.

The main survey was conducted between the months of July 2017 and September 2017 on a final non-probability convenience sample of 396 university students. The questionnaires were conducted under the relevant lecturer's supervision and took no longer than 20 minutes to complete. Prior to the questionnaire distribution, the relevant lecturers of the two selected HEIs were contacted to gain permission for distributing the questionnaires to students during their class sessions. Once permission was obtained, the questionnaires were hand-delivered to the relevant lecturers. Subsequently, the questionnaires were distributed to the students who completed the questionnaires under the supervision of the lecturers. Furthermore, it was ensured that the completion of the questionnaires was done at a time that did not disrupt students' studies. Upon completion, the questionnaires were collected from the relevant lecturers.

3.8 DATA PREPARATION

Once the fieldwork is completed, the data needs to be prepared and converted into a format, which answers the researcher's study question (Zikmund & Babin, 2013). This section explains which data preparation techniques were applied to the qualitative and quantitative data collected for this study.

3.8.1 Qualitative data preparation

Qualitative data should be prepared in such a manner that each participant's perspectives of the studied phenomenon are effectively extrapolated (Oliver *et al.*, 2005). The following qualitative data preparation methods were applied to the study:

3.8.1.1 Transcribing

Transcribing audio recordings from interviews is an important step in qualitative data preparation. Oliver *et al.* (2005) refer to transcribing as the process of listening to speech and converting it into a written document. According to Halcomb and Davidson

(2006:40), the transcription of interviews contribute to ensuring that the qualitative data is authentic, valid and reliable.

For this study, the interviews were transcribed verbatim. Verbatim transcripts reflect the exact replication of the words recorded in the audio (Poland, 1995), which adds to the data's authenticity. Furthermore, all the individual interviews were recorded, with the participant's consent and transcribed on the day of the interview. The transcripts were then sent back to the participants who were asked to advise the researcher of any errors or things they would like to be omitted (Joffe, 2012). The relevant transcripts were then edited and sent back to the participants for final approval.

3.8.1.2 Coding

Coding, in terms of qualitative data, refers to categorising data by taking the text and dissecting it into text segments. According to Attride-Stirling (2001), these segments are meaningful and manageable chunks of text such as single words or quotations. Once the transcripts have been coded, the researcher is able to extract themes relevant to the study from the coded text segments (Attride-Stirling, 2001:391). Thus, coding allows the researcher to determine how many times, during an interview, a certain theme occurred (Bricki & Green, 2002). Coding enables a researcher to analyse the relationship of one code compared to another, in terms of co-occurrence and sequencing (Joffe, 2012).

In this study's context, the transcripts were reviewed and the content thereof was categorised into suitable themes. Thereafter, the transcripts along with the themes were reviewed again to ensure the meanings of the themes were properly captured from the participants' perspectives (Section 4.1).

3.8.2 Quantitative data preparation

On the other hand, the preparation of quantitative data means the raw data needs to be edited and numerically coded in order to capture the information content thereof (Churchill & Iacobucci, 2010:350).

3.8.2.1 Editing

According to Malhotra (2010:423), data need to be legible if they are to be recorded appropriately. The process of editing allows the researcher to increase the accuracy and precision of the questionnaires (Zikmund & Babin, 2013), by identifying and eliminating responses that are incomplete, ambiguous, inconsistent, or illegible (Aaker *et al.*, 2008). Ultimately, the editing procedure results in legible data that the researcher can properly code.

3.8.2.2 Coding

Once the questionnaires had undergone editing, the data were ready to be coded. From a quantitative perspective, coding refers to the process in which the edited data are assigned a number or a code to each response on each question (Malhotra, 2010:425). Such coding allows quantitative researchers to make sense of the captured data, which leads to improved analysis and interpretation thereof.

3.9 DATA ANALYSIS

This section covers the data analyses of both qualitative and quantitative data that were collected for this study. Data analysis refers to the use of reasoning in an attempt to understand the data that have been gathered (Zikmund & Babin, 2013:68). As illustrated in Figure 3.2, there are four stages involved in data analysis in general, namely description, interpretation, conclusion and theorisation (Quinlan *et al.*, 2015:322).



Figure 3.2: The four stages of data analysis

Source: Quinlan *et al.*, (2015:322)

During description, the researcher describes the data by defining what they see in the study's collected data. The researcher subsequently states what they think the data means during the interpretation stage of data analysis. Once the data has been interpreted, the researcher is then responsible to make a conclusion by drawing minor assumptions from the data, which contribute to the study's conclusion. Lastly, during the theorisation stage of data analysis, the researcher refers back to their literature review and analyses where their findings fit with, or contradict, the findings of the theorists that were mentioned there (Quinlan *et al.*, 2015).

3.9.1 Qualitative data analysis

Qualitative data analysis is an all-inclusive process that continues throughout the application of the study. A researcher might not be participating in the data's formal analysis at the initial stage of the study, however, they might be thinking of how to make sense of the data in terms of what codes, categories, or themes to use to explain the phenomena (Basit, 2003:145).

Furthermore, qualitative computer data analysis software was used to assist in the thematic analysis of the collected data. Such software programs help researchers organise, categorise and code information in text databases (Creswell, 2013:548). Atlas.ti Version 7 for Windows was utilised during this study's qualitative analysis.

The following process was implemented to analyse this study's collected qualitative data:

- **Organising data**

The first step of qualitative data analysis includes the organisation and preparation of the data (Creswell, 2012:407). Thus, during this step, all the interviews were transcribed, sorted and arranged into ascending order: from Participant 1 to Participant 21. According to Lacey and Luff (2001:22), it is necessary for the researcher to organise the data into easily retrievable sections. After the qualitative data have been organised, the researcher can proceed to the succeeding step: familiarisation.

- **Familiarisation**

Both procedures of transcribing (refer to Section 3.5) and organising the data start the process of familiarisation (Lacey & Luff, 2001:22). In other words, the researcher listens to the recordings, reads and re-reads the transcripts, makes memos and summarises the data before the formal analysis begins (Van der Merwe, 2009:10). Furthermore, during the familiarisation of the data, the researcher is not only gaining an overview of the data's diversity, richness and depth, but also, the process of abstraction and conceptualisation is started (Ritchie & Spencer, 2002).

- **Themes**

The coded data are then used (refer to Section 3.8) to identify themes or emergent concepts (Van der Merwe, 2009:10). Themes refer to expansive units of information that are comprised of numerous codes combined to form a common idea (Creswell, 2012:414). Schurink *et al.* (2011:410) state it is important to “winnow” the data and reduce them to a small, manageable set of themes when using a large dataset of qualitative data. According to Creswell (2013:560), five to seven themes for a research study should be sufficient.

Additionally, these identified themes often appear as the qualitative study's major findings and are usually used as headings in the study's findings section (Creswell, 2013:560). Lacey and Luff (2001:25) state the themes emerging from the data could reflect some of the identified issues that lead to the study's implementation. If so, the collected data would be a confirmation of the importance of the study and enable a researcher to explore them further. On the other hand, it is also possible to incorporate theoretical ideas into the analysis after emergent themes were identified in the data (Clarke *et al.*, 2015).

Ultimately, a thematic analysis can be used to build added layers to complex qualitative data analysis. According to Creswell and Plano Clark (2011), researchers can develop a theoretical model from the themes (as in grounded theory) or shape the themes into a general description (as in phenomenology). Sophisticated qualitative studies go further

than theme identification, description and interpretation thereof and form complex theme connections (Creswell, 2013:560).

- **Ensuring rigour**

Reliability and validity are vital issues in all research, including qualitative studies. Due to the criticism that qualitative studies are subjective and untrustworthy, it is essential for qualitative researchers to prove the rigour of their study (Lacey & Luff, 2001:26).

In general research, reliability can be demonstrated by showing that the methods used in the study are reproducible and consistent (Shukla, 2008; Zikmund & Babin, 2013). However, in qualitative studies, external replication of a study's methods may not be an appropriate measure at all (Lacey & Luff, 2001:26). Thus, Nell (2005:189) proposes that to prove that a qualitative study conforms to the need of reliability, it needs to adhere to two rules. First, internal checks need to be performed in which the qualitative data and its interpretation are examined (Lewis & Ritchie, 2003:358). This will ensure the study is as robust as it possibly can be. Secondly, the researcher needs to provide detailed information about the research methods and processes that were applied in the study (Delpont & Fouché, 2011).

Validity, on the other hand, is focused on the interpretation of the data. With quantitative data, if the findings have the ability to represent the truth, then the study is considered to be valid (Parasuraman, 1991; Malhotra, 2010). However, qualitative studies uphold the assumption that multiple truths exist (Creswell, 2012; Quinlan *et al.*, 2015). Therefore, the same approach to proving validity in quantitative studies is not appropriate for proving validity in qualitative studies. Rather, qualitative study validity is demonstrated by the extent to which an account seems to fairly and accurately represent the collected data (Lacey & Luff, 2001:27).

Lastly, an alternative way to demonstrate reliability and validity is by conducting triangulation (Tracy, 2013). Triangulation refers to the data collection and analysis, from numerous sources, to acquire a clearer perception on the phenomena that is being studied (Lacey & Luff, 2001:27). Hanson *et al.* (2005) state that triangulation involves examining information from different sources and using it to build coherent justification

for the study's identified themes. Furthermore, the themes are established from the information that is converged from the participants' varying perspectives, which adds to the validity of the study (Creswell, 2013:565).

3.9.2 Quantitative data analysis

Statistical analysis, according to SAS (2017), can be defined as a process in which data are collected, explored and presented in a manner where underlying patterns and trends can be discovered. The quantitative data gathered for this study were analysed using the IBM Statistical Package for the Social Sciences (SPSS) Version 23 for Windows. Van den Berg (2017) defines SPSS as software that is used to edit and analyse numerous kinds of data including those from scientific research. Ultimately, SPSS is a powerful tool in quantitative analysis, which can handle very complex statistical procedures (Pallant, 2007:xiii; Quinlan *et al.*, 2015:318). The following statistical methods were applied during the empirical analysis of the quantitative study:

- **Reliability**

Reliability refers to the indicator of a scale's internal consistency (Zikmund & Babin, 2013:301). In other words, reliability refers to the degree to which a scale obtains consistent results if repeatedly measured (Grable & Schumm, 2010:117). According to Malhotra (2010:318), reliability can be assessed by establishing the association between the scores that were obtained from the different administrations of the scale. Higher association reflects the scale's consistency in terms of results and is therefore reliable (Shukla, 2008:84). Figure 3.3 illustrates the various approaches that can be applied in order to measure reliability.

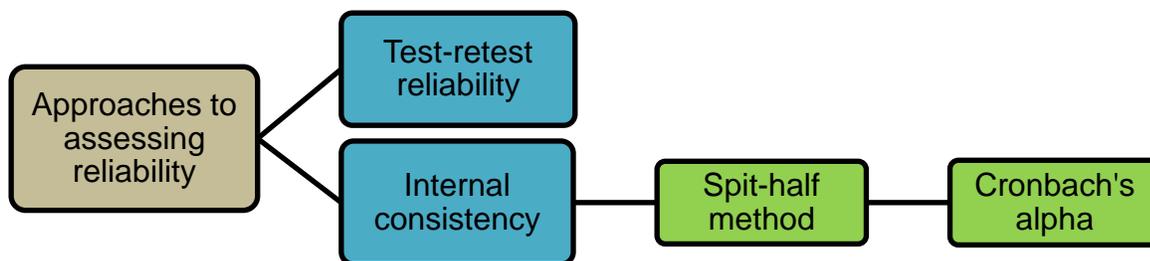


Figure 3.3: Approaches for assessing reliability

Source: Shukla (2008:84)

The first approach, test-retest reliability, is defined by Zikmund and Babin (2013:302) as involving the administration of the same scale to the same respondents on two, separate occasions in order to test for stability. Over time, if administered in similar conditions, the test should obtain similar results, which reflect the scale's stability and repeatability (Shukla, 2008:83). The higher the similarity of the two tests, the higher the reliability of the scale (Marais, 2013:9).

The second approach, internal consistency reliability, assesses the reliability of a scale where several of the scale's items have been summed up to form a total score (Synodinos, 2013:48). Thus, this approach is concerned with the internal consistency of the set of the items that form the scale. According to Churchill and Iacobucci (2010:259), the simplest measure of internal consistency reliability is the split-half method. The split-half method entails the dividing or splitting of items in a scale and subsequently computing the mean of the entire possible split-half coefficients (McDaniel & Gates, 2010:256). The issue with the split-half method is that the way in which the scale items are split results in differing correlations (Pedhazur & Schmelkin, 1991; Dillion *et al.*, 1994:323). However, Cronbach's alpha, also known as the coefficient alpha, is used to deal with the issues that occur with the split-half method (Malhotra, 2010:319).

Pallant (2007:6) states the Cronbach's alpha is the most frequently used statistic as it calculates the average correlation of all the diverse ways of splitting the scale items. The internal consistency will increase as more content is covered and similar scale items are added (Welman *et al.*, 2005; Marais, 2013:70). In this study, the Cronbach's alpha was applied in order to test the reliability of the scale.

- **Validity**

Good research scales should be both consistent and accurate. While reliability relates to the consistency of the scale, validity is linked to the accuracy thereof (Zikmund &

Babin, 2013:303). Quinlan (2011) defines a scale's validity as the extent to which the scale's scores truthfully represent a concept. In other words, by testing validity, a researcher can determine whether or not a scale is measuring what it is meant to measure (Shukla, 2008:82). McDaniel and Gates (2010:256) note there are three different approaches that researchers can implement in order to test the validity of a scale namely, content validity, criterion validity and construct validity. The three approaches are illustrated in Figure 3.4.

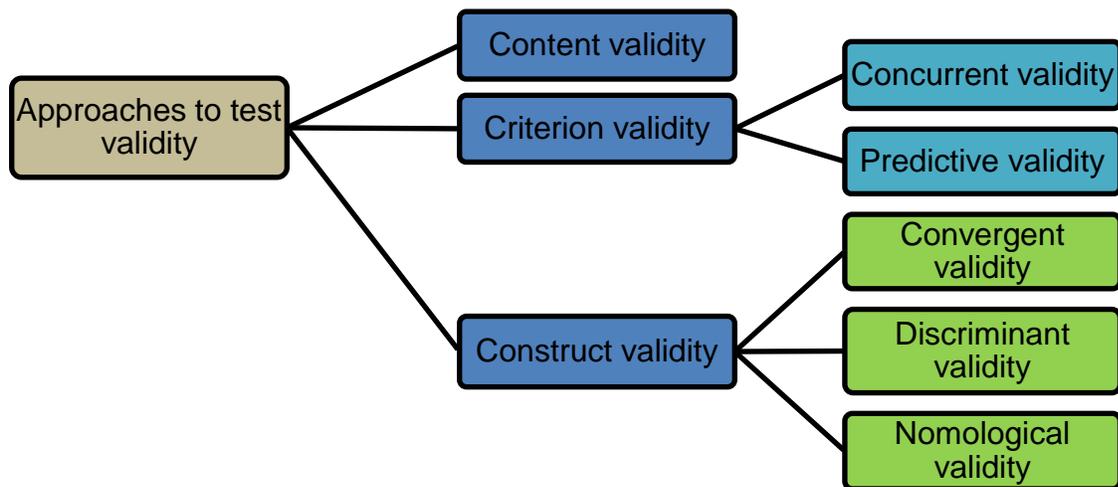


Figure 3.4: Approaches to test validity

Source: McDaniel and Gates (2010:256)

The first approach, content validity, is also known as face validity (Parasuraman, 1991:442). As described by Dillion *et al.* (1994:325) and Zikmund and Babin (2013:320), content validity is a measure in which a researcher systematically evaluates how well the items of a scale represent the measurement task at hand. Content validity is considered a subjective measure since it relies on the researcher's intuition and examination to estimate the validity of the scale (McDaniel & Gates, 2010). Due to the subjectivity of this approach, content validity alone is not considered a sufficient measure of a scale's validity (Wynd *et al.*, 2003). A more formal evaluation can be obtained by analysing criterion validity.

Criterion validity is defined by Malhotra (2010:320) as the degree to which a scale performs as expected compared to other variables that were selected as meaningful criteria. Furthermore, based on the time period involved, criterion validity can be divided into two sub-groups: concurrent validity and predictive validity (Zikmund & Babin, 2013:304). Marais (2013:72) defines concurrent validity as the degree to which a criterion is simultaneously measured with a criterion of interest; whereas predictive validity is defined as the degree to which a future criterion can be anticipated by current measurements (McDaniel & Gates, 2010).

The last approach, construct validity, is considered by Shukla (2008:82) to be the bridge between theory and the scale itself. Construct validity refers to a type of validity which addresses the question of which characteristic or construct is being measured (Pallant, 2007:7). Furthermore, construct validity can be explored by either investigating its related relationship with other constructs, which is known as convergent validity (Churchill, 1995), or by investigating its unrelated relationship with other constructs, which is known as discriminant validity (Synodinos, 2013:113). Malhotra (2010:321), adds that construct validity can also be explored through nomological validity. Nomological validity refers to an assessment of a scale's relation to different yet related measures in a theoretically predicted manner (Marais, 2013:72).

- **Descriptive statistics**

Quinlan *et al.* (2015:359) state descriptive statistics are the elementary transformation of raw data in a summarised manner in order to describe fundamental characteristics, for example central tendency, variability and distribution. One of the most common ways of summarising a data set is to construct a frequency distribution (Zikmund & Babin, 2013:411). Descriptive statistics and frequency distributions are interlinked and are often used to summarise the data that has been captured (Synodinos, 2013:46). According to Malhotra (2010:484), the most common descriptive statistic techniques used to measure frequencies include the measures of location (means), measures of variability (standard deviations) and measures of shape (skewness and kurtosis). The different descriptive statistic techniques are named and briefly explained in Table 3.5.

Table 3.5: Descriptive statistics techniques

Techniques	Measures included in techniques
Measures of location	Mean: The value that represents the average score which is obtained after all the scores are summed up and divided by the sample size (Welman <i>et al.</i> , 2005:233).
	Median: The data are sorted from high to low and the median is represented by the value that is in the middle of the highest and lowest scores (McDaniel & Gates, 2010:410).
	Mode: A measure of central tendency which detects the value that occurs the most (Zikmund & Babin, 2013).
Measures of variability	Range: The value that is obtained after subtracting the smallest value from the largest value in the sample (Marais, 2013:73).
	Variance: The calculation of the mean square deviation of the total values from the mean (Malhotra, 2010:488). In addition, the variance can never be negative.
	Standard deviation: A quantitative index that reflects a distribution's spread or variability by using the square root of the variance of a distribution (Dillion <i>et al.</i> , 1994:401).
Measures of shape	Skewness: The degree of deviation from the mean in one direction or the other (Shukla, 2008:101).
	Kurtosis: Kurtosis measures the peakedness or flatness of a distribution's curve. A normal kurtosis for a distribution is zero (Pallant, 2007:56).

Source: Author's compilation.

Ultimately, descriptive statistics were used in this study to describe variables such as gender, income and level of education by presenting them in various ways including ratios, percentages, averages, ranges and standard deviations (Quinlan *et al.*, 2015:359).

- **Significance tests**

Before reporting on the results of a study, it is important to test which results are significant and which are not (Boyce, 2002:450). With significance tests, researchers use hypothesis testing to determine whether a statement regarding a certain population can be proved or disproved by conducting an empirical study (Gujarati & Porter, 1999). Roets (2013:46) states that the first step during a hypothesis testing is to set a null hypothesis that is stated as H_0 and an alternative hypothesis that is expressed as H_1 . The alternative hypothesis states what will happen if the null hypothesis is rejected.

3.10 SUMMARY

Ultimately, Chapter 3 entailed the discussion of this study's overall research design and methodology. Section 3.1 provided the introduction. Section 3.2 entailed a discussion of the different study designs that can be implemented. These study designs are the qualitative study design, quantitative study design, as well as the mixed methods study design. In Section 3.3, four main study paradigms, namely the positivist, constructivist, participatory, and pragmatic paradigms. Section 3.4 includes a discussion on the different types of sampling strategies that can be implemented in a study. This section mainly focussed on the discussion of the study's target population, sampling frame, sampling method and sampling size used. In Section 3.5, data collection methods were discussed in terms of qualitative data collection methods and quantitative collection methods. Section 3.6 covered the pre-test and pilot testing of data collection instruments. This section thus covered the pre-testing of interview questions and well as the pilot testing of the questionnaire which was used in this study. In Section 3.7, both the qualitative interview administration and the quantitative questionnaire administration. Section 3.8 and 3.9 respectively covered the qualitative and quantitative aspects of data preparation as well as the qualitative and quantitative aspects of the data analysis that were applied in the study. Chapter 4 entails the qualitative analysis of the transcripts that were obtained from the one-on-one interviews that were conducted with the student investors.

CHAPTER 4: QUALITATIVE ANALYSIS OF THE INTERVIEWS

This chapter focusses on the qualitative analysis of the data, which was obtained through the interviews conducted. The analysis was conducted thematically, which allowed the findings of the qualitative study to be integrated, compared and accurately presented. As such, the qualitative analysis is presented as a theme-by-theme analysis of the interviews. Furthermore, various sub-themes that are related to the main themes were identified.

4.1 INTRODUCTION

Chapter 4 is focussed on the qualitative analysis of the themes that were identified from the interviews that were conducted. There are three main themes that were identified during the analysis of the transcripts from the interviews. Those themes are discussed in detail in the subsequent sections.

4.2 QUALITATIVE ANALYSIS OF THE MAIN THEMES

The main themes identified within the transcripts of the interviews serve as a basis for the qualitative analysis of this study. As such, each of the ensuing sections examines a main theme in terms of its sub-themes. It should be noted that in some themes, a certain degree of convergence occurred. Consequently, some sub-themes were discussed in more than one section, as they were considered equally relevant to the identified main themes. However, even though repeatedly discussed, these sub-themes reflect both similar and dissimilar perspectives the participants had on the underlying sub-theme.

Additionally, where applicable, each identified theme along with its sub-themes was related to the existing literature on students' investment knowledge, financial risk tolerance and perception on investment risk (as discussed in Chapter 2). Furthermore, these sub-themes were evaluated in a manner, which allowed the researcher to identify participants' motivations, sources of funding, investment structures, investment instruments and other topics, which have influenced the main themes identified. Thus,

the researcher was able to identify themes, from a South African perspective, which do not seem to be reflected in any of the existing literature described in the present study.

In order to keep to the assumptions of the constructivist paradigm, some of the sub-themes discussed were presented in the participants' own words. Subsequently, the responses illustrate the richness and subtle differences of the participants' knowledge, risk tolerance and perception of investment much more directly and comprehensively than summarised from the researcher's account.

4.2.1 Theme 1: The importance of investment knowledge

In theme one, the general degree of importance and significance, which participants attached to investment, was explored. This theme's discussion includes the participants' origin of investment knowledge; the motivation behind their decision to start investing; and an explanation on why investment knowledge was generally perceived by the participants as a barrier during investing. The discussion illustrates the divergent responses from the participants based on each identified sub-theme, which links back to the importance of investment knowledge. The sub-themes that were obtained during the interviews are discussed in the sections that follow.

4.2.1.1 Sub-theme 1: Origin of investment knowledge

Learning about investments plays an important role in helping participants interact effectively in the financial market. It helps participants choose between investment instruments that are available and how to manage their cash (Cohen & Stebstad, 2003:5). The origin of investment knowledge plays an important role in creating participants' overall perception of investing. Participants are able to learn and understand investment concepts, which helps them to develop their investing skills and adopt appropriate investing behaviour (Antoni, 2014:42). In this study, participants learned about investing from three main sources, namely their academic backgrounds; friends and family; and/or social media. The majority of participants indicated that they learned about investing through their academic background:

Participant 1: “At university. I attended classes with a lecturer that kept on talking about preparing for the future. So, over there I learned that you should start investing”

Participant 3: “... I think in, in varsity ... that’s when I learned about it”

Participant 4: “... from my first year’s studies. Uhm, I had investment as a module and I learned from, to invest there”

Participant 8: “... back in my first year ... when I got here at varsity through the course risk management”

Participant 10: “I first learned about investing in high school”

Participant 11: “I think my knowledge from investing just comes from ... an academic background ... So, I think mainly from, from undergraduate studies”

Participant 12: “Uh, I learned about investing ... through both studies and personal experience”

Participant 15: “Probably at university – risk management”

Participant 16: “... I’ve done economics finance and so basically that’s where I’ve learned about it”

Participant 18: “School and university”

Participant 20: “... through university and also, I mean, just watching the news”

It is clear that schools and universities still play an important role in introducing and improving participants’ investing knowledge. Participants such as Participants 10 and 18, who learned about investment in school were exposed to the basics of investments at an early age (Mundy & Moseke, 2011:16). More specifically, participants who are studying financial courses at university (Participants 1, 3, 4, 11, 15, and 20), are able to gain detailed information on investments and investing (Power *et al.*, 2011:97). Learning about investments at a tertiary level helped participants to improve their investment knowledge, investment perception and skills (Antoni, 2014:42). Furthermore, these participants are informed of investment risks and are able to seek investment help where needed. As a result, these participants are more likely to make appropriate investment decisions and stand a better chance to reach their investment goals (Messy & Monticone, 2012:8). Other participants indicated that they learned about investing through social media:

Participant 5: “Uhm, I learned about investing by watching, uhm, a business channel on DSTv ... and then the shows that played on that, uhm, investment shows ... That’s where I, I, I learned about investing”

Participant 6: "I, I remember in my first year I used to watch videos about investments, different assets and different securities and then through that process I, I self-equipped myself with investment knowledge"

Participant 13: "I've learned from the Internet"

Participant 14: "I just saw it on the Internet and I wanted to know more about it so I went through and did some investigations and some research about the investment things"

Participant 17: "I learned through online research, just being curious, uhm, going through articles"

Participant 19: "... Facebook ... you Google and research and you just get more knowledge ... until you finally master it"

The Internet is a great tool for participants to easily and inexpensively research investment opportunities (Sabherwal *et al.*, 2008). Participants 6, 13, 14, and 19 learned about investing through social media platforms by using the Internet as a customised, self-paced and on-demand learning path to gain more knowledge on investing (Baird & Fisher, 2009:2023). The knowledge they have gained from social media is what they have applied throughout their investing journeys. Therefore, for these participants, the Internet and social media are not only a source of investment information but also a source of influence on how they should invest (Hanna *et al.*, 2011:269).

However, it should also be noted that the Internet and social media platforms contain many scammers and sources of false information (Baker, 1999). Scams are created to bait individuals who are desperate to make money as quickly as possible (Sabherwal *et al.*, 2008). Participants 12 and 19 have mentioned that such online investment scams are a drawback when it comes to investing:

Participant 12: "Uhm, there's also things with investing, uh, traps that you can fall in like Ponzi schemes. So, it's also something that you should be aware of, not only on the risk on the downside of the return that you can get but also there is a lot of fake and false investment instruments out there"

Participant 19: "... there's many scam artists out there. So, they offer you knowledge but that won't really help ... So it's better to get the proper knowledge"

These investment scams can negatively influence the perceptions novice participants have on investing (Baker, 1999). Consequently, these participants may be demotivated from investing again in the future. Therefore, it is important that prospective participants be aware of investment scams and ensure that the investment instruments they want to invest in are valid. The remaining group of participants had responded that they learned about investing through either friends or family. Subsequently, the participants provide another example of how equally important it is for families and/or friends to share investment knowledge amongst each other:

Participant 2: "I would say I learned about investing through my parents, when I was very young"

Participant 7: "Uhm, I learned from my brother. He gave me a lot of information as to how I should spend my money and how I should be able to make money work for me and how I should always, uhm, be able to have something reserved, you know, in case of emergencies"

Participant 9: "I learned from my uncle ... in high school already, he started with these things and then he told me about it and then I had an interest in it"

Participant 21: "... I learned, it was first year when I met my friend. He introduced me to this thing ... investing ... and told me about all its benefits"

Participants 2, 7, 9, and 21 obtained their investment knowledge from their social interactions tend to develop the same interest and desire in investing as their social groups, which include friends and family (Baker & Nofsinger, 2002:110). Therefore, the participant's social environment has an influence on their investment decisions. For example, if a student learns about investing in money market accounts from their parents, then the student would likely also be interested to invest in money market accounts. Otherwise, if a student's friend invests in stock markets and frequently talks about their experience thereof, the student would also be highly likely to try investing in the stock market. Therefore, participants who are social are more likely to engage in investing activities (Hong *et al.*, 2004). This is because they are exposed to and influenced by many other participants, of which some are investors. The participants of the study took on similar investment decisions as the individuals from whom they got the investment knowledge. In conclusion, friends and family have an influence on what instruments participants invest in and how they choose to invest. It is important for

participants to learn as much as they can about investing from their social interactions. That way, participants will be able to learn from others' experiences and develop their own investing behaviours.

Ultimately, the origin of investing knowledge for these participants helped introduce them to investment at an early stage in their lives. They have a better understanding of investment concepts (Cohen & Stebstad, 2003). Over time these participants will continue applying their investment knowledge and improve their skills by suitable investing practices (Antoni, 2014:42). For this study, it was deemed necessary to explore what motivated these participants to use their investing knowledge and apply it practically. Sub-theme 2 discusses the various reasons that motivated these participants to start investing.

4.2.1.2 Sub-theme 2: Motivation to start investing

As discussed in sub-theme 1, many participants have at some point in their lives learned about investing. However, not all of them end up investing once they start earning pocket money or a salary. It was important to explore the various reasons that motivated these participants to start investing. Three main categories of motivation for participants to start investing are discussed in the sections to follow.

4.2.1.2.1 Financial wellbeing

Numerous participants responded that their motivation to start investing was inspired by their need to secure their future financial wellbeing. For the purpose of this study, financial wellbeing is used as an umbrella term, which can mean money growth, financial security, financial future, lifestyle goals and financial freedom. The following responses reflect the abovementioned categories of financial wellbeing:

Participant 2: "I think you need to invest as a student, or as myself, I realised that you need to invest in order to save or grow your money to be able to afford what you would like to acquire in life"

Participant 3: "Well, firstly I'm all about security like I said. So, a friend of mine had advised me that you know if you could invest some money, you may

need it in future and then there's easy access to that so, that may help you"

Participant 4: "Hmm, I think it's being in control of your money. Uhm, we are living in uncertain circumstances at the moment in South Africa. So, for me it is that absolute control that your future is secured."

Participant 6: "So, basically what motivated me is being optimistic about the future, thinking about my financial future and knowing that I don't have, err, the leisure time to actually invest in the future. So, I started doing it now. So, I can secure my financial future."

Participant 7: "Seeing the difficulties there are in paying fees, like, all the difficulties my mother goes through to be able to pay my school fees ... I wouldn't want to go through that or see my kids, uhm, see my go through that"

Participant 10: "I felt like ... there's no career in the world that could, like, sustain the lifestyle I wanna live. So, that's why I basically started investing"

Participant 11: "... just to make sure I have enough money to start as early as possible to ... make provisions for my old age"; "Investing for me, uhm, at this moment just means a sense of security at the end of the day. Yes there's risk involved in investing but for me investing at the moment is just for me securing my old age, uh, securing my future in terms of, of my old age and retirement"

Participant 15: "Well, everybody always tells you , you need to start preparing for your future, you need to put something away for when you're older ... I think that's what motivated me to invest"; "... it's just peace of mind, knowing that I'm creating a better future in the end ..."

Participant 18: "I want to be financially secure in my future and the only way to do that is by putting money into investments that are going to earn me the returns that allow that"; "Investing to me means the first step towards a financially secure future for myself"

Participant 19: "Money ... we all want money. So, err, I also have big dreams for myself that I would like to achieve and I see myself, err, at a certain place so a regular job won't get me there. So, it's always better to have something on the side"

Participant 21: "Err, financial freedom of course. As you know, we all want to ... have money"

Financial wellbeing motivated these participants to start investing, which allowed them to take on a proactive approach in securing their finances in case of a financial crisis. These participants were able to apply their financial knowledge and understand that making an investment in today's economy is a financially sound decision. As indicated in Participant 4's response, it is important for participants to invest in order to protect

themselves financially during the uncertain economic conditions South Africa is experiencing. Also, as participants 10, 15 and 18 indicated, it is important for participants to start investing in order to make provisions for their old age. Since South Africa's economy is unstable (Crue Invest, 2017), it is important for students to invest as soon as possible and adopt appropriate investment behaviours. This will allow them to increase their likeness of earning more money over time, which will positively affect their financial future. It is important for participants to keep improving their investment knowledge so that they are aware of the different investment decisions they can take to protect themselves financially (Antoni, 2014).

Additionally, by adopting a proactive approach towards investing, participants will be able to decrease their likeliness of experiencing emotional distress, which is linked to their finances (Robb, 2011). Other participants indicated that they were motivated by their personal emotion to start investing.

4.2.1.2.2 Personal emotion

Personal emotion is a primary psychological factor, which influences an investor's rationality when making investment decisions (Charles & Kasilingam, 2014:45). Baker and Nofsinger (2002:107) are of the opinion that investors are motivated by two emotions, namely greed and fear. In addition, other emotions such as curiosity, hope and regret can also have an effect on the way participants invest. This study found that some participants used their personal emotion as motivation to start investing. Participants 1 and 8 responded that greed motivated them to start investing. Instead, for Participant 12, it was curiosity that motivated her decision to start investing.

Participant 1: "I'm greedy and I'm a greedy person. So, the more I can invest now, the more that I will have one day"

Participant 8: "What motivated me the most was, uhm, let me not lie, I was money driven – it was money driven"

Participant 12: "Uhm, it always interested me, uhm, how money works and how the world, revolves around money and why certain people have less money and why other have more money than some people"

Participants who invest by basing their investment decisions on their emotions are not using self-control and reason to do so (Charles & Kasilingam, 2014:46). Consequently, these participants' emotions obscure their judgements, which in turn, may hinder their abilities to make sound investment decisions. Therefore, participants should be aware of their emotional bias when it comes to investing (Kugler *et al.*, 2010). They should learn how to deal with their emotions appropriately and use their investment knowledge to make objective investment decisions. As such, participants will be able to improve their investing behaviours and maintain a good perception of investing (Roszkowski & Davey, 2010). Some participants indicated that their role models are what influenced their perception of investment and what motivated them to start investing.

4.2.1.2.3 Role models

Simply stated, role models refer to individuals who can influence other individuals' perception and behaviours (Van Auken *et al.*, 2006). Previous research has established that people obtain a substantial portion of their behavioural tendencies through observing and imitating their role models (Martin & Bush, 2000:442). This study has found that some participants were motivated to start investing by their role models.

Participant 5: "I got my motivation from, uhm, a person, one of the best investors in the world – Warren Buffet; and one of the things he said is that he just had an advantage with investing because he started earlier"

Participant 14: "... he's named, err, Refilwe Mkembe ... Yeah, he's the one who motivated me, like, he inspired me that time ... I wanted to know more about the investing things and everything"

Due to their achievements, role models from the field of investment, have motivated many participants to adopt a certain perception towards investing (Lockwood & Kunda, 1997:91). In addition to influencing these participants' perception towards investing, these role models influence how these participants chose to invest. Participants also look up to their investing role models to gain more knowledge on the different types of investments in which they can invest. Thus, through the exposure to their role models, these participants obtained the knowledge, skills and dispositions needed for them to start investing (Ward, 1974).

4.2.1.3 Sub-theme 3: Investment knowledge as a barrier

Earlier studies have found that there is a relationship between investment knowledge and investing behaviour (Volpe *et al.*, 2002; Antoni, 2014). Participants with lower investment knowledge than their counterparts tend to make inappropriate investment decisions (Robb, 2011). Inappropriate investment decisions can lead to bad experiences, which in turn, can lead to bad perceptions towards investing. Ultimately, a bad perception towards investing could result in participants being discouraged from investing again in the future. This study, as with previous research (Mandell & Klein, 2009; Antoni, 2014), has found that participants have a lack of investment knowledge.

Participant 2: "I think one of the barriers would be lack of knowledge"

Participant 3: "I did not understand the terminology"

Participant 11: "Uhm, gaining that knowledge, gaining that understanding of, of which investment fits me best and which investment is best catered to my needs ... although we have the knowledge from an undergraduate degrees of what investments are, we don't really have practical knowledge"

Participant 12: "... you have to have the sufficient knowledge about all the alternative and then the alternative just sometimes makes you confused because they're too many"

Participant 17: "... knowledge, mean-, meaning, in terms of how they work. I had to go do, do some extensive research ... 'cause normally you have to, like, uhm, pay in order to get the knowledge. So, to get the knowledge ... on my own I had to do some extensive research"

Participant 20: "Knowledge on investing, experience as well"

The lack of investment knowledge has been a barrier throughout these participants' investing journeys. Participant 3 indicated that she did not understand the terminology used in practice when she first started investing. In contrast, Participant 11 stated that he experienced a lack of practical knowledge. As Participant 20 indicated, this can also be translated as a lack of practical experience that the participants had when they first started investing. Participants are aware that they need to conduct extensive research about the investment instruments they are interested in investing in.

In addition, participants need to be aware of the many factors that can affect their investments and how to proactively deal with a potentially disastrous investment. However, with a lack of investment knowledge, participants put themselves at risk of making bad investment decisions (Chen & Volpe, 1998). In other words, by not having sufficient investment knowledge, these participants found difficulty in making investment decisions that are appropriate for them. This, in turn, could lead to bad experiences, which could lead to them not investing again. In addition, those with low levels of investing knowledge will find difficulty in making complex investment decisions and will find it difficult to understand basic terminology such as investment risk and diversification. As a result, participants with low levels of investing knowledge are exposed to marketing tactics and investment scams (Antoni, 2014). These participants may be convinced to invest in instruments that are false or not suitable to their risk tolerance. Also, those with low levels of investment knowledge lack the investment skills to take advantage of investment products or services, which may improve their investment situation (Yoong, 2010:63). Therefore, participants should conduct extensive research as well as gain some knowledge and understanding about the risks that are linked to certain investments. As a result, participants will be able to avoid investing in instruments that are inappropriate for them.

4.2.1.4 Conclusion on Theme 1: The importance of investment knowledge

As indicated by the responses and discussions in Theme 1, the importance of investment knowledge is undeniable. Investment knowledge can help participants acquire the appropriate skills, right perceptions and relevant information needed in making better investment choices (Falahati *et al.*, 2011:6086). As stated by Robb (2011:693), investment knowledge has a significant influence on the perceptions that these participants form towards investing. In turn, their perspectives have a strong influence on their behaviour towards investing. Hilgert *et al.* (2003) state financially knowledgeable and well-informed participants make better investment decisions, which will lead to improved financial security and wellbeing.

For participants who want to start investing, it is important for them to understand investments and that they are able to obtain information that is needed to make appropriate investment decisions (Sebstad *et al.*, 2006:10). In other words, participants should be able to conduct their own research regarding investments and be able to translate the investment information from words to numbers (Shuttleworth, 2011:94). Furthermore, participants should ensure that they invest in instruments that suit their needs and will help them reach their financial goals (Bajtelsmit & Rastelli, 2008:13). Therefore, participants should always make effort in improving their investing knowledge and gain information that could increase their likelihood of making better investment decisions.

4.2.2 Theme 2: Participants are highly risk tolerant

Theme 2 entails a discussion regarding the various factors that have an influence on participants' financial risk tolerance. First, this discussion explores how different demographic factors influences the participants risk tolerances. Thereafter, the effect that personal emotions have on investors' risk tolerance is also investigated. Ultimately, only two sub-themes were identified within this study, namely the relationship between demographics and risk tolerance as well as personal emotion's effect on risk tolerance.

4.2.2.1 Sub-theme 1: Demographics and risk tolerance

As discussed in Chapter 2, there is much literature that has examined how demographic characteristics can be used to predict investor risk tolerance. This section analyses how participants' risk tolerance have been influenced by their demographic characteristics. Table 4.1 contains the demographic data of the participants who participated in this study's qualitative phase.

Table 4.1: Demographics of participants

Demographics	Description	Data
Race	Black	12
	Coloured	1
	White	8
Gender	Female	5
	Male	16

Age	18 – 20	2
	20 – 25	17
	25 – 30	1
	30 – 35	1
Education level	BCom (undergraduate)	10
	BCom (postgraduate)	11
Investing experience	Less than one year	5
	1 – 2 years	6
	2 – 3 years	5
	3 – 4 years	2
	4 – 5 years	1
	5+ years	2

Source: Author's own compilation.

4.2.2.1.1 Race and risk tolerance

Sung and Hanna (1996) as well as Grable (1997) found that white individuals were high risk tolerant investors. In contrast to findings in previous research, this study found that the majority of black participants invest in high risk instruments. As indicated in the succeeding participant responses, most of the instruments that black participants invest in are shares and currencies, which are high risk instruments.

Participant 5: "I invest in shares ... I buy and sell currencies"

Participant 6: "I'm investing in, in shares"

Participant 7: "Well, uhm, livestock and, uhm, FOREX"

Participant 8: "I'm trading in, in currencies"

Participant 10: "I'm investing in FOREX"

Participant 13: "I've invested in FOREX and I've also invested in Bitcoin"

Participant 16: "It was a bank that sold its shares and that is where I invested"

Participant 17: "I'm investing in, in shares. Also, in ... future trading and I also have a 32-day notice account"

Participant 19: "I'm in FOREX and binary options"

Participant 21: "I'm doing, err, FOREX trading"

Furthermore, this study found that white participants invest in low risk instruments (Participants 1, 4, 9, 11, 12, and 15). Thus, the findings of this study contradict the findings of previous research that found that white participants are high risk tolerant.

From this study, only one white participant invests in risky investment instruments. Therefore, in context of this sample, it can be assumed that white participants are low risk tolerant investors. The following responses illustrate that white participants tend to invest in either money market accounts or funds.

Participant 1: "I'm currently investing in annuities. I have got two of those and then I also have saving accounts"

Participant 4: "... it's a 32-day notice account"

Participant 9: "I have invested in Coronation Fund and SASOL (shares)"

Participant 11: "The main investment I have is an annuity ... a retirement annuity"

Participant 12: "Uh, I currently have money in a growth fund"

Participant 15: "The Sanlam one (fund) and then also a depositor plus that has great interest"

For the purpose of this study, it will be assumed that coloured participants have a low risk tolerance in terms of investments. The quantitative phase of this study will help determine whether that statement is true or false. The following excerpt simply indicates what low risk investment instrument Participant 20, a coloured participant, invests in:

Participant 20: "It's an investment account at the bank"

Therefore, in terms of race and risk tolerance in this qualitative study, it can be concluded that overall black participants are more risk tolerant than their white and coloured counterparts. This finding is contradictory to the findings of previous studies, which found that white individuals have the highest probability of taking greater investment risks (Haliassos & Bertaut, 1995; Lee & Hanna, 1995; Sung & Hanna, 1996).

4.2.2.1.2 Gender and risk tolerance

There is a widespread belief that males take on greater financial risks than females. Based on the literature discussed in Chapter 2, it was expected that male participants would be more risk tolerant overall than their female counterparts (Ford & Kent, 2009). There were 16 male and five female participants who participated in the qualitative phase of this study.

It was found that the majority male participants invest in high-risk instruments only. The following responses indicate that the main high-risk instruments, which male participants invest in are shares and currencies. Participants 7, 13, and 19 respectively mentioned notable, risky instruments, which include livestock, Bitcoin, and binary options.

Participant 5: "I invest in shares ... I buy and sell currencies"

Participant 6: "I'm investing in, in shares"

Participant 7: "Well, uhm, livestock and, uhm, FOREX"

Participant 8: "I'm trading in, in currencies"

Participant 10: "I'm investing in FOREX"

Participant 13: "I've invested in FOREX and I've also invested in Bitcoin"

Participant 19: "I'm in FOREX and binary options"

Participant 21: "I'm doing, err, FOREX trading"

Furthermore, there were male participants who solely invest in low risk investment instruments. From the male participants who invest in low risk investment instruments, they are invested in either money market accounts or funds. On the other hand, one male participant (Participant 14) is invested in a demo account, wherein he aims to first learn more about the investment instruments he is interested in investing in. Thus, he is taking on low risk by not taking chances to invest in instruments with which he is not familiar. As illustrated in the responses, participants 4, 11, 14 and 20 all invest in low risk instruments:

Participant 4: "... it's a 32-day notice account"

Participant 11: "The main investment I have is an annuity ... a retirement annuity"

Participant 14: "Right now I'm still on a demo account"

Participant 20: "It's an investment account at the bank"

Lastly, the remaining small group of male participants had indicated that they invest in two or more investment instruments, which have different risk levels associated to them. In other words, these male participants invest in both high and low risk investment instruments. The following responses indicate that some male participants prefer a more diverse approach to selecting investments.

Participant 2: "I have a savings account ... I have a stock trading account"

Participant 9: "I have invested in Coronation Fund and SASOL (shares)"

Participant 17: "I'm investing in, in shares. Also, in ... future trading and I also have a 32-day notice account"

Participant 18: "... equity, bonds, currency ..."

Ultimately, in terms of this qualitative study's male participants, it can be assumed that male participants are high risk investors. This finding is aligned with the findings of previous research that focused on how gender influences risk tolerance (Slovic, 1972; Sung & Hanna, 1996), despite the sample size of this study.

In contrast, female participants were found to be low risk tolerant investors. The majority of the qualitative study's female participants invest in instruments that are classified as safe, low risk tolerance investments. As illustrated in the responses, these low risk investments instruments include annuities, money market accounts and funds.

Participant 1: "I'm currently investing in annuities. I have got two of those and then I also have saving accounts"

Participant 3: "Uhm, I have a 32-day interest account"

Participant 12: "Uh, I currently have money in a growth fund"

Participant 15: "The Sanlam one (fund) and then also a depositor plus that has great interest"

Only one female participant invested in shares, which are considered high risk investment instruments (Barber & Odean, 2001). However, this investor only invested in this high risk instrument for a short amount of time:

*Participant 16: "It was a bank that sold its shares and that is where I invested"
"I just wanted it for a short time"*

Thus, Participant 16 took a safer approach to investing in a high risk investment instrument. Regardless of having invested in a high risk instrument, it can be argued that this investor might also be a low risk tolerant individual. Ultimately, based on the type of investment instruments owned, it was found that male participants have a higher risk tolerance than female participants for this sample. This is due to the fact that the male participants invest in high risk tolerant investments whereas female participants

invest in low risk investments. Therefore, the findings correspond with previous findings of male investors being more risk tolerant than their female counterparts (Ford & Kent, 2009; Aren & Zengin, 2016) despite the sample size.

4.2.2.1.3 Age and risk tolerance

It is assumed that younger investors should be more risk tolerant than older investors (Grable, 2000). All but one of the participants to participate in this study are below the age of 30. The majority of those under the age of 30 are mostly under the age of 25. Consequently, it can be argued that the participants who participated in this study are all young investors. In general, young investors have been proven to take on high financial risks (Wang & Hanna, 1997).

In this study, the youngest participant is 18 years old; whereas the oldest is 32 years old. Overall, the median age of the group of participants is 23 years old. From the sample of 21 participants, the majority invest in risky investment instruments. Thus, their investment behaviour is in line with that illustrated by the investor life cycle (Yao *et al.*, 2011). In other words, these participants' actions of investing in risky instruments are in line with literature that stated young individuals should invest in risky instruments. However, there were two participants who responded that they invest in low risk instruments:

Participant 14: "... right now I'm still on a demo account"

Participant 20: "It's an investment account at the bank"

More specifically, Participant 14 invests in a demo account with the intention of day trading in currencies in future:

Participant 14: "... I haven't started with my real account, but ... I'm trading with currencies (on the demo account)"

Thus, the reason behind Participant 14's choice to invest in a demo account is for him first to learn more about the investment he is interested in investing in. On the other hand, Participant 20 invests in a low risk instrument, as he perceives himself to be "*risk-averse*". In addition, Participant 20 consults with his parents before making any

investment choices. Older individuals have been proven to take on less investment risk as they age (Yao *et al.*, 2011), thus it could be that Participant 20's parents are influencing his decision to invest in low risk instruments (Martin & Bush, 2000):

Participant 20: I'm risk-adverse, I would rather save into an account and let interest generate over time until I can gain proper knowledge for investments"; "... I would advise with my parents, my mom especially. So, we'll discuss how we're gonna invest it, for how much and so on"

Alternatively, the older participants in the study (Participants 3, 11, 12, and 15) mostly invest in low risk instruments. Again, this finding proves to be in line with the investor life cycle theory, which states older investors tend to invest in safer instruments by taking on less investment risks (Yao *et al.*, 2011). However, it was found that two of the older participants invest in high risk instruments:

Participant 16: "It was a bank that sold its shares and that is where I invested"; "... I just wanted it for a short period of time"

Participant 18: "... equity, bonds, currency ..."

Participant 16 invested in shares, however, stated that it was only for a short period of time. Participant 16 is aware that she is a lower mid lifecycle where she still takes risks but not as much as before (Grable *et al.*, 2009; Yao *et al.*, 2011). Therefore, it was a safe approach towards investing in a high risk instrument. On the other hand, Participant 18, is a risk-aggressive investor. When asked what his investment structure is, the participant responded with "*highly aggressive*".

Participant 18: "Highly aggressive ... highly aggressive with a lot of my capital going purely into commodities"; "...because the returns are way better and also there's this marginal return, it becomes exponential. The more money you put into your trading account, the faster you can turn it"

Furthermore, Participant 18 had indicated that he enjoys the "*adrenaline rush*" he experiences when investing. Additionally, he indicated that he invests aggressively because it allows him to participate in larger trades. Ultimately, most investors tend to invest "*according to their age*". However, in terms of this study, it can be concluded that young participants are more risk tolerant than their older counterparts.

4.2.2.1.4 Education level and risk tolerance

According to Psacharopoulos (1994), the best investment that one can make for oneself is education. Grable (1997:85) states differences amongst investors' risk tolerance levels may lie in the education levels those investors have obtained. Participants who had attained a higher educational level were assumed to be more risk tolerant than participants with a lower educational level. The assumption is based on the ideology that higher educational levels expose investors to a better understanding of finances as well as the financial risks involved (Archuleta *et al.*, 2013; Antoni, 2014) .

Within the qualitative study, there were 10 undergraduate investors and 11 postgraduate investors. The undergraduate investors are those participants who are studying towards obtaining their degree. Alternatively, the postgraduates have already earned their degrees and are studying towards obtaining their honours, masters, or doctoral degrees. In order to determine the participants' risk tolerance, the responses to what they invest in were analysed.

Out of 10 undergraduate investors, eight were found to invest in high risk instruments (illustrated in the succeeding responses). A potential explanation of the finding could be that the participants have a financial background in commerce, and therefore understand the consequences of their risk taking (Berger & James, 2002).

Participant 5: "I invest in shares ... I buy and sell currencies"

Participant 7: "Well, uhm, livestock and, uhm, FOREX"

Participant 8: "I'm trading in, in currencies"

Participant 10: "I'm investing in FOREX"

Participant 13: "I've invested in FOREX and I've also invested in Bitcoin"

Participant 17: "I'm investing in, in shares ... Also, in ... future trading"

Participant 19: "I'm in FOREX and binary options"

Participant 21: "I'm doing, err, FOREX trading"

On the other hand, seven out of the 11 postgraduate investors were found to invest in low risk instruments:

Participant 1: "I'm currently investing in annuities. I have got two of those and then I also have saving accounts"

Participant 3: "Uhm, I have a 32-day interest account"

Participant 4: "... it's a 32-day notice account"

Participant 11: "The main investment I have is an annuity ... a retirement annuity"

Participant 12: "Uh, I currently have money in a growth fund"

Participant 15: "The Sanlam one (fund) and then also a depositor plus that has great interest"

Participant 20: "It's an investment account at the bank"

Based on the literature surrounding the investor life cycle, participants are in the accumulation phase since they are in their early-to-middle years of their working careers. Within this phase young individuals, such as participants, are expected to accumulate assets to satisfy their immediate need for example to buy a car or make a down payment for a house. Participants' 11, 12, 15, and 20's responses indicate that these participants are taking a low-risk approach into reaching their financial goals. It may be that these participants avoid investing in high risk instruments as these investments could negatively affect their goal of obtaining a secure financial future within an unstable country. Ultimately, from this sample, it can be concluded that undergraduate participants are highly risk tolerant investors and postgraduates are low risk tolerant investors. The second-last factor analysed in terms of risk tolerance is the participants' investing experience.

4.2.2.1.5 Investing experience and risk tolerance

An investor's level of risk tolerance can also be influenced by the years of investing experience they have. It is expected that participants with few years of investing experience will have a lower risk tolerance level than those who have been investing for a longer period of time. Table 4.2 summarises the investing experiences of the participants:

Table 4.2: Participants' investing experience

Participant	Investing experience	Investment risk type
1	5 years	Low risk
2	6 years	High risk
3	2 years and a few months	Low risk
4	1.5 years	Low risk
5	3 years and a few months	High risk
6	2 years	High risk
7	9 years and a few months	High risk
8	3 years	High risk
9	3 years	Low risk
10	3 years	High risk
11	1.5 years	Low risk
12	2 years	Low risk
13	3 months	High risk
14	1 month and a few weeks	Low risk
15	2 years	Low risk
16	6 months	High risk
17	4 years	High risk
18	1.5 months	High risk
19	2 years and 6 months	High risk
20	4 months	Low risk
21	1 year	High risk

Source: Author's compilation.

Out of the five participants who have been investing for less than one year, three (participants 13, 16 and 18) invest in high risk instruments. In addition, only one of the three participants who invest in risk instruments makes use of a financial advisor.

Participant 13: "I invest with a group of friends"; "I'm invested in FOREX and I've also invested in Bitcoin"; "I can say three months now"

Participant 16: "... independent because I am actually the financial advisor ... I've done some finance"; "a bank that sold its shares and that where I invested"; "maybe six months"

Participant 18: "I have a financial advisor"; "I'm investing into markets. So ... equity, bonds, currency"; "about month, month and a half"

The majority of the participants have between one and two years of investing experience. Participants 4, 11, 12 and 15 have indicated that they invest in low risk investment instruments. Additionally, Participant 4 independently decided to invest in a safer investment on his own whereas Participants 11, 12 and 15 all made use of a financial advisor to make their investment decisions.

Participant 4: "I am an independent investor"; "It's a 32-day notice account"; "I think it's one and a half years now"

Participant 11: "... the investment structure that I use is just predominantly from a financial advisor"; "... the main investment that I have is an annuity"; "I think ... year and a half, thereabout"

Participant 12: "I use a financial advisor"; "... I currently have money in a growth fund"; "It's two years now"

Participant 15: "... we do have a financial advisor"; "The Sanlam one and then also a type of ... depositor plus that has great interest"

There were five participants with two to three years investing experience. The majority of these participants, participants 8, 10 and 19, invest in high-risk instruments. They invest in these risky instruments independently or with help from friends:

Participant 8: "Actually with me, it's individual but obviously ... I do talk to other people"; "I'm trading in, in currencies"; "I've been trading for the past, err, two to three years"

Participant 10: "I invest with my friends"; "I'm investing in FOREX"; "Instruments ... I have three years now"

Participant 19: "... with a group of friends"; "I'm in FOREX and binary options. So I trade, err, currency pairs"; "... FOREX it's been two years and binary about six months"

Furthermore, there were two participants, participants 5 and 17, who have investment experience of three to four years. Both of these participants invest in risky instruments. In addition, both of these participants use financial advisors in terms of their riskier instruments; and invest independently with instruments they are more comfortable investing in alone:

Participant 5: "I invest alone but the, the broker that I use does send, uhm, newsletters to elaborate or try to advise me as an investor better on what I should look out for or, uhm, things that I can currently invest in"

that I would make a good return on ...”; “I invest in shares”; “I started investing in ... shares in 2014, and I did that for three years ... it’s only recently, in 2017, that I ... ventured into, uhm, buying and selling currencies”

Participant 17: “... for shares I use a financial advisor and for future trading ... I’m independent on my own”; “I’m investing in, in shares ... Also, in ... future trading ... I also have a 32-day notice account”; “... it has been four years now”

Only one of participants, Participant 1, has had investing experience of four to five years. This student invests independently in low risk instruments:

Participant 1: “My investment structure is independently, I invest everything myself”; “I’m currently investing in annuities ... and then I also have a savings account”; “For the annuities, I’ve been investing five years and the savings account only for a year now”

Lastly, there were only two participants (participants 2 and 7) with more than five years’ investing experience. Both of these participants invest in high risk instruments on their own. It could be that these participants, through their years of investing, have gained a better understanding of how these instruments operate in different economic situations. Thus, these participants are comfortable in investing in high risk instruments on their own:

Participant 2: “I’m an independent investor”; “I have a stock trading account”; “Investments of stock trading I would say six years now”

Participant 7: “I invest alone”; “livestock and ... FOREX”; “From 2008, so it’s 9 years”

Ultimately, these categories can be divided into two groups: short investment experience (under three years) and long investment experience (more than three years). Within the sample, the majority of participants from both these groups mostly invest in high risk instruments. Thus, regardless of their investing experience, most of the participants are high-risk tolerant investors. This could be due to their age group or other demographic factors.

4.2.2.1.6 Source of income and risk tolerance

Previous research has indicated that an investor’s income has an effect on their risk tolerance (Grable & Joo, 1999; Grable, 2000). However, for this study, the participants

were not asked what their income is as it could not be indicated anonymously. Alternatively, the participants were asked what the source of their income is. Table 4.3 provides the main sources of income identified in the study. Furthermore, the majority risk tolerance in each source of income category identified is provided.

Table 4.3: Source of participant income

Sources of income	Number of participants	Overall risk tolerance
1. Allowance	7	High risk tolerance
2. Bursary/Scholarship	1	High risk tolerance
3. Job	3	Low risk tolerance
4. Savings	1	High risk tolerance
5. Combination of sources above	9	High risk tolerance

Source: Author's compilation

In this study, many of the participants receive their allowance/income from a combination of sources. Based on the participants' responses in terms of what they invest in, these participants were grouped as high risk tolerant investors. A potential explanation could be that the participants are aware that they can hedge their losses through their numerous sources of income. If a student loses from an investment made with money from one source, the investor will still have other sources of income available to use (Henry *et al.*, 2001). Thus, it could explain why the participants are comfortable with taking on high risk investments. In terms of the participants who receive their investment money from bursaries or savings, it was found that these participants are also high risk investors.

In contrast, Participants 11, 13, and 15 obtain their investing money from their jobs and invest in low risk instruments. This could be that these participants understand the value of money better since they have to work for it on their own. Thus, they invest in low risk investments so that they are not reckless with the money they worked hard to earn. In conclusion, all of the participants' demographics somewhat played a role in determining

their level of risk tolerance. In order to generalise the findings of the study, a section testing the risk tolerance was included in the study's questionnaire. The results of the risk tolerance test were linked to the participants' demographics and are discussed in Chapter 5.

4.2.2.2 Sub-theme 2: Personal emotions and risk tolerance

Another sub-theme that arose during the analysis of risk tolerance amongst participants is personal emotions. It was found that personal emotions can influence participants to either be high risk tolerant investors or low risk tolerant investors depending on the feelings they experience when faced with making an investment risk decision.

When asked what they enjoy about investing apart from making money, the first group of participants (participants 1, 7, 9, 17 and 21) indicated that for them, investing is a pleasurable activity in which to be involved. These participants experience a thrill when faced with taking investment risks. This thrill is what makes the process of investing entertaining and worth committing to.

Participant 1: "I'm currently investing in annuities. I have got two of those and then I also have saving accounts"; "The thrill of it"

Participant 7: "Well, uhm, livestock and, uhm, FOREX"; "the thrill, you know, of either winning or losing ... I actually enjoy that thrill"

Participant 9: "I have invested in Coronation Fund and SASOL (shares)"; "It's fun"

Participant 17: "I'm investing in, in shares. Also, in ... future trading and I also have a 32-day notice account"; "It's exciting"

Participant 21: "I'm doing, err, FOREX trading"; "it's enjoyable"

Often, individuals who enjoy experiencing thrills, tend to take on higher risks in order to intensify the thrill they are experiencing i.e. gamblers (Roszkowski & Davey, 2010). As presented in the responses above, four out of the five participants who partake in investing for the thrill of it, own high risk instruments. Conversely, not all participants enjoy investing for the thrill of it. Participants 3, 12, 13 and 14 had indicated that they dislike investing in high risk instruments due to the negative emotions they experience when they are faced with making an investment decision:

Participant 3: "Uhm, I have a 32-day interest account"; "it's just, it's overwhelming"

Participant 12: "Uh, I currently have money in a growth fund"; "... you're not always sure ... if I were to invest in something a bit more aggressive; I would think the risk is the part that would bother me the most"

Participant 13: "I've invested in FOREX and I've also invested in Bitcoin"; "the most thing that I, I dislike apart from losing money, is like, is to have to deal with the emotions of losing, ay; it can actually break you not to go in again"

Participant 14: "Right now I'm still on a demo account"; "it needs a lot of patience"

On the other hand, some participants indicated that they experience both positive and negative personal emotions when they invest.

Participant 2: "I have a savings account ... I have a stock trading account"; "the thrill of the unknown"; "that apprehensiveness and fear of your share decreasing and you start panicking"

Participant 8: "I'm trading in, in currencies"; "it's entertaining"; "Apart from losing money ... the emotion part of it, it's painful"

Participant 20: "It's an investment account at the bank"; "the adrenaline from it"; "... I guess also the uncertainty of knowing that you could lose out on money"

The abovementioned responses indicate that participants find investing both exciting and exhilarating at the same time. The uncertainty thereof can either add or take away from the experience. How individuals perceive investing is based on their experiences and the lessons they learn along the way (Roszkowski & Davey, 2010). Some view it as interesting, others view it as stressful. However, these experiences or perceptions are what can guide an investor or cause them to discontinue their investments.

4.2.2.3 Conclusion on Theme 2: Participants are highly risk tolerant

The analysis on the relationships between the participants' demographics and their risk tolerances revealed that overall participants in the sample are highly risk tolerant. This finding is similar to those of previous research that was conducted on participants and their risk tolerances (Harlow & Brown, 1990; Grable & Joo, 1999; Gutter & Copur, 2011). In conclusion to Theme 2, this study found that demographics, in terms of the sample, have an effect on the type of investment in which participants invest.

4.2.3 Theme 3: Participants' perception towards investment

The third and last theme identified from the transcripts is an open theme, which allowed for the participants' general perception towards investment to be captured. Ultimately, two sub-themes were identified, namely the overall perception that participants have on investing as well as the recommendations that these participants have for participants who want to start investing.

4.2.3.1 Sub-theme 1: Overall positive perception on investing

This study has found that participants have an overall positive perception on investing. The following responses from participants 3, 7, 8, 13, 14, 16, 19 and 21 capture the perception that participants have on investment:

Participant 3: "... it's great! It is. Obviously you suffer now because you're putting a portion of your money somewhere but honestly, the benefits in the long run are really good"

Participant 7: "It says a lot of about a person when they start pursuing, it shows a certain level of responsibility and maturity"

Participant 8: "I'll advise students to do it as well. It's just good. It's good. You get to, you get to grow. You get to, to know a lot of things"

Participant 13: "... investing creates opportunities for me"; "... I'd say student investing means a lot to me ... it is fun, it is something new and you are exposed to a lot to which you wouldn't have been exposed to"

Participant 14: "... I can say if you're a participant you get to ... be exposed to a lot of things ... so you get to have knowledge about currencies, commodities, how these things work"

Participant 16: "It's good to encourage others to invest because of the benefits and, and the most important thing it just teaches you ... to just learn how to keep money"

Participant 19: "Investing means to me that there's a chance of a brighter future ... It just means that I can make more from what I have and I can become something great"

Participant 21: "... it's putting your money so that it will accumulate and it will be more as time goes on and you don't have to work for it ... it works for you"

As Participant 7 stated, investing while still a student reflects "a certain level of responsibility and maturity". In addition, participants are aware that having started

investing at such an early age will positively affect them in their futures. As Participant 16 indicated, investing as a student is good not only because of the potential financial gain, but also because it teaches participants how to manage their money. In addition, as stated by Participant 19, students who invest are more likely to be successful in terms of their future financial endeavours. Students with a good perception on investment can help inspire other students to also start investing (Aren & Zengin, 2016). In sub-theme 2, recommendations that participants from this qualitative study shared with potential participants, are discussed.

4.2.3.2 Sub-theme 2: Recommendations from participants to future participants

During the interviews, each participant was asked whether they had any recommendations that they wanted to share with students who are interested in investing in the future. There were five main recommendations, which participants had shared. The first recommendation discussed is to conduct research.

4.2.3.2.1 Conduct research

When making the decision to start investing, it is vital to first conduct research in terms of the investment instruments that are available on the market. By acquiring the necessary information on the various investments available, students will be able to learn more about the investments in which they are interested in investing. Many participants had mentioned the importance of conducting research before making the commitment to investing:

Participant 2: "... research and learn the market before committing"

Participant 3: "... read, learn so much, as much as you can"

Participant 10: "You must put in time to learning and you will see participating after ... put in time to learning. That's the most important variable"

Participant 11: "Try to get as much information as possible on investments, uh, different types of investments where your money can, can work for you best and then just enjoy it. Don't be too scared"

Participant 14: "... you have to be eager to learn"

Participant 17: "So it's best to invest in, in themselves, invest in ... their knowledge and then it will pay off as they go on investing on their own"

Participant 20: “yes, uhm, do a lot of research and speak to other people to gain knowledge so that it could help you make better investments”

As a result, students are able to gain more knowledge about the instruments they want to invest in and will increase their chances of making investment choices that are suitable to them (Underdahl *et al.*, 2001). Also, it is important for students to have an idea of what their risk tolerance is in terms of investments. There are many online tests which students can take in order get a sense of their risk tolerance in terms of investments (Rutgers, 2017; Sanlam, 2017). Once students have the appropriate investment knowledge and a sense of their risk tolerances, they will have an idea of which type of instruments to invest in. Once students have determined which instruments they want to invest in, it is recommended that they find a platform, where possible, on which they can practice their investing skills on.

4.2.3.2.2 Practice

Participants suggest that prospective participants should start their investing journeys by practising to invest. There are many platforms available, which allow students to test their investment knowledge and practise investing through online simulation (FNB, 2017b; OANDA, 2017). In this study, participants recommended that prospective participants first practise investing through the use of a demo account:

Participant 2: “I would think not to rush into it, rather start maybe on, if they’re doing trading or something like a demo account that’s available for students to use before they move into a live account with actual money”

Participant 5: “... I would just recommend that they should just start ... a demo so it doesn’t take money to start. All it takes is your time and commitment”

Participant 8: “... for example, trading basic demo where you practice, you see how these things work”

Participant 9: “... I would say try those demo accounts, there are a lot of apps ... So, if you want an extra income, go practice”

Demo accounts allow students to review and test the features of a trading platform before funding the account or trading takes place (Investopedia, 2017). Thus, students who are interested in investing, but are still unsure whether to make the commitment, will be able to learn about investing through online simulation. Consequently, these

students will be exposed to different investing situations and will learn how to deal with their investments throughout different economic situations. Many studies have found that learning through simulation has many benefits (Lee, 2009). Thus, students who want to start investing are encouraged first to make use of investment simulation applications. Thereafter, when they feel confident enough, students can invest their funds into investment instruments that are suitable for them and their financial situation. Another recommendation that participants provide is that a student who wants to invest should start investing as early as possible.

4.2.3.2.3 Start as soon as possible

Many participants stressed that prospective participants should start investing as early as possible. By investing at an earlier stage, students will be exposed to different conditions in which their investments will be affected (Berger & James, 2002). Consequently, students will be exposed to increased investment knowledge and will learn what to decisions to make in each situation, which will allow them still to stay true to their risk tolerances:

Participant 1: "The sooner, the better. Prepare for the future"; "... if you start investing when you are a student, you win four years compared to the next guy. Then at the end you have contributed four years more than every other person and you will get a bigger return"

Participant 4: "I think ... starting early. So, your chances of building a bigger portfolio is much greater than someone who starts in their thirties. Uhm, you're also exposed to the investment environment from an early age. So, once you get to a later stage in your life, you know exactly in what you want to invest"

Participant 6: "They should start now, but then before they invest, it's important for students to understand their risk profile"

Participant 7: "It's never too early ... The earlier, the better because you can learn more and you might end up making more"

Participant 11: "I think start as early as possible. Try to see the advantages in long terms investing, rather than just spending all your money at once on short term things that don't really add value to your, to your life"

Participant 15: "Uhm, start as early as possible, find something that suits your needs and don't be scared to take a little bit of risk"; "I started early. So, in the end, I think I will be better off than most people"

Participant 16: “It’s better to start it young because then actually you learn more, by the time ... you are working and everything, you would’ve known all the tricks”; “It’s beneficial to take risk ... it’s good for students ... to like start investing when they’re still young ... you can start with as little money as you have”

Participant 18: “... the only advice I’d give students is do it as soon as possible. You, you make so much more just by putting it in earlier than you do by waiting longer”

Also, since economies tend to face unstable conditions, students who start their investing journeys earlier than their counterparts will be already taking action in securing their financial wellbeing (Berger & James, 2002). In addition, by investing earlier, students increase their likeliness to earn more money. This is because, in the early stages of investing, students are able to take on more risk than older individuals (Grable & Joo, 1999). By taking on more risk, student increase their chances of earning more returns. It is also noteworthy to mention that students will also be exposed to making substantial losses. However, because they start out their investing journeys earlier, students will be able to recuperate their loses in the long run (Reilly & Brown, 2011). To recuperate from these losses much faster would be by starting “small”.

4.2.3.2.4 Start small

Many students have the misconception that investing is only for individuals who have a lot of money (Archuleta *et al.*, 2013). Participants responded that it is possible to start investing by using a small amount of money:

Participant 8: “It’s about starting small and ending somewhere, growing as well ...”

Participant 16: “You can invest with as, as little money as you have, yeah. So I mean it’s better you go out there and maybe you seek advice or anything. You can, you can start with any amount. You can start with any, you don’t have to wait for you to like maybe if I’m employed I get work, I get somewhere to work and then everything, that’s when I’ll start investing”

However, there are many different types of investments that are available on the market; from investments that were created to cater to the needs and risk tolerances of high net-worth individuals to investments that were created to suit the needs of low-income individuals. Although there is a lack of investment instruments that are tailored

specifically to suit the risk tolerances and financial situations of students, some can be used as a starting point to investing. Also, these investment instruments require low starting and maintaining fees. Thus, students should not perceive that they cannot start investing with the little money that they have. Throughout the interviews, many participants mentioned that it is important to start investing, even if it is with a small amount of money.

Participant 8: "It's about starting small and ending somewhere, growing as well"

Participant 9: "I would say 'do it' ... you have to start small"

Participant 16: "You can invest with as, as little money ... you can start with any amount"

Participant 20: "... there's always, uh, financial gains from it even though it's a little amount but it's still something"

Many students do not have a consistent source of income. Some students get money from their family in the form of an allowance; others get money from sources such as bursaries, loans, inheritances and so on forth (Antoni, 2014). Also, students are in the phase of their lives where they are exposed to managing their funds completely on their own (Cudmore *et al.*, 2010:1). Initially, many students will be exposed to financial challenges. However, throughout their financial journeys, they will eventually find a budget that is suited for them. It is important that students make a small contribution towards their investing journeys. Thus, they can see that even with a little money invested, they have invested in their financial futures.

4.2.3.2.5 Persevere

Many students are in the phase of their lives where they are expected to manage their finances on their own. Given tough economic conditions in South Africa, many students find it challenging to start investing. Alternatively, those who have started investing, are finding it difficult to continue investing. However, participants have mentioned during their interviews that prospective participants should persevere and not be too quick in giving up investing:

Participant 10: “For me, for me investing is more like ... planting a tree. As you know, the process of planting a tree, you just sow the seed and you know, you plant the seed ... then you wait for ... it to grow then when it’s grown is when you enjoy the benefits. Benefits being the, the fruits of that tree and the shade and whatever ... and the other advantages that come with it. So, me that’s basically what investment means to me. If I put in my money today, or whatever, my time, my money, I’ll get to enjoy those benefits at a later stage”

Participant 14: “It requires a lot of time ... You have to focus to stay focussed as it needs a lot of patience”

Participant 19: “Don’t give up as soon as you lose. Don’t give up or, or set to say ‘okay, I’m only gonna invest this much, if I lose it or what, then I’ll quit’ ... all successful people have one failed and from your failure, you learn how to succeed”; “... but in the end, if you persist and keep on going, you will finally get there”

Participants suggested that one learns throughout their investing mistakes and that investing is a journey in which there are pitfalls and successes (Participant 19). Thus, students who are considering investing, or those who have started investing, should not be discouraged by the first negative experience that they encounter during their investing journey. Rather, students should persevere and be open to learn more on their journey of investing. Through trial and error, students can eventually figure out how to deal with their investments throughout different economic conditions.

4.2.3.3 Conclusion on Theme 3: Participants’ perception towards investment is positive

Ultimately, this study found that participants have an overall positive perception towards investment. A positive perception towards investment can be interpreted as an indication that students will be willing to invest in the future. By being willing to invest, students who eventually commit to the process of investing will be taking proactive steps in securing their future financial wellbeing in an uncertain economy (Rootman & Antoni, 2015). Consequently, many students will learn how to diversify their finances, which will help protect them in cases of need. Therefore, perception can be perceived as a powerful tool that can lead to behaviour and that students’ perception of investment needs to be a positive one.

4.3 SUMMARY

The purpose of this chapter was to reflect on the qualitative analysis, which was conducted on the transcripts from the semi-structured interviews that were conducted with the 21 participants for this study. A thematic analysis was conducted wherein the transcripts were examined thematically by identifying sub-themes, which reflected the participants' investment knowledge, financial risk tolerance and perception of investment. The following main points are a summary of the findings in the qualitative study:

- Participants have a lack of investment knowledge;
- Participants are high risk tolerant; and
- Participants have an overall positive perception towards investment.

Chapter 5 seeks to generalise the findings of the study to the general student population. A quantitative analysis was conducted to test whether the main findings from the qualitative study are the same in terms of a larger sample. Thus, Chapter 5 is the quantitative analysis and discussion of the results from the questionnaires. In addition, the findings of both analyses are synthesised for the study as a whole.

CHAPTER 5: QUANTITATIVE ANALYSIS OF THE QUESTIONNAIRES

5.1 INTRODUCTION

This chapter includes the reporting on and the interpretation of the statistical findings of the study. Section 5.2 discusses the pilot study, which was implemented in this study. Section 5.3 is a discussion on the preliminary data analysis. Thereafter, Section 5.4 discusses the demographics and participation of participants in investment activities. In Section 5.5, the link between the results of the two studies is provided.

5.2 RESULTS OF THE PILOT STUDY

The questionnaire was pre-tested in order to check for its face and content validity by allowing two pertinent field researchers to scrutinise the questionnaire to identify any potential problematic areas or likely problems. The questionnaire was refined based on the pre-test's results. The refined questionnaire consists of:

- five Likert-scaled items for the DOSPERT financial risk perception scale;
- 13 multiple-choice questions for the Grable and Lytton (1999) 13-item risk tolerance scale;
- one multiple-choice question for the SCF risk tolerance scale; and
- nine Likert-scaled items for the subjective investment knowledge scale

After the questionnaire was subjected to both a pre-test and a pilot study, its scales were then used to prepare the main survey questionnaire which was administered to a larger sample size. Table 5.1 provides an overview of the description of the items and constructs that were included in the respective sections of the final questionnaire (refer to Annexure B).

Table 5.1: Description of items and constructs

Code	Variables	Construct
B1	Betting a day's income at the horse races	Construct B - Financial risk perception
B2	Investing 10% of your annual income in a moderate growth mutual fund	
B3	Investing 5% of your annual income in a very speculative stock	
B4	Betting a day's income on the outcome of a sporting event	
B5	Investing 10% of your annual income in a new business venture	
Code	Variables	Construct
E4	You have just finished saving for a "once-in-a-lifetime" holiday. Three weeks before you plan to leave, you lose your job. You would?	Construct E1 - Investment risk
E5	If you unexpectedly received R 20 000 to invest, what would you do?	
E8	Given the best and worst case returns of the four investment choices below, which would you prefer?	
E11	Suppose a relative left you an inheritance of R 100 000, stipulating in the will that you invest ALL the money in ONE of the following choices. Which one would you select?	
E12	If you had to invest R 20 000, which of the following investment choices would you find most appealing?	
E1	When you hear "financial risk", what do you think of?	Construct E2 - Financial risk and hypothetical projections
E3	You are on a TV game show and can choose one of the following. Which would you choose ?	
E6	In terms of experience, how comfortable are you investing in high or medium risk investments such as stocks or stock mutual funds?	
E7	Some experts are predicting prices of assets such as gold, jewels, and real estate (hard assets) to increase in value. Bond prices (low risk) may fall as a result. If most of your investments are in high interest government bonds, what would you do?	
E13	Your trusted friend and neighbour, an experienced geologist, is putting together a group of investors to fund an exploratory gold mining venture. The venture could pay back 50 to 100 times the investment if successful. If the mine is a bust, the entire investment is worthless. Your friend estimates the chance of success is only 20%. If you had the money, how much would you invest?	
E2	In general, how would you describe yourself as a financial risk taker?	Construct E3 - Speculative risk
E9	In addition to whatever you own, you have been given R 2 000. You are now asked to choose between:	
E10	In addition to whatever you own, you have been given R 2 000. You are now asked to choose between:	
Code	Variables	Construct
F1	Which of the following statements comes closest to the amount of financial risk that you are willing to take when making an investment?	Construct F - Financial risk tolerance

Code	Variables	Construct
G1	I know much about investment	Construct G1 - Subjective investment knowledge
G2	I know how to judge the quality of an investment opportunity	
G3	I think I know enough about investment to feel pretty confident when I make an investment decision	
G4	I do not feel very knowledgeable about investment	
G5	Among my circle of friends, I'm one of the experts on investment	
G6	Compared to most other people, I know less about investment	
G7	I have heard of most of the new investment products that are around	
G8	When it comes to investment, I really don't know a lot	
G9	I can tell if an investment is worth the price or not	

Source: Author's compilation.

5.3 PRELIMINARY DATA ANALYSIS

Before the data set can be analysed, coding and tabulation is critical. Coding and tabulation makes it easier for the researcher to address any problem that may occur with the final survey of the questionnaire (Malhotra, 2010). For this reason, a preliminary data analysis was executed.

5.3.1 Coding

Coding refers to the categorising of a number of responses relating to a specific question and subsequently allocating numeric values to each of the questions' responses. The questionnaire utilised in this study consisted of six sections. Section A comprised sections on demographical information; sections B and C comprised questions on participants' saving and investment behaviour. In addition, Section D comprised questions on participants' perception of investment risk; Section E comprised questions on participants' risk tolerance and Section F comprised questions on participants' subjective investment knowledge. Table 5.1 illustrates the coding of this study's questionnaire.

Table 5.1: Coding of the questionnaire

Section A: Demographic data			
Question	Code	Variable	Value assigned to responses
Question 1	A1	Age	N/A
Question 2	A2	Gender	Male = 1; Female = 2
Question 3	A3	Race	African = 1; White = 2; Coloured = 3; Asian/Indian = 4
Question 4	A4	Marital status	Never married = 1; Married = 2; Divorced = 3
Question 5	A5	Nationality	South African = 1; Other = 2
Question 6	A6	Home province in SA	N/A
Question 7	A7	Home language	Sesotho = 1; IsiZulu = 2; Sepedi = 3; Tshivenda = 4; IsiNdebele = 5; IsiXhosa = 6; SiSwati = 7; English = 8; Afrikaans = 9; Tswana = 10; Tsonga = 11; Other = 12
Question 8	A8	Degree	BA = 1; BCom = 2; BEd = 3; BSc = 4; BTech = 5; Diploma = 6; Other = 7
Question 9	A9	Year of study	1 st = 1; 2 nd = 2; 3 rd /4 th = 3; Hons = 4; MCom = 5; PhD = 6
Question 10	A10	Current situation	Full-time student = 1; Part-time student = 2; Full-time student and part-time worker = 3; Part-time student and full-time worker = 4
Question 11	A11	Monthly income/allowance	R500 or less = 1; R501-R1000 = 2; R1001-R1500 = 3; R1501-R2000 = 4; R2001-R2500 = 5; R2501-R3000 = 6; More than R3000 = 7
Question 12	A12	Source of income/allowance	Allowance = 1; Bursary/Scholarship = 2; Salary (Part-time or Full-time job) = 3; Savings = 4
Question 13	A13	Dependents	Yes = 1; No = 2
Question 14	A14	Number of dependents	N/A
Section B: Saving and Investment			
Question	Code	Variable	Value assigned to responses
Question 1	B1	Saving	Yes = 1; No = 2
Question 2	B2	Types of savings	Flexible = 1; Fixed-term = 2; Tax-free savings/call account = 3; Call deposit = 4; Not sure = 5
Question 3	B3	Investing	Yes = 1; No = 2
Question 4	B4	Reasons for not investing	Don't know where to start = 1; Lack of investment knowledge = 2; Too much effort = 3; Lack of time = 4; Investing is intimidating = 5; Other = 6
Question 5	B5	Consider investing	Yes = 1; No = 2
Question 6	B6	Percentage income would invest	0%-5% = 1; 5%-10% = 2; 10%-25% = 3; 25%-50% = 4; 50% or more = 5

Section C: Investments			
Question	Code	Variable	Value assigned to responses
Question 1	C1	Type of investments	Money market account = 1; Government bonds = 2; Pension/Retirement annuity = 3; Stocks/shares = 4; Derivatives (FOREX/ETFs) = 5; Investment club/group (e.g. <i>stokvel</i>) = 6; Other = 7
Question 2	C2	Percentage income invested	0%-5% = 1; 5%-10% = 2; 10%-25% = 3; 25%-50% = 4; 50% or more = 5
Question 3	C3	Period invested	Less than 6 months = 1; 6 months = 2; 1 year = 3; more than one year = 4; 2-5 years = 5; 5 years or more
Section D: Investment risk perception			
Question	Code	Item	Value assigned to responses
Question 1	D1	3, 7, 18, 11, and 24	Extremely unlikely = 1; Moderately unlikely = 2; Somewhat unlikely = 3; Not sure = 4; Somewhat likely = 5; Moderately likely = 6; Extremely likely = 7
Section E: 13-item Risk tolerance measure			
Question	Code	Item	Value assigned to responses
Question 1	E1	1	a = 1; b = 2; c = 3; d = 4
Question 2	E2	2	a = 1; b = 2; c = 3; d = 4
Question 3	E3	3	a = 1; b = 2; c = 3; d = 4
Question 4	E4	4	a = 1; b = 2; c = 3; d = 4
Question 5	E5	5	a = 1; b = 2; c = 3
Question 6	E6	6	a = 1; b = 2; c = 3
Question 7	E7	7	a = 1; b = 2; c = 3; d = 4
Question 8	E8	8	a = 1; b = 2; c = 3; d = 4
Question 9	E9	9	a = 1; b = 3
Question 10	E10	10	a = 1; b = 3
Question 11	E11	11	a = 1; b = 2; c = 3; d = 4
Question 12	E12	12	a = 1; b = 2; c = 3
Question 13	E13	13	a = 1; b = 2; c = 3; d = 4
Section F1: Single-item risk tolerance measure			
Question	Code	Variable	Value assigned to responses
Question 1	F	SCF	Take substantial risk = 1; Take above average risk = 2; Take average risk = 3; Not willing to take risk = 4
Section F2: Subjective investment knowledge			
Question	Code	Variable	Value assigned to responses
Question 1	G	1, 2, 3, 4, 5, 6, 7, 8, and 9	Extremely unlikely = 1; Moderately unlikely = 2; Somewhat unlikely = 3; Somewhat likely = 4; Moderately likely = 5; Extremely likely = 6

Source: Author's compilation.

5.3.2 Cleaning of the data

The data of this study were also cleaned. All of the questionnaires that were not filled in appropriately were discarded. Thus, all questionnaires with uncompleted sections and those that had participant' identifying information were discarded.

5.3.3 Data gathering process

The study followed the data gathering process that was discussed in Chapter 3. Permission was first obtained from the lecturers to distribute the 400 questionnaires to the two selected HEIs. Thereafter, questionnaires were hand-delivered and distributed to the students, either during class time or after class. The final questionnaire comprised of 51 items. Section A aimed at obtaining participants' demographical information and consisted of 14 items. Section B determined whether or not participants save and invest and consisted of six items. Section C aimed at determining the investing habits of participants who invest and consisted of three items. Section D aimed at obtaining participants' perception toward financial risk and consisted of five items. Section E determined participants' risk tolerance through the use of a 13-item scale. Section F also aimed at determining participants' risk tolerance, however, through the use of a one-item scale. Lastly, Section G focussed on determining participants' subjective knowledge and consisted of nine items. The aim and the purpose of the study were explained in the cover letter, which formed part of the seven-page questionnaire. Participants completed the questionnaires on a voluntary basis, as explained in the cover letter.

There were 400 questionnaires administered, and 396 were completed. Thus, the study has a 99 percent response rate in terms of the questionnaires. Any incomplete questionnaires were discarded. A discussion on the tabulation of the data obtained by this questionnaire follows.

5.3.4 Tabulating of the results

After all of the data had been coded and cleaned, the data were then tabulated. Table 5.2 indicates the frequency of participants' responses in Section B and Section C of the questionnaire.

Table 5.2: Frequency table on participant' responses on saving and investing

Frequency of participant' responses in Sections B and C	
Save	
Yes	Frequency 205
No	191
Total	396
Type of savings	
Not sure	Frequency 42
Tax-free/Call account	16
Multiple	2
Flexible	100
Fixed-term	39
Call deposit	6
Total	205
Investment	
Yes	Frequency 50
No	346
Total	396
Non-investing participants' reason for not investing	
Don't know where to start	Frequency 105
Lack of investment knowledge	134
Too much effort	13
Lack of time	22
Investing is intimidating	18
Other	54
Total	346
Non-investing participants' consider investing	
Yes	Frequency 331
No	15
Total	346

Non-investing participants' percentage income considered to invest	Frequency
0%-5%	48
5%-10%	137
10%-25%	119
25%-50%	32
50% or more	10
Total	346
Investing participants' investment type	Frequency
Money market account	15
Government bonds	2
Pension/Retirement annuity	0
Stocks/Shares	14
Derivatives (FOREX, ETFs)	5
Investment club/group (e.g. <i>stokvel</i>)	5
Other	5
Multiple	4
Total	50
Investing participants' percentage income invested	Frequency
0%-5%	4
5%-10%	18
10%-25%	16
25%-50%	4
50% or more	8
Total	50
Investing participants' period invested	Frequency
Less than 6 months	13
6 months	12
1 year	7
More than 1 year	13
2-5 years	4
5 years or more	1
Total	50

Source: Author's compilation.

Table 5.3 is a frequency table that provides the participant' recorded responses on sections D, E, and F. These sections represent the scales that were used in this study (Flynn & Goldsmith, 1999; Grable & Lytton, 1999; Weber *et al.*, 2002). Each of the rows that contain the scale item responses summed up is equal to the study's sample size of 396.

Table 5.3: Frequencies of participants' responses on investment risk perception, risk tolerance, and subjective investment knowledge

Frequency table of recorded responses							
DOSPERT (2002): financial risk perception							
Scale item	Extremely unlikely	Moderately unlikely	Somewhat unlikely	Not sure	Somewhat likely	Moderately likely	Extremely likely
3	219	25	24	41	30	15	42
7	42	41	41	51	102	81	38
18	39	48	55	104	78	46	25
11	161	36	37	49	44	35	34
24	34	37	32	52	91	85	65
Grable and Lyttion (1999): 13-item risk tolerance scale							
Scale item	a	b	c	d			
1	117	205	64	10			
2	52	118	175	51			
3	110	123	85	78			
4	219	74	90	13			
5	139	208	49	N/A			
6	143	231	22	N/A			
7	101	214	71	10			
8	57	113	154	72			
9	199	N/A	197	N/A			
10	157	N/A	239	N/A			
11	136	174	51	35			
12	184	168	44	N/A			
13	77	212	94	13			
SCF: single-item risk tolerance measure							
Scale item	1	2	3	4			
1	73	196	111	43			
Flynn and Goldsmith (1999): subjective investment knowledge							
Scale item	Extremely unlikely	Moderately likely	Somewhat likely	Somewhat likely	Moderately likely	Extremely likely	
1	56	79	82	110	54	15	
2	65	73	104	103	35	16	
3	67	89	103	81	36	20	
4	44	78	92	82	6	39	
5	104	75	88	65	48	16	
6	57	95	93	77	46	28	
7	61	65	93	86	67	24	
8	57	72	99	70	58	40	
9	69	58	79	100	56	34	

Source: Author's compilation.

Section 5.4 will focus on the discussion of the participant' demographics and their participation in saving as well as investment.

5.4 DEMOGRAPHICS AND PARTICIPATION IN INVESTMENT ANALYSIS

This section reports on the demographic characteristics of the sample. According to Malhotra (2010:350), demographical information consists of socioeconomic, and demographic characteristics. These characteristics are used to classify the participants and help the researcher to better understand the results. Throughout this section, frequency tables, bar graphs and pie charts were used to present the information. The sample comprised of 396 participants from both a traditional university and a university of technology. The participants' demographical information was gathered from Section A of the questionnaire. Section 5.4.1, sample description, discussed the participants' demographics in the order in which it was asked in Section A of the questionnaire.

5.4.1 Sample description

Figure 5.1 illustrates the age of the participants of the quantitative study. A large portion of this study's participants (25.8 percent) are 21 years old. Thereafter, most participants are 22 years old (18.2 percent) then 20 years old (14.9 percent).

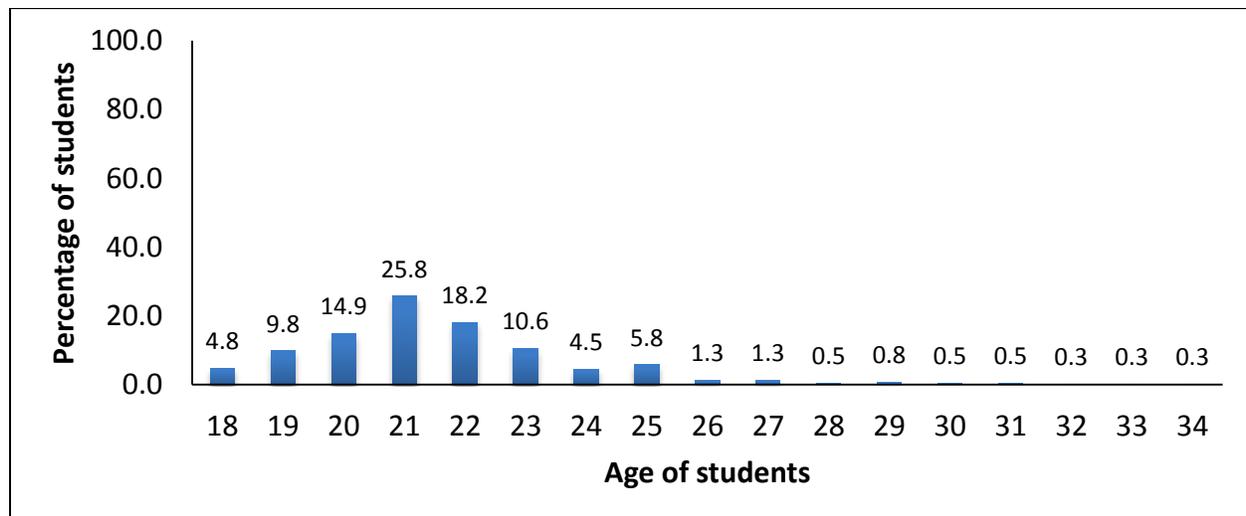


Figure 5.1: Participants' age

Figure 5.2 shows the distribution information in terms of the participants' gender. Of the participants, the majority of the are female (57 percent). The male participants made up 43 percent of the sample.

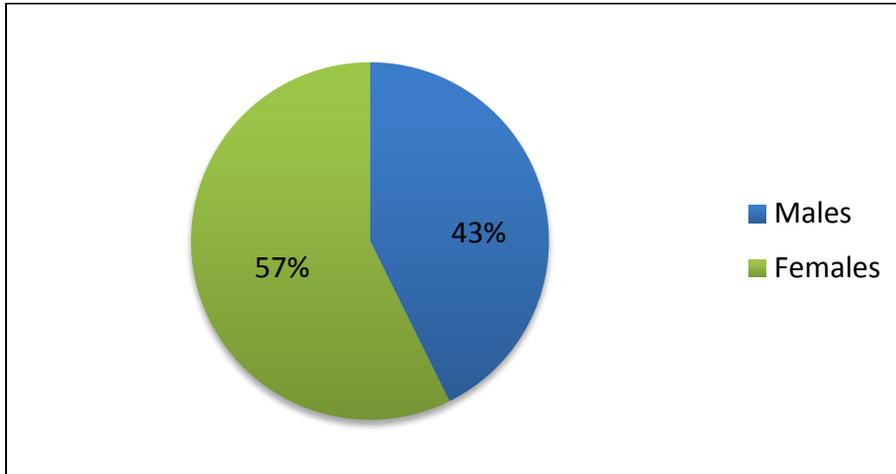


Figure 5.2: Participants' gender

The questionnaire also included a section on the race of participants. As indicated in Figure 5.3, the majority of the sample consists of African participants (82.6 percent). White participants represented 13.6 percent of the sample; whereas, Asian/Indian and Coloured participants represented 0.8 percent and 3 percent of the sample respectively.

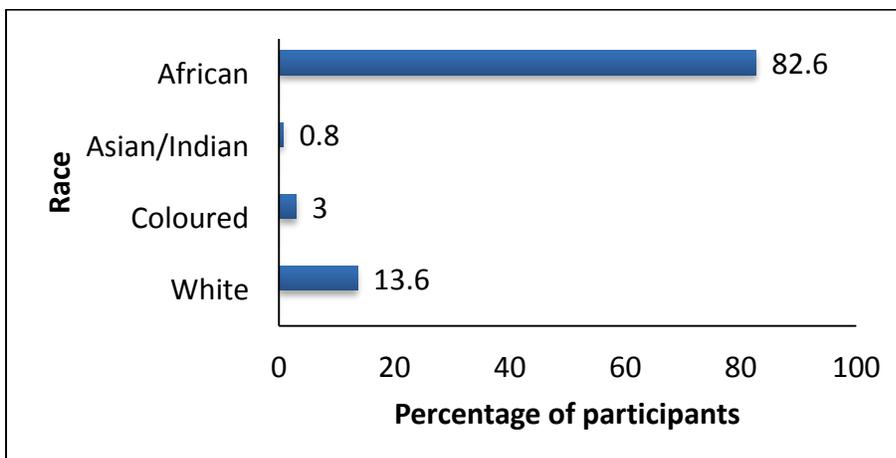


Figure 5.3: Participants' race

Also included in the demographics section of the questionnaire is the marital status of the participants. Figure 5.4 illustrates that the majority of the participants (96.7 percent)

have never been married. Furthermore, 3 percent of the study's participants are married; whereas, only 0.3 percent of the participants are divorced.

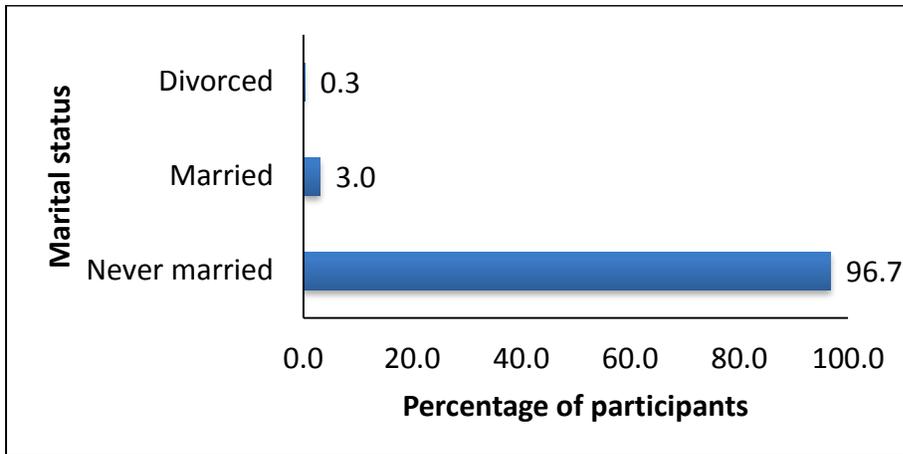


Figure 5.4: Participants' marital status

Figure 5.5 depicts that the majority of the participants are South African (97%). Only 3 percent of the study's quantitative sample is from other countries. Furthermore, as Figure 5.6 illustrates, most of the participants live in the Gauteng province (61.4 percent), followed by those who live in Limpopo (11.9 percent) and the Free State (11.1 percent).

Figure 5.7 shows that the language most spoken by the participants at home is SeSotho (32.1%). Only 8.4 percent of the sample speaks English mostly at home. Thereafter the participants speak IsiZulu (15 percent) or Afrikaans (10.7 percent) at home.

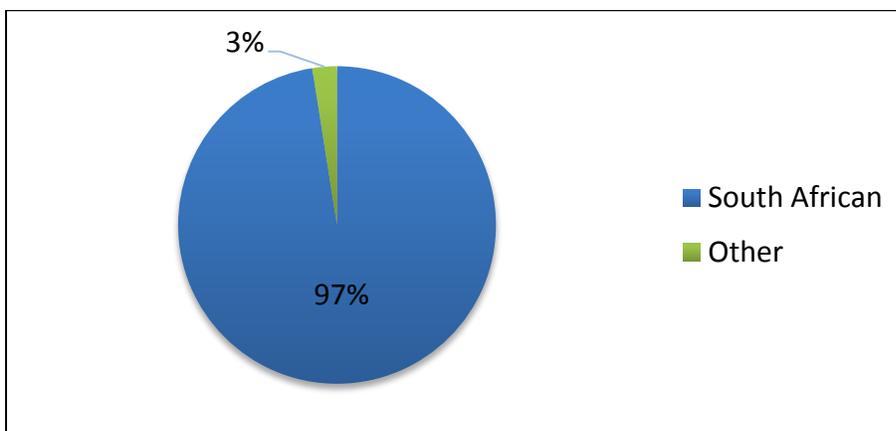


Figure 5.5: Participants' nationality

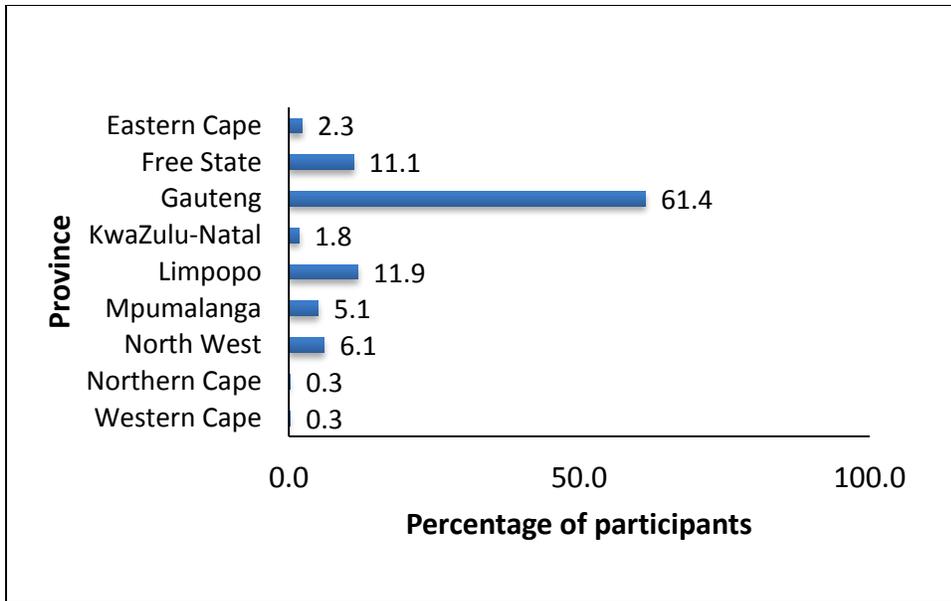


Figure 5.6: Participants' home province

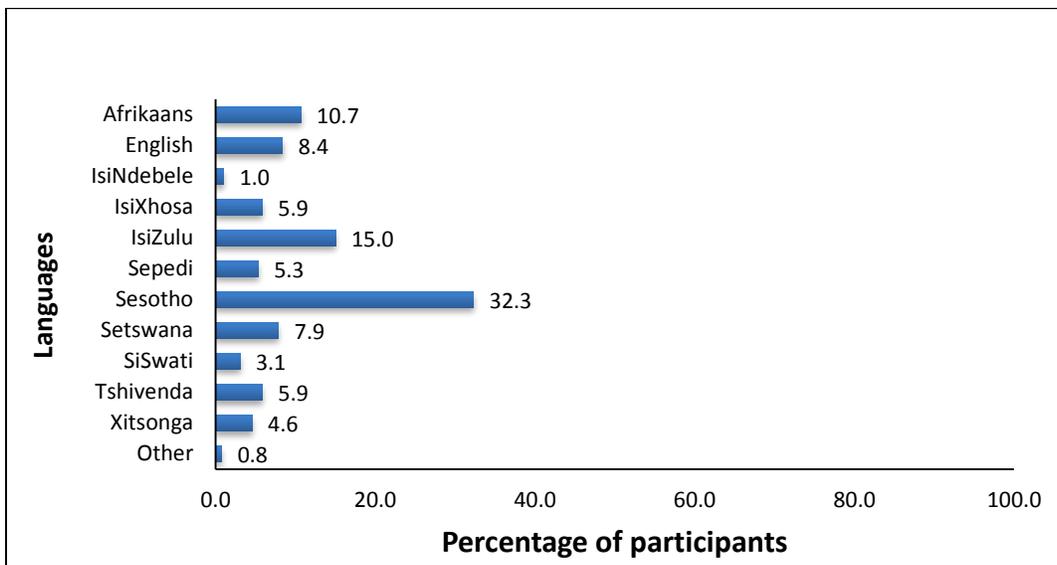


Figure 5.7: Participants' home language

Figure 5.8 illustrates the institutions where the participants are studying. A total of 396 participants were obtained from the HEIs under study. Of the 396 participants, 70 percent were from a traditional university and 30 percent from a university of technology.

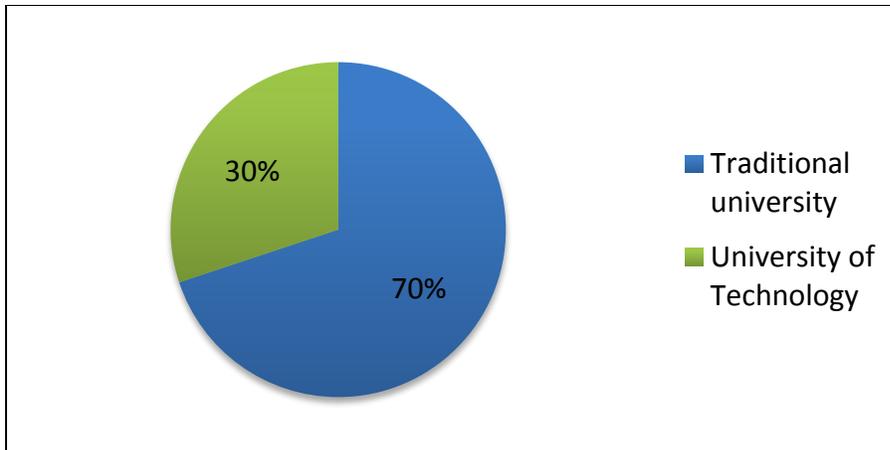


Figure 5.8.: Participants' institution

Figure 5.9 depicts the degrees in which the participants from the institutions are enrolled. The majority of participants, 32.1 percent, are enrolled in a BCom degree, followed by participants enrolled for a Diploma (25 percent) or a BA degree (16.7 percent).

Figure 5.10 illustrates in which academic year of study the participants are. Most participants are in their third or fourth year of study (56.1 percent). In other words, most participants are in their last academic year of study, followed by participants that are in their first year of study (21.2 percent) and in their second year of study (13.6 percent). Only 9.1 percent of participants are postgraduates (Hons = 7.3, MCom = 0.8 percent and PhD = 1.0 percent). Therefore, the majority of the 396 participants from this study are undergraduate participants.

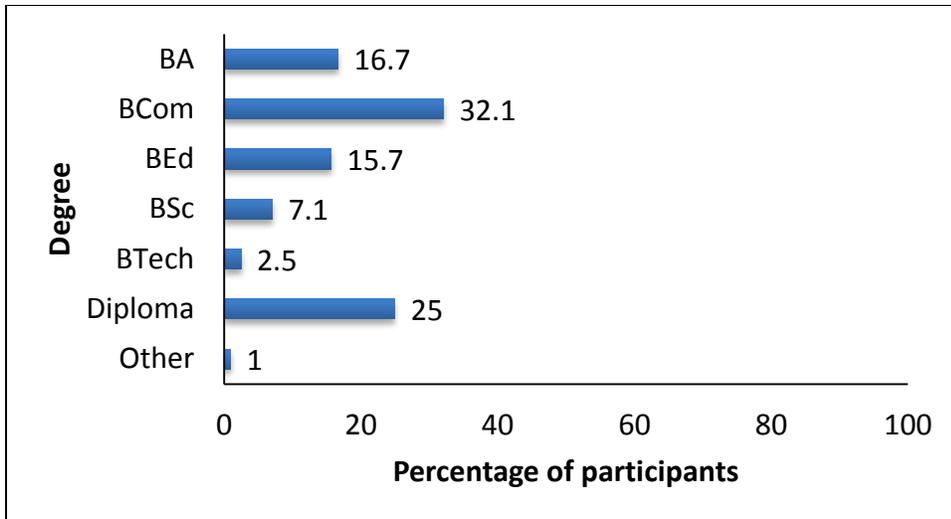


Figure 5.9: Participants' degree

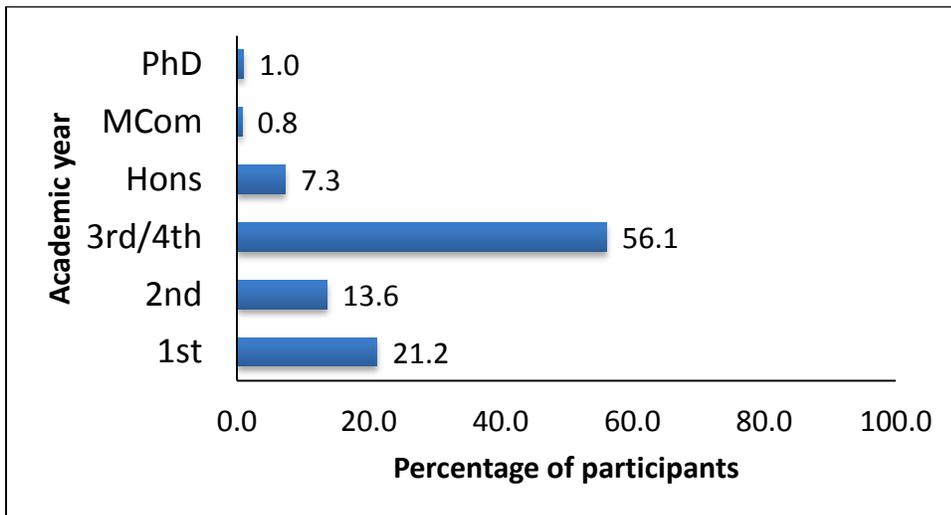


Figure 5.10: Participants' academic year

Figure 5.11 illustrates the studying situation in which the participants are in; most of the participants are full-time participants (90.9 percent). Participants who are full-time participants and part-time workers represent 7.6 percent of the sample. Part-time participants represent only 0.3 percent of the sample; whereas, part-time participants who are full-time workers represent 1.3 percent of the sample.

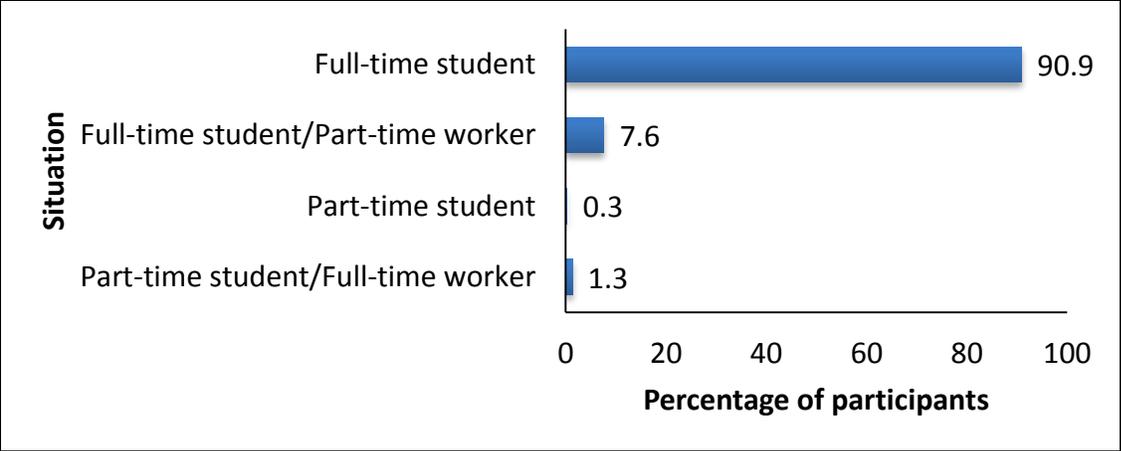


Figure 5.11: Participants' current study situation

The last few questions on the demographics focus on the income, source of income, as well as the number of dependents of the participants. As illustrated in Figure 5.12, most participants (30.1 percent) earn R500 or less per month. Participants who earn between R501 and R1000 make up 25 percent of the sample. Additionally, participants who earn between R1001 and R1500, as well as R1501 to R2000, each reflect 12.9 percent of the sample. Furthermore, Figure 5.13 depicts that most participants receive their income in the form of an allowance from their family, while 29.3 percent receive their incomes from their bursaries or scholarships and 9.2 percent receive their income from their full-time or part-time job.

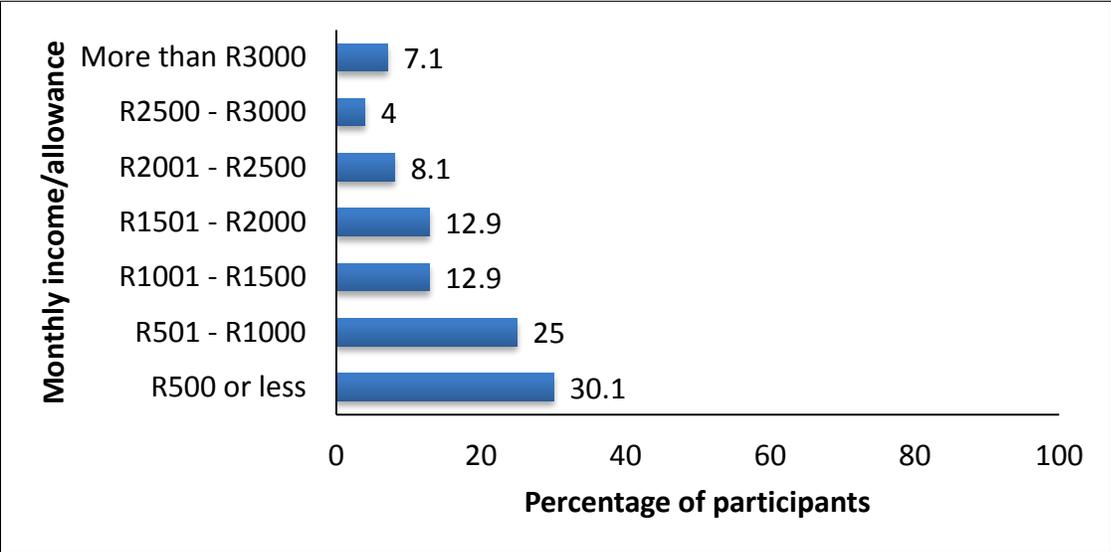


Figure 5.12: Participants' monthly income/allowance

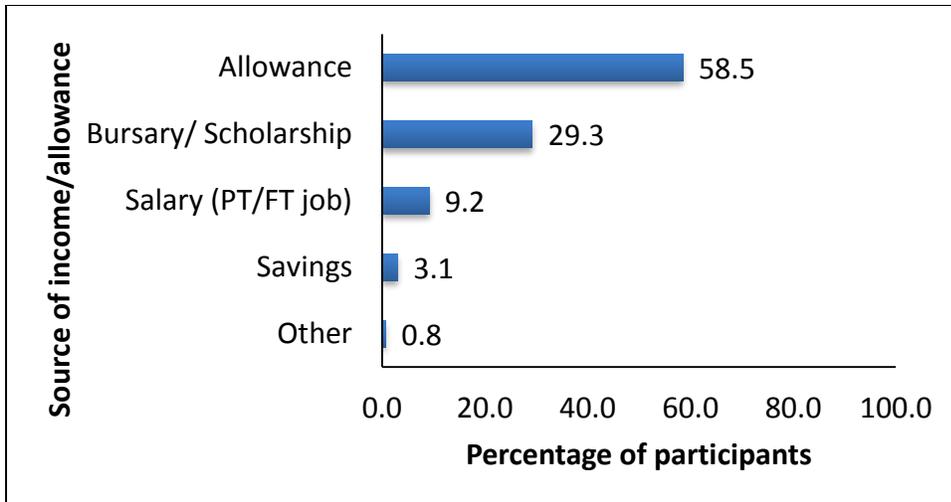


Figure 5.13: Participants' source of income/allowance

Lastly, participants were asked whether they had dependents. If participants indicated that they had dependents, they were asked to indicate the number of dependents they have. Figure 5.14 illustrates that the majority of participants (82 percent) do not have dependents, while 18 percent of participants have indicated that they have dependents. As indicated in Figure 5.15, from the sample of participants that have dependents, the majority (10.4 percent) indicated that they have only one dependent, while 3.5 percent of participants have two dependents and 3.3 percent of participants have at least three dependents.

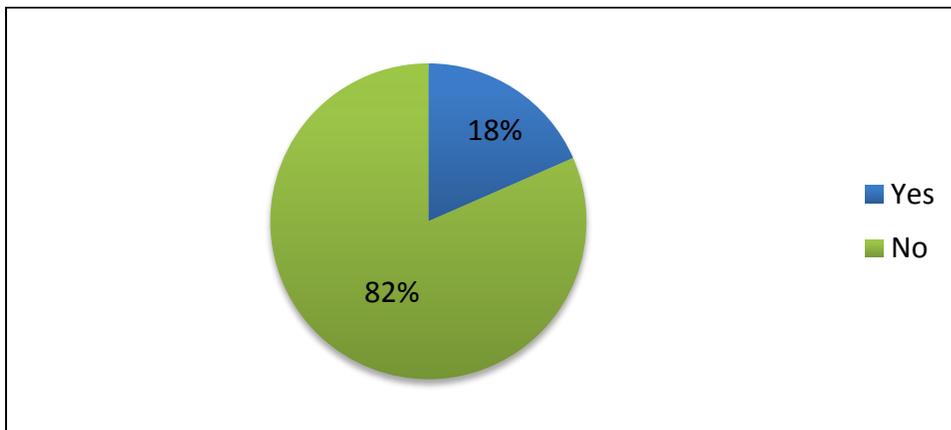


Figure 5.14: Participants' dependents

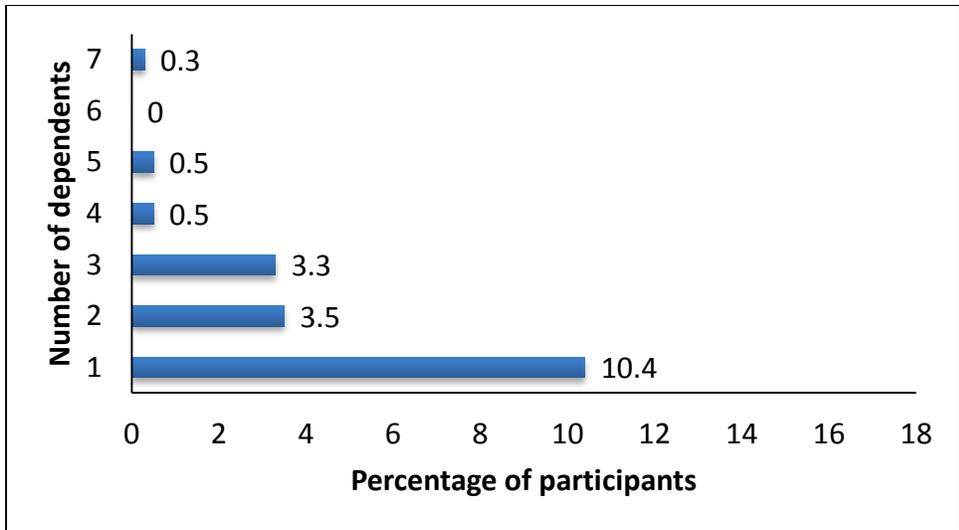


Figure 5.15: Participants’ number of dependents

Section 5.4.1 reported on the sample’s results of the demographics section of the questionnaire. The following section, Section 5.4.2, discusses the participants’ saving and investing habits.

5.4.2 Participants’ saving and investing habits

This section covers the sample’s saving and investing habits. Figure 5.16 depicts how many of the participants have a savings account. Contrarily to previous research (Antoni, 2014; McLendon, 2016), this study found that the majority of participants save (52 percent). Figure 5.17 illustrates that, of the participants who save, most of them have a flexible savings account (48.8 percent). A further 20.5 percent were not sure what kind of savings account they have; however, 19.0 percent of participants indicated that they have a fixed-term savings account.

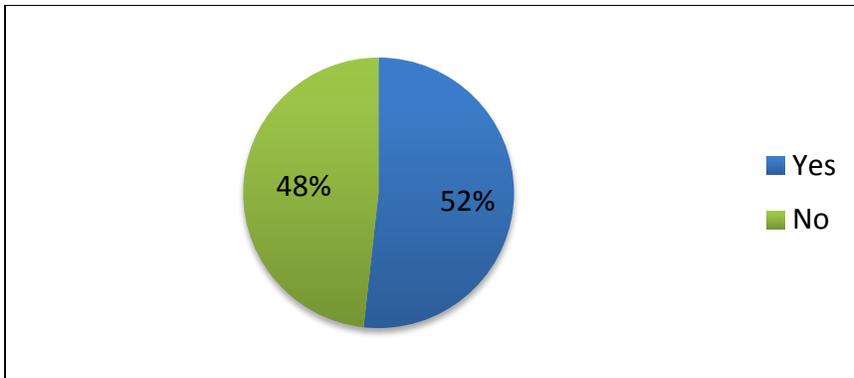


Figure 5.16: Participants who save

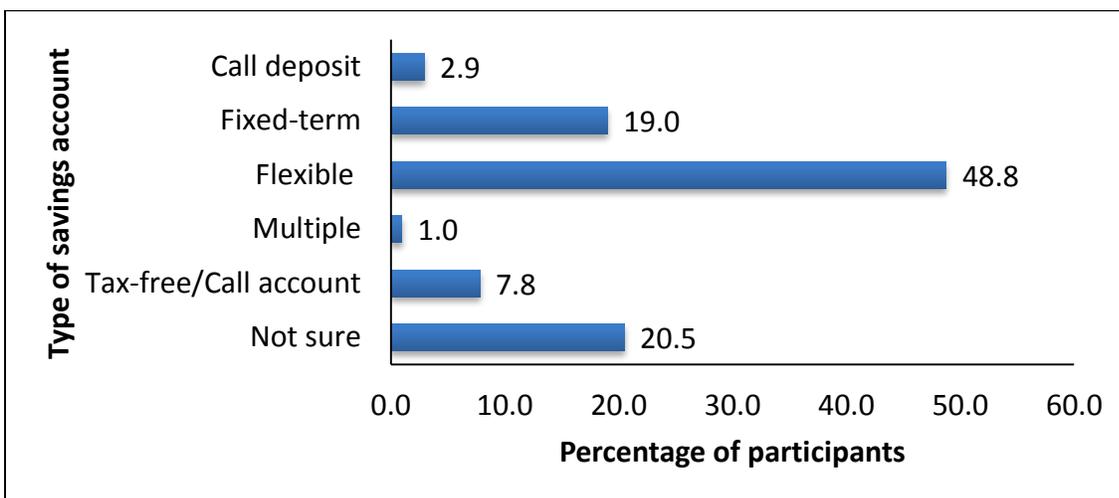


Figure 5.17: Participants' type of savings account

The number of participants who invest is rather low. As illustrated in Figure 5.18, only 13 percent of participants of the study's sample invest. In other words, from the 396 participants, only 50 indicated that they are involved in investing activities.

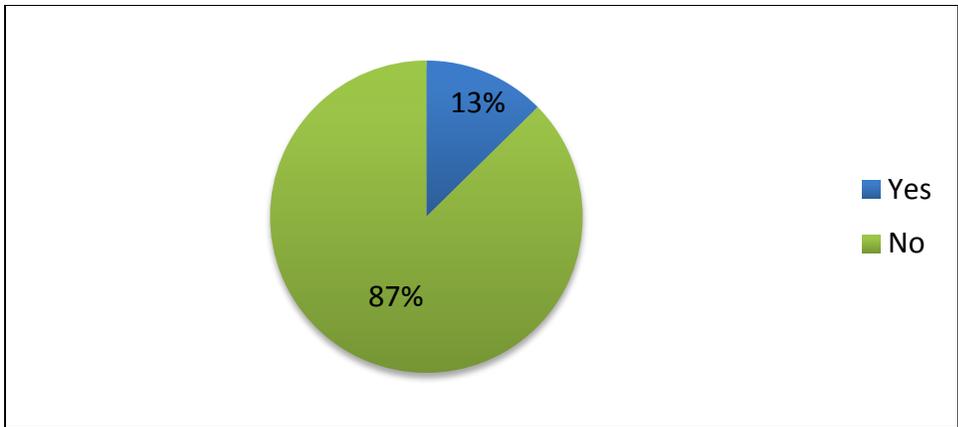


Figure 5.18: Participants who invest

From the quantitative phase and as illustrated in Figures 5.19, most of the participants who do invest, invest in money market accounts (30 percent). Furthermore, participants also invest in stocks/shares (28 percent). This is an indication that, in terms of risk tolerance, participants who invest have two extremes – they either invest in low risk investments such as money market accounts, or they invest in high risk investments such as stocks/shares. Additionally, 10 percent of participants invest in derivatives; another 10 percent invest in ‘other’ investments and a further 10 percent are invested in an investment club/group such as a *stokvel*.

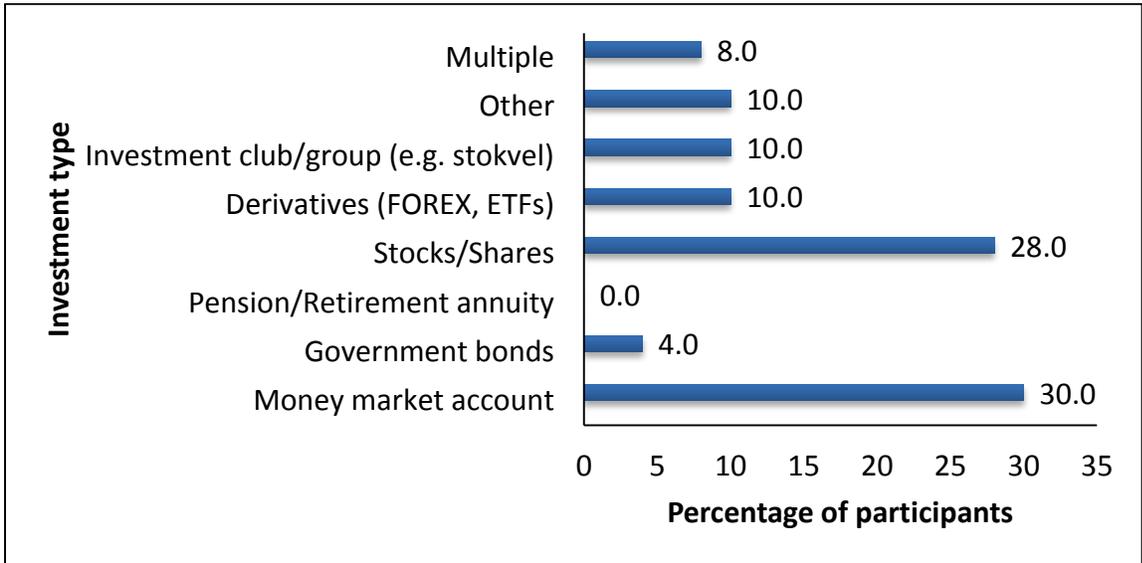


Figure 5.19: Participants’ investment types

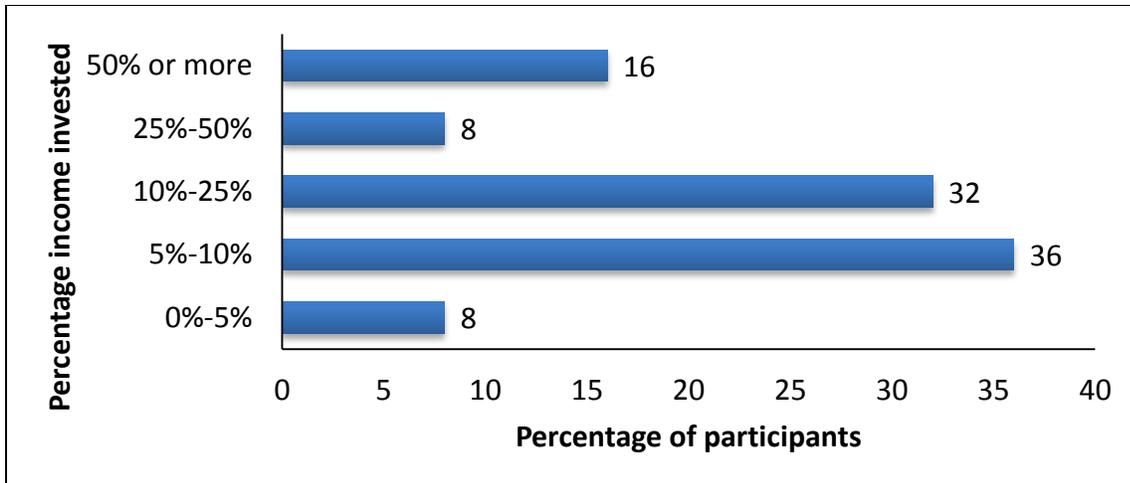


Figure 5.20: Participants' percentage income invested

Figure 5.20 depicts that most of the participants who do invest (36 percent) have invested between 5 to 10 percent of their income/allowance in their investments. The other 32 percent of participants who invest have invested between 10 and 25 percent of their income/ allowance into their investments. This illustrates that participants who invest take on a low or medium-to-high risk when deciding on which amount of their income/ allowance to invest. 16 percent of participants who invest, invest 50 percent or more of their income. Lastly, 8 percent of participants invest between 0 and 5 percent of their income and a further 8 percent of participants invest between 25 and 50 percent of their income.

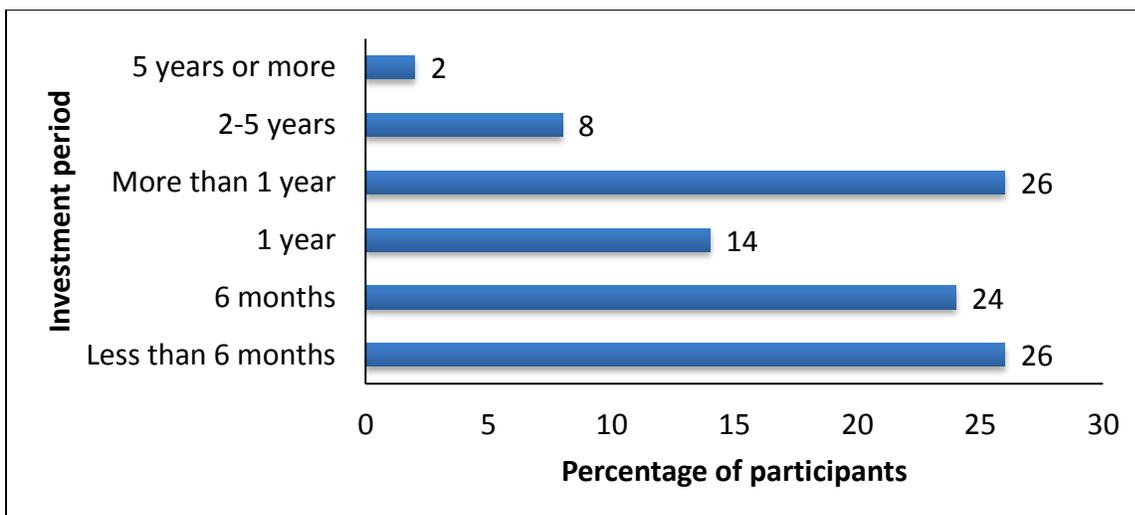


Figure 5.21: Participants' investment period

Figure 5.21 illustrates that only 2 percent of participants who invest have had their investments for five years or more, 8 percent have had their investments for between two and five years and 26 percent of participants who invest have had their investments for more than one year. While, 26 percent have had their investments for less than six months, 24 percent for 6 months and 14 percent for one year. This indicates that the majority of this sample's participants who invest are relatively new at investing.

Referring back to Figure 5.18, it illustrates that 87 percent of participants do not invest. Participants were provided with a list of reasons (obtained from the qualitative study) for not investing and were asked to indicate which reason was most applicable to them for not investing. Figure 5.22 illustrated that 38.7 percent of participants' reason for not investing is a lack of investment knowledge.

However, "Investing is intimidating", "Don't know where to start", along with "Lack of investment knowledge" can be combined and all together be classified as "Lack of investment knowledge". Therefore, in total, 74.2 percent of participants who are not investing indicated that the reason therefore is a lack of investment knowledge. Most participants, who indicated "other", specified that they had a lack of income, which made it difficult to start investing. In addition, participants who do not invest were asked whether they would want to invest in the future. Figure 5.23 indicates that 96 percent of the participants, who are not currently investing, want to invest in the future.

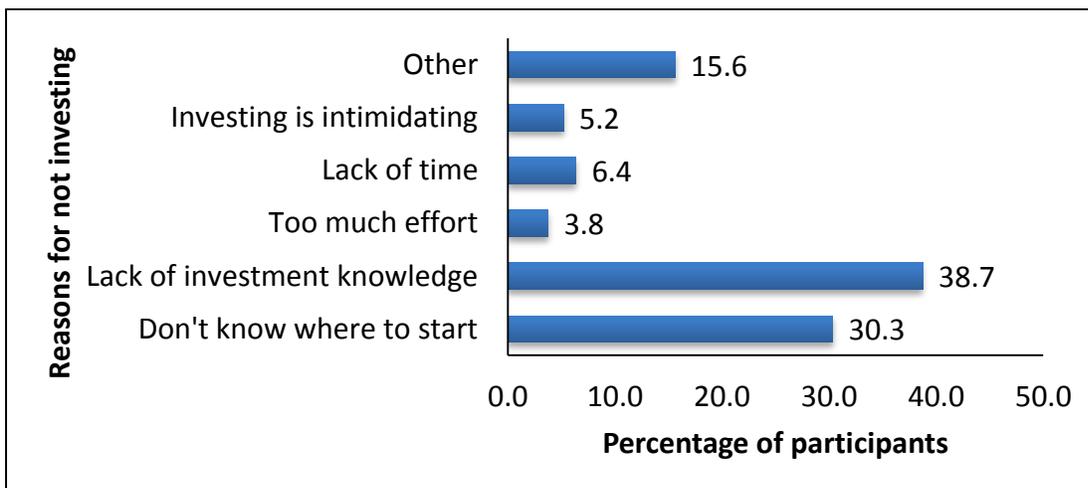


Figure 5.22: Participants' reasons for not investing

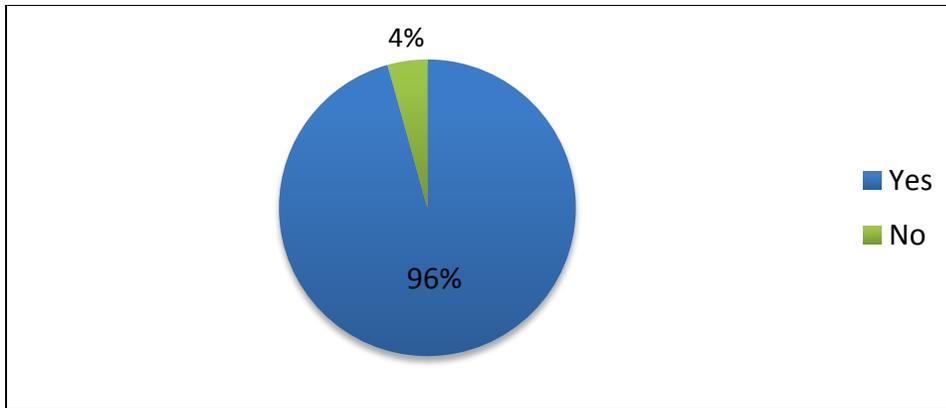


Figure 5.23: Participants who are willing to invest

Participants who indicated they are interested in investing were asked how much of their income they would consider investing. Figure 5.24 depicts that from the 96 percent of participants who want to invest, 39.6 percent are considering investing between 5 and 10 percent of their income/ allowance.

A further 34.4 percent indicated that they would consider investing between 10 and 25 percent of their income/allowance. This finding is in line with the percentage income/ allowance that participants who invest from both the qualitative and quantitative phase of this study are investing. Section 5.4.3 focusses on the results from the participants' responses on Section D relating to participants' perception of investment risk.

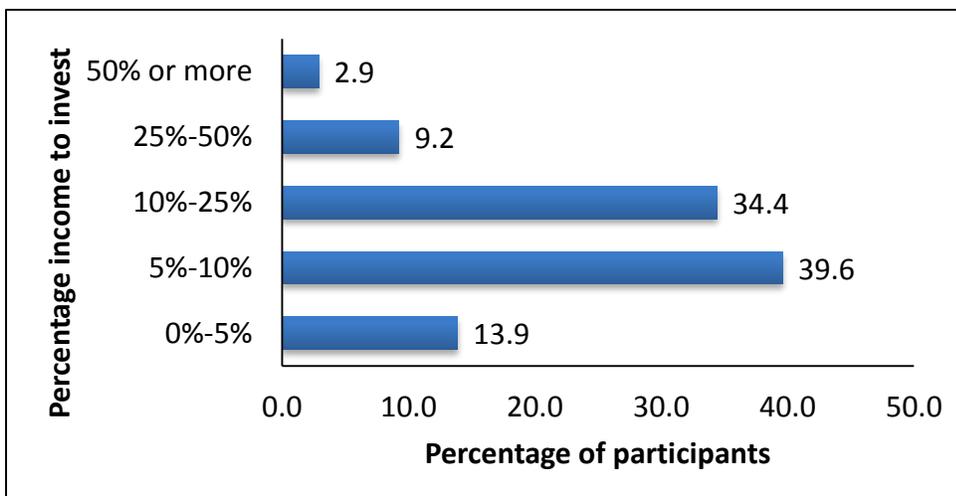


Figure 5.24: Percentage income non-investing participants are willing to invest

5.4.3 Participants' perception on investment risk

This section discusses the results from the questionnaire's Section D. Section D made use of the DOSPERT scale financial domain sub-scale to assess participants' risk taking in financial decisions. The scale analyses financial decisions in terms of the participants' investing and gambling behaviours. In order to simplify the interpretations of the results, the participants' responses were grouped into the following categories based on a seven-point Likert scale of:

- Unlikely: Extremely unlikely (1), moderately unlikely (2), and somewhat unlikely (3);
- Not sure: Not sure (4); and
- Likely: Extremely likely (5), moderately likely (6), and somewhat likely (7)

Table 5.4: Participants' perception of investment risk

DOSPERT financial risk perception scale		
D1: Betting a day's income at the horse races	Frequency	Percent
Unlikely	268	67.7
Not sure	41	10.4
Likely	87	22.0
Total	396	100.0
D2: Investing 10% of your annual income in a moderate growth mutual fund	Frequency	Percent
Unlikely	124	31.3
Not sure	51	12.9
Likely	221	55.8
Total	396	100.0
D3: Investing 5% of your annual income in a very speculative stock	Frequency	Percent
Unlikely	142	35.9
Not sure	104	26.3
Likely	150	37.9
Total	396	100.0
D4: Betting a day's income on the outcome of a sporting event	Frequency	Percent
Unlikely	234	59.1
Not sure	49	12.4
Likely	113	28.5
Total	396	100.0

D5: Investing 10% of your annual income in a new business venture	Frequency	Percent
Unlikely	103	26.0
Not sure	52	13.1
Likely	241	60.9
Total	396	100.0

Source: Author's compilation.

The following discussion is based on the results in Table 5.4. In terms of the gambling statements, the majority of participants (67.7 percent) are unlikely to bet a day's income at the horse races and 59.1 percent of participants are unlikely to bet a day's income on the outcome of a sporting event. In other words, participants are unlikely to participate in gambling behaviour. The possible reason for this finding is that participants perceive the notion of gambling as risky and, therefore, are unlikely to participate in any gambling activity regardless of the level risk associated to the gambling activity itself.

Furthermore, in terms of the investing statements, it was found that 55.8 percent of participants are likely to invest 10 percent of their annual income in a moderate growth mutual fund. Participants' responses in terms of investing 5 percent of their annual income in a very speculative stock were fairly evenly distributed. In other words, 37.9 percent of participants are likely to invest 5 percent of their annual income in very speculative stocks whereas 35.9 percent were unlikely and the other 26.3 percent were not sure. Lastly, 60.9 percent of participants are likely to invest 10 percent of their annual income in a new business venture. Ultimately, participants have a better perception towards investment risk than gambling risk. The study found that participants are unlikely to participate in any gambling activity; however, they are likely to participate in investing activities.

Table 5.5: Financial risk perception statistics

DOSPERT financial risk perception statistics						
		D1	D2	D3	D4	D5
N	Valid	396	396	396	396	396
	Missing	0	0	0	0	0
Skewness		0.948	-0.43	-0.099	0.521	-0.545
Kurtosis		-0.584	-0.901	-0.724	-1.154	-0.759

Source: Author's compilation.

Based on Table 5.5, the data from both gambling risk statements (D1 and D4) is positively skewed. In other words, the majority of participants' frequent scores on these items are clustered at the lower or more negative scores. Most participants are indicated that they are unlikely to bet a day's income at the horse races, or on the outcome of a sporting event. Specifically, D1 has a skewness of 0.948 and D4 has a skewness of 0.521, thus the data from both statements are moderately negatively skewed. In terms of the investment risk statements (D2, D3, and D5), the data reflects that it is negatively skewed. Thus, for items D2, D3, and D5, the majority of participants' frequent scores on these items are clustered at the higher or more positive scores. Therefore, participants have a positive perception on investment risk because they are likely to take on investment risk. In detail, data from the D2 and D3 investment risk statements, with respective skewness of -0.43 and -0.099, are fairly symmetrical. Lastly, D5's skewness of -0.545 indicates that the data for this statement are moderately skewed to the left. All of the items' (D1-5) skewness fall in between the skewness range of -2 and +2 range (Pallant, 2007).

In terms of the kurtosis of the data, all of the statements have negative kurtosis. In other words, the data have a platykurtic distribution, which means that the kurtosis of the data is less than zero. Thus, the data distribution is relatively flat due to the participants' responses on the extremes of the constructs' Likert-scale.

5.4.4 Participants' investment risk tolerance

Since financial risk tolerance is complex in nature, two most commonly used measures were included in the question. The Grable and Lytton (1999) 13-item risk tolerance

scale was included in order to measure risk tolerance from multiple dimensions. Furthermore, the SCF single-item measure was included in order to measure participants' risk tolerance from a simplistic approach. The results of the 13-item risk tolerance measurement are discussed first; thereafter, the SCF single-item risk tolerance measure will be covered.

Table 5.6: Participants' risk tolerance (13-item scale) statistics

Statistics													
	E 1	E 2	E 3	E 4	E 5	E 6	E 7	E 8	E 9	E 10	E 11	E 12	E 13
Mean	1.92	2.57	2.33	1.74	1.77	1.69	1.97	2.61	1.99	2.21	1.96	1.65	2.11
Mode	2	3	2	1	2	2	2	3	1	3	2	1	2
Std. Deviation	0.743	0.876	1.083	0.92	0.651	0.569	0.732	0.944	1.001	0.98	0.909	0.672	0.743
Skewness	0.507	-0.221	0.249	0.794	0.266	0.106	0.428	-0.18	0.01	-0.425	0.786	0.56	0.306
Std. Error of Skewness	0.123	0.123	0.123	0.123	0.123	0.123	0.123	0.123	0.123	0.123	0.123	0.123	0.123
Kurtosis	0.001	-0.635	-1.215	-0.753	-0.719	-0.596	-0.001	-0.856	-2.01	-1.829	-0.09	-0.727	-0.145
Std. Error of Kurtosis	0.245	0.245	0.245	0.245	0.245	0.245	0.245	0.245	0.245	0.245	0.245	0.245	0.245

Source: Author's compilation.

All of the items, except for items E2, E8, and E9, have indicated a positive skewness. In other words, the majority of participants' frequent scores on these items are clustered at the lower or more negative scores. This is an indication that students are low risk tolerant. In terms of items E2, E8, and E9, the skewness is positively distributed. In other words, participants' scores are frequent on the higher, or positive sides of the scale. Thus, participants, in terms of these items (E2, E8, and E9), are high risk tolerance. However since the majority of the items are positively skewed, participants of this study are considered low risk tolerant. All of the items' (E1-13) skewness fall in between the skewness range of -2 and +2 range (Pallant, 2007).

In terms of kurtosis, all of the items except for item E1, have a negative statistic. Thus, for these items, their kurtosis is less than zero, which means that the data for these items are a platykurtic distribution. Thus, the data distribution is relatively flat due to the participants' responses on the extremes of the constructs' Likert-scale.

Based on the overall answers that participants provided in the 13-item risk tolerance scale, participants have a low-to-medium risk tolerance level. The study also incorporated the SCF risk tolerance item. This item measures an individual's risk tolerance level; however, only through a single-question measure. Thus, the multifaceted layers of risk tolerance are measured from only one aspect. The results of the SCF risk tolerance measure are presented in Figure 5.26 and are subsequently discussed.

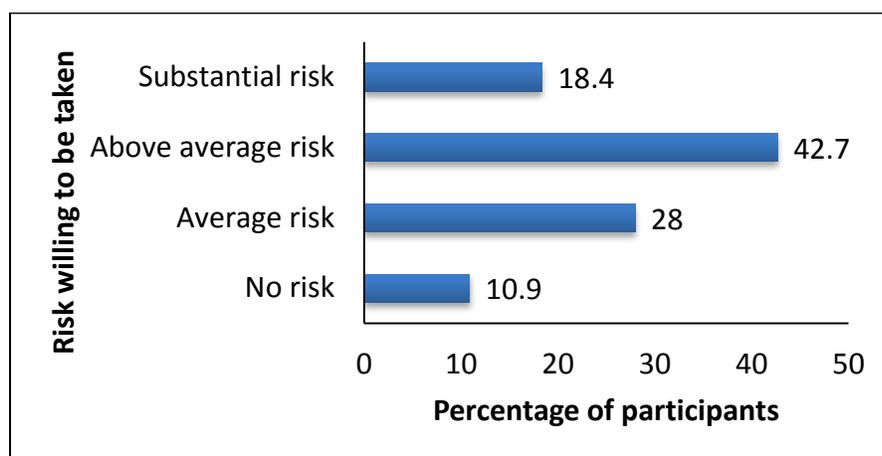


Figure 5.26: Participants' risk tolerance (SCF question)

Nearly half of the participants (42.7 percent) indicated that they would be willing to take above average investment risk and expect to earn above average returns. Furthermore, 28 percent indicated that they are willing to take average investment risk and expect to earn average returns. Thus, most participants are willing to take on medium-to-high risk when investing.

A comparison between the results of the 13-item scale and the single-item scale for measuring risk tolerance indicates that participants have a low-to-medium risk tolerance level based on their responses of the 13-item risk tolerance scale. Alternatively, participants have a medium-to-high risk tolerance level based on the single-item risk tolerance level. Since the 13-item risk tolerance scale measures risk tolerance from multidimensional levels, its results will be used throughout the rest of the study. Thus, this study states that participants have a low-to-medium risk tolerance level. Section 5.4.5 focusses on the participants' subjective investment knowledge.

5.4.5 Participants' subjective investment knowledge

The last scale used in the questionnaire is the Flynn and Goldsmith (1999) subjective knowledge scale, which was adapted to suit the purpose of this study. Participants were asked to indicate on a six-point Likert scale how unlikely or likely they could related to the statements presented to them. In order to simplify the discussion of the results, the options from the scale were divided into the following two main groups:

- Unlikely, which represents responses of either extremely unlikely, moderately unlikely and somewhat unlikely; and
- Likely, which includes responses of extremely likely, moderately likely and somewhat likely.

The results from the subjective knowledge scale are presented in Table 5.7.

Table 5.7: Participants' perceived investment knowledge

Subjective investment knowledge scale (Flynn & Goldsmith, 1999)		
G1: I know much about investment	Frequency	Percent
Unlikely	217	54.8
Likely	179	45.2
Total	396	100.0
G2: I know how to judge the quality of an investment opportunity	Frequency	Percent
Unlikely	242	61.1
Likely	154	38.9
Total	396	100.0
G3: I think I know enough about investment to feel pretty confident when I make an investment decision	Frequency	Percent
Unlikely	259	65.4
Likely	137	34.6
Total	396	100.0
G4: I do not feel very knowledgeable about investment	Frequency	Percent
Unlikely	214	54.0
Likely	182	46.0
Total	396	100.0

G5: Among my circle of friends, I'm one of the experts on investment	Frequency	Percent
Unlikely	267	67.4
Likely	129	32.6
Total	396	100.0
G6: Compared to most other people, I know less about investment	Frequency	Percent
Unlikely	245	61.9
Likely	129	32.6
Total	396	100.0
G7: I have heard of most of the new investment products that are around	Frequency	Percent
Unlikely	219	55.3
Likely	177	44.7
Total	396	100.0
G8: When it comes to investment, I really don't know a lot	Frequency	Percent
Unlikely	228	57.6
Likely	168	42.4
Total	396	100.0
G9: I can tell if an investment is worth the price or not	Frequency	Percent
Unlikely	206	52.0
Likely	190	48.0
Total	396	100.0

Source: Author's compilation.

Based on the results in Table 5.7, it was found that participants, subjectively, do not have much investment knowledge. Specifically, the results indicate that:

- 54.8 percent of participants do not know much about investment (G1);
- 61.1 percent of participants do not know how to judge the quality of an investment opportunity (G2);
- 65.4 percent of participants do not know enough about investment to feel pretty confident when making an investment decision (G3);
- 67.4 percent of participants are not, among their friends, one of the experts on investment (G5);
- 55.3 percent of participants have not heard of most of the new investment products that are around (G7); and
- 52 percent of participants cannot tell if an investment is worth the price or not (G9).

On the other hand, some participants indicated that they feel they are knowledgeable about investment. These participants indicated that they:

- 54 percent of participants do feel knowledgeable about investment (G4);
- 61.9 percent of participants know more about investment compared to other people (G6); and
- 57.6 percent of participants feel like they do know a lot (when it comes to investment G8).

Ultimately, it can be concluded that this study's participants are not knowledgeable about investments. The statistics on the subjective investment knowledge scale are provided in Table 5.8 and subsequently discussed.

Table 5.8: Statistics on the subjective investment knowledge scale

Subjective investment knowledge scale statistics										
		G1	G2	G3	G4	G5	G6	G7	G8	G9
N	Valid	396	396	396	396	396	396	396	396	396
	Missing	0	0	0	0	0	0	0	0	0
Skewness		0.008	0.128	0.325	0.115	0.36	0.31	0.026	0.166	0.011
Kurtosis		-0.883	-0.665	-0.625	-0.927	-0.925	-0.781	-0.948	-0.951	-0.979

Source: Author's compilation.

Overall, as depicted in Table 5.8, it is clear that the data for all of the questions (G1-9) are positively skewed. Participants' responses are frequent in the lower, or negative scores of the construct. Thus, participants have low subjective investment knowledge. All of the items' (G1-9) skewness fall in between the skewness range of -2 and +2 range (Pallant, 2007). However, because all the questions' skewness values are between -0.5 and 0.5, it means that their data are fairly symmetrical. All of the questions' kurtosis values are negative. Thus, the kurtoses for these questions are all below zero; therefore, the data have a platykurtic distribution. Thus, the data distribution is relatively flat due to the participants' responses on the extremes of the constructs' Likert-scale.

5.5 DESCRIPTIVE STATISTICS AND RELIABILITY OF THE SCALES

Section 5.5.1 and Section 5.5.2 respectively entail discussions on the descriptive statistics as well as the reliability of the scales that were used in this study.

5.5.1 Descriptive statistics of the scales

The descriptive statistics for the scales were computed. These descriptive statistics of the scales include their mean, standard deviation, skewness and kurtosis. The abbreviations of the scales are as follows:

- IRP represents DOSPERTs investment risk perception domain;
- GLRT represents Grable and Lytton's (1999) 13-item risk tolerance measure; and
- SIK represents the subjective investment knowledge measure.

Table 5.9: Descriptive statistics of the scales

Descriptive statistics of the scales						
Scale	Mean	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
IRP	3.715	1.078	-0.290	0.123	0.150	0.245
GLRT	2.040	0.364	0.027	0.123	-0.112	0.245
SIK	3.153	0.765	-0.553	0.123	0.095	0.245

Source: Author's compilation.

The mean statistic for IRP is 3.715. IRPs standard deviation indicates that the participants' responses deviated 1.0787 from the mean of 3.715. The standard deviation indicates that participants had a lower level of agreement when answering the IRPs items. In terms of skewness, IRP has a negative skewness statistic; however, the data are distributed fairly symmetrically. Thus, participants have a positive perception towards investment risk. The kurtosis for IRP is 0.15; therefore, the data are normally distributed. In other words, the data are a mesokurtic distribution because the data's kurtosis is close to zero. A mesokurtic distribution has a kurtosis which is similar to the kurtosis of a normally distributed data set.

On the other hand, GLRTs mean statistic is 2.04040404. GLRTs standard deviation, 0.364657401, indicates that the participants' responses did not largely deviate from the scale's mean responses. The data for GLRT also are positively distributed fairly as indicated by its skewness statistic of 0.027. In terms of kurtosis, GLRTs data are a platykurtic distribution. In other words, the kurtosis of -0.112 is less than zero.

Lastly, SIKs mean is 3.15375982. SIKs standard deviation indicates that the participants' responses deviated 0.765763247 over the scale's mean. The standard deviation indicates that participants had a fair level of agreement when they answered the SIK measure's items. The skewness of the SIK measure is -0.553, which indicates that the data are moderately distributed. In terms of kurtosis, the data are normally distributed. This is because the SIK measure's kurtosis is 0.095 and is close to zero. Furthermore, the reliability of the scales was also tested.

5.5.2 Reliability of the scales

In order to calculate the reliability of the three scales used in the study, the Cronbach alpha was calculated for each scale. The Cronbach alpha is measured between zero and one. According to Malhotra (2010:319), a Cronbach alpha of 0.60 or higher can be considered as a good indication of sufficient internal consistency reliability. Table 5.10 depicts the Cronbach alpha of each scale.

Table 5.10: Reliability of scales

Reliability of scales	
Scale	Cronbach's alpha
IRP	0.464
GLRT	0.66
SIK	0.681

Source: Author's compilation.

The Cronbach alpha for the IRP measure of 0.464 falls below Malhotra's (2010) suggested Cronbach of 0.60. Therefore, there is a lack of internal consistency in terms of the scale. A possible reason therefore is that the scale was tested on a South African sample. The Cronbach alphas for the GLRT measure and the SIK measure are 0.66

and 0.681, respectively. Both of these Cronbach alphas are above 0.6, therefore, both of the scales suggest internal consistency reliability. A correlation test was done with the demographics of the participants in terms of risk tolerance in order to link the quantitative study's results with the qualitative study's results. The results of the correlation test are discussed in Section 5.5.

5.6 CORRELATION TEST RESULTS

In order to determine whether or not the findings from the qualitative study (Chapter 4) in terms of risk tolerance can be generalised, correlation tests were conducted with the demographics of the students and the two risk tolerance measures used the study. Correlation refers to the statistic used to summarise the strength of association between two metric variables (Malhotra, 2010:640).

Since the 13-item risk tolerance scale measures risk tolerance from multiple dimensions, the study only uses the results thereof and not the results of the SCF item which measures risk tolerance only from one dimension. The results of the correlations between the demographics and the Grable and Lytton (1999) 13-tem risk tolerance scale are presented in Table 5.11.

Table 5.11: Students' demographics' correlation with Grable and Lytton (1999) 13-item risk tolerance scale

Demographics and Grable and Lytton (1999) 13-item risk tolerance scale correlations						
		Age	Gender	Race	Year	13-item scale
Age	Pearson Correlation	1	-0.097	0.026	.508**	0.024
	Sig. (2-tailed)		0.054	0.613	0	0.639
	N	396	396	396	396	396
Gender	Pearson Correlation	-0.097	1	0.059	0.058	-.113*
	Sig. (2-tailed)	0.054		0.238	0.248	0.024
	N	396	396	396	396	396
Race	Pearson Correlation	0.026	0.059	1	0.06	-.115*
	Sig. (2-tailed)	0.613	0.238		0.232	0.022
	N	396	396	396	396	396

Year	Pearson Correlation	.508**	0.058	0.06	1	0.04
	Sig. (2-tailed)	0	0.248	0.232		0.43
	N	396	396	396	396	396
13-item scale	Pearson Correlation	0.024	-.113*	-.115*	0.04	1
	Sig. (2-tailed)	0.639	0.024	0.022	0.43	
	N	396	396	396	396	396

Source: Author's compilation.

The correlation results will be discussed the way in which Pallant (2007:133) suggests correlation should be interpreted:

5.6.1 Checking the information about the sample

As indicated in Table 5.11, the number of cases (N) is 396. This number is equal to the number of the sample size used in the quantitative phase of the study. Therefore, there was no missing data when the test for correlation was conducted.

5.6.2 Determining the direction of the relationship

Two variables were found to have a positive relationship with risk tolerance. High scores in age are associated with high scores in risk tolerance. Thus, older students are associated to have higher risk tolerance levels than younger students. This finding suggests that the older students get, the higher their association with risk tolerance they have. This finding could be explained by the fact that students learn more about finances and personal finance management and thus become more willing to take on more financial risks including investment risk.

Also, this study found that high scores in students' academic year of study are associated with high scores in risk tolerance. Thus, the higher a students' academic year of study, the higher their association to risk tolerance. This finding suggests that the more students learn about finances and investments at university, the more their risk tolerance increases. This could be that students have a better understanding of finances and are then more willing to take on financial risks.

On the other hand, correlations can also be negative. A negative sign in front of a correlation coefficient indicates that there is a negative correlation between the two variables. If this is the case, high scores on one variable are associated with low scores on the other. Gender was found to have a negative relationship with risk tolerance. High scores in gender are associated with low scores in risk tolerance. In other words, this study found that being a female student is associated with low risk tolerance. Alternatively, being a male student is associated with having high risk tolerance.

Another variable that was found to have a negative relationship with risk tolerance is race. High scores in race are associated with low scores in risk tolerance. In terms of this study, being a African student is associated with having a high risk tolerance level. Alternatively, non-African students are associated with having lower levels of risk tolerance. This finding is in contradiction with previous findings that have found that white students are more risk tolerant than non-white students (Sung & Hanna, 1996; Grable & Joo, 1999). There are two reasons which can explain the finding of this study: the study's sample largely consists of African students; and the study was conducted in a South African context.

5.6.3 Determining the strength of the relationship

The strength of the relationship can be indicated by a correlation coefficient's value which ranges between -1 and 1. A correlation of 0 indicates that there is no relationship between the two variables. Alternatively, a correlation of -1 or 1, is an indication of a perfect negative correlation or a perfect positive correlation. All of the variables (age, gender, race, and year) have small values that are closer to zero. Thus, all of the variables do not have a strong relationship with risk tolerance.

5.6.4 Assessing the significance level

The study set null (H_0) and alternative hypotheses (H_1) for each of the variables and its relationship with risk tolerance. Subsequently, the results thereof are discussed. The study uses a significance level of 0.05. The first variable's relationship with risk tolerance which was analysed is age.

- *H₀: Age does not have a relationship with risk tolerance*
- *H₁: Age does have a relationship with risk tolerance*

Age's p-value is 0.639. This p-value is larger than the study's significance level of 0.05. Therefore, the null hypothesis is not rejected. Thus, this study found that age does not have a relationship with risk tolerance.

- *H₀: Gender does not have a relationship with risk tolerance*
- *H₁: Gender does have a relationship with risk tolerance*

Gender's p-value is 0.024. This p-value is lower than the study's significance level of 0.05. This result suggests that the null hypothesis of gender in terms of risk tolerance is not rejected. Therefore, this study found that gender has a negative relationship with risk tolerance. This finding is in line with similar findings from studies by Sung and Hanna (1996)

- *H₀: Race does not have a relationship with risk tolerance*
- *H₁: Race does have a relationship with risk tolerance*

The p-value of race is 0.022. In other words, race's p-value is lower than this study's significance value of 0.05. Therefore, the null hypothesis is rejected. This study found that race has a negative relationship with risk tolerance. This study's finding is in contradiction with studies by Sung and Hanna (1996) and Grable (1997).

- *H₀: Year of academic study does not have a relationship with risk tolerance*
- *H₁: Year of academic study does have a relationship with risk tolerance*

The p-value for year of academic study is 0.43. This p-value is also lower than the significance level of 0.05. Thus, the null hypothesis is rejected and the study has found that year of academic study has a positive relationship with risk tolerance. This study's results are similar to results of a study by Grable (1997), Grable and Joo (1999), as well as Archuleta *et al.* (2013). The following section, Section 5.7, will focus on discussing the link between the results in the qualitative study and the results of the quantitative study.

5.7 SYNTHESISING THE QUALITATIVE AND QUANTITATIVE RESULTS

The topic (and aim) of this study was to measure student investment potential. Due to the newness of this topic, it was unknown to the researcher which questions, theory, and variables to use. Therefore, in this case, it was best to conduct an exploratory fixed sequential mixed methods approach. This approach involved two phases, namely the implementation of a qualitative study and a subsequent conduction of a quantitative study.

The qualitative phase of the study allowed the researcher to explore and investigate many aspects of student investors. The researcher made use of open-ended interview questions in order to explore important issues that were relevant to this study. Also, these questions allowed the researcher to discover what student investors own opinions are regarding investment. Some of the aspects that were explored in the qualitative phase of this mixed methods study are student investors':

- origin of investment knowledge;
- motivation behind their decision to start investing;
- instruments invested in; and
- risk tolerance

Overall, there are three main findings that the qualitative study established. Firstly, student investors have a lack of investment knowledge. When student investors from the qualitative study were asked which barriers they faced when they started investing, many had responded that their lack of investment knowledge made it difficult for them to manage their investments. Also, one of the main recommendations that student investors had for prospective student investors, was to ensure that they continuously work on improving their investment knowledge.

Secondly, the study found that student investors are high risk tolerant. When asked what type of instruments they are invested in, many student investors responded that they invest in instruments that are considered high risk instruments, such as shares and currencies. Furthermore, most of the student investors from the qualitative phase of the

study (after acknowledging their lack of investment knowledge) were making investment decisions individually, without the help of financial advisors.

Lastly, student investors from the qualitative study were found to have an overall good perception towards investment risk and investments. This finding is based on the responses of student investors who encouraged other students to start investing. Furthermore, student investors provided prospective student investors with recommendation that they can apply which may make their investing journey less intimidating.

Subsequently, a quantitative study was implemented in order to test whether the findings from the qualitative study can be generalised. The quantitative study was also implemented in order to investigate the extent of student investment activities. There following points were found:

In general students have a lack of investment knowledge. Student scored low in terms of the subjective investment knowledge scale, which indicates that students do not have the appropriate level of investment knowledge to make appropriate investment decisions for themselves. Furthermore, it was found that students are low risk tolerant. Given that the quantitative sample is young, it was concerning to find that they are low risk tolerant. This finding contradicts with the investor life cycle theory that states that young individuals should have high risk tolerance. Lastly, it was found that students also have an overall positive perception towards investment risk and investments. Students scored high in DOSPERT's perception of investment risk scale and indicated that they would be likely to take on any sort of investment risk. Also, students were asked whether or not they would want to invest in the future, and 96 percent of students who do not invest, indicated that they would invest in the future.

Thus, based on the findings of the whole study, it can be concluded that there are students who invest. Furthermore, 96 percent of students are interested in participating in investing activities in the future; however, they have a lack of investment knowledge, which serves as a barrier. Lastly, students are low risk tolerant. Thus, students are open to investment; however would invest in low-risk instruments.

5.8 SUMMARY

In Chapter 5, the questionnaires that were obtained for the study were quantitatively analysed. Firstly an introduction to the chapter was provided in Section 5.1. Thereafter, the results of the pilot study implemented were discussed in Section 5.2. In Section 5.3, the preliminary data analysis of the study was discussed in terms of coding, cleaning the data, data gathering process, and the tabulating of the results. Section 5.4 provided an analysis on the participants' demographics and their participation in investment. Thus, Section 5.4 included the discussion on the sample description; participants' saving and investing habits; participants' perception on investment risk; participants' investment risk tolerance; as well as participants' subjective investment knowledge. In Section 5.5 covered the descriptive statistics and the reliability of the scales that used in the questionnaire. The correlation test results of the study are covered in Section 5.6; and lastly, the synthesising of the results from the qualitative and quantitative phases of the study are covered in Section 5.7. Chapter 6 is the final chapter of the study and discusses the conclusion and recommendations of the study.

CHAPTER 6: CONCLUSION AND RECOMMENDATIONS

6.1 INTRODUCTION

This section will highlight the conclusions of the study and make recommendations. It was found in the qualitative phase of this study that students do invest. These student investors were interviewed in an attempt to obtain more knowledge on the investment process, type of investment, benefits, drawbacks and required skills/knowledge needed during the investment process.

Student investors indicated that they learned about investment from school, university, their friends and family, or from social media. Student investors responded that they started investing because they were motivated to secure their future financial wellbeing. Student investors indicated that they invest in various types of investments including money market accounts, shares, bonds, funds, and investment groups such as stokvels. The majority of student investors invest in high risk instruments such as shares and derivatives. Thus, the study found that student investors from the qualitative phase of the study are high risk tolerant investors.

Moreover, student investors indicated that they have barriers that make their investing journeys difficult to maintain. The biggest barrier that student investors indicated they face is the lack of investment knowledge. This includes both low levels of objective and subjective investment knowledge. However, the study found that student investors have an overall good perception towards investment and its investment risk. The student investors motivated students to start investing as soon as possible and provided students with recommendations for what they can do when they decide that they want to start investing. In order to test for the extent of the qualitative study's findings on a larger sample of students, a quantitative phase was undertaken.

Through the implementation of the quantitative phase, the study found that students also have a low level of subjective investment knowledge. This confirms the statements made by the qualitative participants. Furthermore, it was found that students have low risk tolerance based on their responses. This finding is not in line with that of the

qualitative study which found that students are high risk tolerant. This could be due to the fact that non-investing students from the quantitative study are not yet aware of, or understand, yet how investment risks affect investments in real life. Thus, they chose the safer options in the 13-item risk tolerance scale. Lastly, the study found that, overall; the students also have a good perception towards investment and investment risk. It was found that the majority (96 percent) of students who do not invest yet are interested in starting to invest. The following section provided an overview of the study.

6.2 OVERVIEW OF THE STUDY

Chapter 1 provided an introduction (Section 1.1) for the study. The problem statement (Section 1.2), along with the objectives of the study (Section 1.3) was also discussed in Chapter 1. Specifically, there are three objective that were discussed in Chapter 1, namely the primary objective (Section 1.3.1), the theoretic objectives (Section 1.3.2), and the empirical objectives (Section 1.3.3). Overall, the study's objectives were as follows (Section 1.3):

6.2.1 Primary objective

The primary objective of the study was to measure student investment potential.

6.2.2 Theoretical objectives

To achieve the primary objective of the study, the following theoretical objectives were identified:

- Conduct a theoretical analysis of investment, investment instruments and investment risk;
- Determined the importance of investment knowledge as a driver for investment; and
- Conduct a theoretical analysis of risk tolerance and risk perception.

6.2.3 Empirical objectives

To achieve the primary objective of the study, the following empirical objectives were identified:

- Determine students' involvement in investment activities (including their motivations to invest and the underlying instruments);
- Based on the results of the initial exploration, develop a survey instrument for gathering data on the extent of student engagement in investment activities; and
- Determine the relationship between the extent of student engagement in investment activities and underlying demographic factors.

Chapter 2 consisted of a discussion relating to the theoretical objectives (Section 1.3.2) that were formulated in Chapter 1. The following topics were discussed in Chapter 2 of this study: Investment (Section 2.2) was discussed in terms of its definition (Section 2.2.1); investment risk (Section 2.2.2); and the importance of diversification (Section 2.2.3). In addition investment knowledge (Section 2.3) was discussed in terms of its definition (Section 2.3.1); and the importance of investment knowledge (Section 2.3.2). Furthermore, risk perception (Section 2.4) was discussed in terms of its definition (Section 2.4.1); and its link with investment decision making (Section 2.4.2). Lastly, investor risk tolerance (Section 2.5) was discussed in terms of its definition (Section 2.5); and its relationship to demographics (Section 2.5.1).

Chapter 3 detailed the research methodology used within this study in terms of the study design (Section 3.2), study paradigms (Section 3.3); sampling strategies (Section 3.4), data collection methods (Section 3.5), pre-test and pilot test of data collection instruments (Section 3.6), interview and questionnaire administration (Section 3.7), data preparation (Section 3.8), and data analysis (Section 3.9).

Chapter 4 relates to the analysis and interpretation of the empirical findings of the qualitative study. Chapter 4 includes an analysis on the main themes obtained in the qualitative study (Section 4.1). The main themes discussed are the importance of investment knowledge (Section 4.1.1), participants' are highly risk tolerant (Section 4.1.2), and participants' perception towards investment (Section 4.1.3). A brief summary on the findings of the study is also provided (Section 4.1.4).

Furthermore, Chapter 5 includes an analysis and interpretation of the empirical analysis of the quantitative study. The Chapter includes a discussion on the results of the pilot

study (Section 5.2), preliminary data analysis (Section 5.3), demographics and participation in investment analysis (Section 5.4), descriptive statistics and reliability of the scales (Section 5.5), correlation test results (Section 5.6), as well as the synthesising of the qualitative and quantitative results (Section 5.7).

Both of the analyses are in line with the study's empirical objectives. Ultimately, the primary objective of the study, to measure students' investment potential, was fulfilled.

6.3 MAIN FINDINGS OF THE STUDY

The main findings of this study in accordance with the empirical objectives formulated in Chapter 1 are as follows:

6.3.1 Students do invest

The first empirical objective of the study was to determine students' involvement in investment activities. Specifically, the study aimed at exploring the following points: what motivated students to invest, how they perceive investment, and what they invest in in order to provide a sense of their risk tolerance. Based on the findings in the qualitative study, and as indicated in the second empirical objectives, a survey instrument was developed for gathering data on the extent of student participation in investment activities.

Specifically, in the quantitative study, Section B of the questionnaire focussed on obtaining the larger sample of students' involvement in investment activities. Section B helped determine that 52 percent of students do save and 13 percent are involved in investment activities. Regardless of the small percentage of students who invest, a further 96 percent of non-investing students indicated that they are interested in investing. Therefore, this study was successful in achieving the empirical objective of determining students' involvement in investment activities.

6.3.2 Students have a lack of investment knowledge

In the qualitative study, student investors responded that they do have a lack of investment knowledge. In order to generalise this finding, participants in the quantitative

sample where asked what their subjective investment knowledge is. The findings of the quantitative study concur with those of the qualitative study. Participants in both phases of the study lacked requisite investment knowledge.

6.3.3 Students have a low risk tolerance

Student investors in the qualitative sample were found to be high risk tolerant investors. However, students in the quantitative sample were found to be low risk tolerant based on their responses in the 13-item risk tolerance measure. The reason for the difference in these findings could be because non-investing students from the quantitative sample are not aligned with their actual risk tolerance. The 13-item risk tolerance test is based on hypothetical investment situations. Since these non-investing students were found to have low levels of investment knowledge, it could be that they could not fully interpret and understand the risks involved in the items provided by the 13-item risk tolerance scale.

Alternatively, student investors from the qualitative study were not scored based on a 13-item risk tolerance scale. It could be that these students would have scored the same as the students from the quantitative sample. Overall, student investors from the qualitative study were found to be high risk tolerant based on their responses; and non-investing students from the quantitative study were found to be low risk tolerance since they scored low on the overall 13-item risk tolerance scale.

6.3.4 Students have a positive perception towards investment

Students in the qualitative sample responded that overall, they have a positive perception towards investment. These student investors encouraged students to start investing as soon as possible. Student investors were understanding of the importance of investing and adopting appropriate investment behaviours as it contributes to securing their future financial wellbeing. Furthermore, these student investors also shared some recommendations (Section 4.1.3.2), for students who are interested in investing.

In addition, the quantitative study also found that students have an overall positive perception towards investment. From the sample of non-investing students, 96 percent indicated that they are interested in. Furthermore, these students indicated that they will be willing to invest between 5 percent and 10 percent of their future incomes in investment instruments that are available in the market. This finding indicates that students are interested in participating in financial markets in the future; however, are in need of some guidance along the way.

6.3.5 Correlation of students' demographics and their risk tolerance

A correlation analysis was conducted in order to test whether some of students' demographics have a relationship with risk tolerance. The following results were found from the correlation tests of students' age, gender, race, and year of academic study with risk tolerance:

- Students' age does not have a statistical relationship with risk tolerance;
- Students' gender has a statistically negative relationship with risk tolerance;
- Students' race has a statistically negative relationship with risk tolerance; and
- Students' year of academic study has a statistically positive relationship with risk tolerance.

Therefore, regardless of the students' age, they all tend to have the same level of risk tolerance. Gender has a negative relationship with risk tolerance. In terms of this study, it was found that male students have a higher level of risk tolerance than their female counterparts. Alternatively, female students are associated with low levels of risk tolerance. This finding is in line with previous studies that have been conducted on the role of gender on risk tolerance.

This study also found that African students are associated with higher levels of risk tolerance than non-African students. This finding diverges from research that has been previously conducted and found that white individuals are more risk tolerant than non-white individuals. The reason for this study's finding of African students being more risk tolerant than non-African students could be because African students' socioeconomic

and demographic characteristics played a role in how they perceive risk. Therefore, this finding requires more investigation.

Lastly, the study found that the higher the academic year level of students, the higher their association to be more risk tolerant. Most of the quantitative sample consisted of students enrolled in a commerce degree, which could explain why students within a higher academic year than others, are associated to having higher risk tolerance. In other words, the more these students learn about finances during each year of study, the more comfortable they feel to take on more risk. The following section focusses on the contribution of the study.

6.4 RECOMMENDATIONS

Financial wellbeing is the primary objective for students who invest; however, those with limited investment knowledge and a lack of awareness of their risk tolerance will find difficulty in adopting the appropriate investment behaviours. This study suggests that students should improve their investment knowledge and be aware of their risk tolerance in order to make investment decisions that are appropriate to their situations. Based on the findings of the study, the following recommendations are suggested:

- **Improve student investment knowledge**

Both the qualitative and quantitative phases of the study found that student investors as well as students who do not invest yet lack investment knowledge. Thus, students are encouraged to make use of available platforms in order to learn more about investing. In other words, students can rely on schools and universities to learn the basics and intermediary fundamentals of investment. However, students are encouraged to make use of social media applications, and banking applications to learn more about the different types of instruments that are available in the market.

- **Ensure awareness of risk tolerance**

This study found that students are not aware of their risk tolerances. The results from the 13-item risk tolerance measure and the SCF single-item scale gave contradicting

results. It is important to note that the nature of the measures is different. The 13-item risk tolerance scales measure risk tolerance from multiple dimension; whereas the SCF single-item scale measures risk tolerance only from one perspective. Thus, it could be that since students have low investment knowledge, they were not aware of how to indicate the same level of risk in the SCF scale, as they did in the 13-item risk tolerance scale.

However, students are encouraged to learn more about risk tolerance and what role it plays in their investment decision making. The importance of understanding risk tolerance and the risks that are linked to different instruments is essential. Students will be able to make investment decisions that better fit their financial situation as well as their risk tolerance. Therefore, with the awareness and understanding of their risk tolerances, students will increase their chances of making better investment decisions which will help them adopt good investing behaviours.

- **Reduce the intimidating nature of investment**

Thirdly, financial institutions are encouraged to make investing more appealing and less intimidating for students. Some students in the quantitative phase of the study, indicated that they think that investment is intimidating. Other students responded that they thought that investments are only for individuals who earn high amounts of money. Thus, financial institutions are encouraged to clear the common misconception that students have which is investing is intimidating and only for high-income earning individuals. Consequently, many students in South Africa can be motivated to start investing as soon as possible. This will help them develop their investing skills and behaviours at an early stage in their investor life cycle.

- **Development of investment instruments tailored for the student investor**

Finally, financial institutions are encouraged to create investment products specifically for students. Students who invest in these products can be guided by the financial institutions on how to improve their investments. Thus, financial institutions will be able to create loyal and lasting relationships with students as their clientele. Furthermore,

financial institutions can also help students learn more about better managing other personal finances such as saving, credit, and insurance. Financial institutions are also encouraged to collaborate with individuals who have the power to influence the behaviours of students who are interested in investing. Students are more likely to participate in investment activities if they see their role models do the same.

6.5 CONTRIBUTIONS OF THE STUDY

The findings of this study contribute to the limited literature available regarding South African students' investing activities. This was achieved by measuring South African students' investment potential by using three well-known scales, namely:

- the DOSPERT's financial risk items that focussed on the students' investment risk perception;
- Grable and Lytton's 13-item risk tolerance measurement; and
- Flynn and Goldsmith's subjective investment knowledge scale.

These findings can be used by financial institutions in order to help them create a clearer view of the risk tolerance and investing interest of students. These students have the potential to earn high incomes and are willing to participate in the financial market in the future; therefore, it was important to measure students' investment potential. Furthermore, it was possible to identify which aspects of investment students struggle with in terms of investment.

6.6 LIMITATIONS AND FUTURE RESEARCH

6.6.1 Study limitations

The study managed to achieve all of its stated objectives; however the study accepts and acknowledges its limitations. Firstly, there sample of the study did not reflect an equal distribution of students from both the traditional university and the university of technology. The preferred representation would be a 50 percent sample from the traditional university and a 50 percent sample from the university of technology.

However, the sample reflected that the sample was mainly from the traditional university (70 percent); and only 30 percent from the university of technology.

Secondly, in terms of the students risk tolerances, only four demographics (age, race, gender, and year of academic study) were used to measure their association to risk tolerance. Other demographic and socio-economic factors can also be used to analyse their association to the students' risk tolerance.

Lastly, the study did not ask the student investors from the qualitative study to also fill in the 13-item risk tolerance scale. It would have provided the researcher the chance to compare the qualitative student investors' measured risk tolerance with that of the student investors from the quantitative study.

6.6.2 Areas for future research

To address some of this study's limitations, the following areas may be explored for future research:

- The study can be extended to other HEIs of the country. This will help create a better perception on South African students' overall potential to invest since they are the future participants of the financial market;
- Replicate the test of the study of the empirical model using a wider variety of differentiating and classifying factors, such as behaviours, attitudes, and other socioeconomic characteristics. This type of replication will contribute to determining the importance of other factors in differentiating risk tolerance levels; and
- Also, the study can be replicated in universities in other countries. This will allow researchers to determine and compare the results of students' potential to invest with other international universities. Furthermore, researchers will be able to measure whether or not South African students' are in par with international students in terms of their potential to invest.

- Lastly, a study can be conducted wherein a singular scale is developed to measure the investment potential of students, specifically from a South African context. A scale can be created to measure students' investment potential while taking into consideration South African factors which could affect students' potential to invest. Such a scale will be able to identify which areas, in terms of investment, prospective students have difficulty with. Thereafter, these areas can be further investigated and attempts can be made to improve students' potential to invest and be successful financial market participants.

6.7 CONCLUDING REMARKS

Ultimately, the study found that students have the potential to become future investors. However, students are faced with multiple challenges that restrain them from starting to invest. Firstly, some students do not have sufficient money to start investing as they do not work and have dependents to look after. Secondly, students have a lack of investment knowledge which contributes to them perceiving investing as an intimidating activity. Furthermore, students are not aware of their risk tolerances. In order to make investment decisions that are in line with students' financial situation, it is important that they are aware of their risk tolerances and how their risk tolerance will affect the way they invest.

Ultimately, since students are the future participants of financial markets, it is important that they improve their investment knowledge and learn about their risk tolerances so that they can adopt appropriate investing behaviour at an earlier stage in their lives. As a result of improved investment knowledge and risk tolerance awareness, students will increase their chances of making better investment decisions and take on appropriate investment risk which will help them secure their future financial wellbeing and improve their quality of life.

This study made a valuable contribution to literature on South African students' investment potential. Furthermore, the study provides insight and recommendations to the ways of improving students' investment knowledge and their awareness of their risk tolerance.

LIST OF REFERENCES

- Aaker, D.A., Kumar, V. & Day, G.S. 2008. Marketing research. New York: John Wiley & Sons.
- Aaronson, I. 2013. Perception. *Journal of Philosophy, Psychology and Scientific Research*, 11(2):37-46.
- ABSA. 2017. Save or invest. <https://www.absa.co.za/personal/save-invest/> Date of access: 27 Mar. 2017.
- Anbar, A. & Eker, M. 2008. An examination of relationship between burnout and job satisfaction among Turkish accounting and finance academicians. *European Journal of Economic and Political Studies*, 1(1):39-57.
- Angrosino, M. 2007. Doing ethnographic and observational research. London: Sage.
- Antoni, X.L. 2014. Financial Literacy and Behaviour Among the Black Community in Nelson Mandela Bay. Nelson Mandela Metropolitan University. (*Dissertation - MCom*).
- Archuleta, K.L., Dale, A. & Spann, S.M. 2013. College students and financial distress: Exploring debt, financial satisfaction, and financial anxiety. *Journal of Financial Counseling and Planning*, 24(2):50-62.
- Aren, S. & Zengin, A.N. 2016. Influence of financial literacy and risk perception on choice of investment. *Journal of social and behavioral sciences*, 235:656-663.
- Ashworth, P. 2015. Conceptual foundations of qualitative psychology. (*In Smith, J.A., ed. Qualitative psychology: a practical guide to research methods. London: Sage.*
- Attride-Stirling, J. 2001. Thematic networks: an analytic tool for qualitative research. *Qualitative research*, 1(3):385-405.

- Azorín, J.M. & Cameron, R. 2010. The application of mixed methods in organisational research: a literature review. *Electronic Journal of Business Research Methods*, 8(2):95-105.
- Babbie, E. & Rubin, A. 2008. Research methods for social work: Belmont, CA: Thompson Brooks/Cole.
- Baird, D.E. & Fisher, M. 2009. Pedagogical mash up: Gen Y, social media and learning in the digital age. (In Dasgupta, S., ed. Social computing: concepts, methodologies, tools, and applications. Milwaukee: Milwaukee Applied Technical College).
- Bajtelsmit, V.L. & Bernasek, A. 1996. Why do women invest differently than men? *Financial Counseling and Planning*, 7(1):1-10.
- Bajtelsmit, V.L. & Rastelli, L.G. 2008. Personal Finance. London: John Wiley & Sons.
- Baker, C.R. 1999. An analysis of fraud on the Internet. *Internet Research*, 9(5):348-360.
- Baker, H.K. & Nofsinger, J.R. 2002. Psychological biases of investors. *Financial Services Review*, 11(2):97-116.
- Baker, H.K. & Ricciardi, V. 2015. Understanding behavioral aspects of financial planning and investing. *Journal of Financial Planning*:22-26.
- Bakshi, G.S. & Chen, Z. 1994. Baby boom, population aging, and capital markets. *Journal of Business*, 5(3):165-202.
- Barber, B.M. & Odean, T. 2001. Boys will be boys: Gender, overconfidence, and common stock investment. *The Quarterly Journal of Economics*, 116(1):261-292.

- Barreiro, P.L. & Albandoz, J.P. 2001. Population and sample. Sampling techniques. *Management Mathematics for European Schools*(42):2000-2021.
- Basit, T. 2003. Manual or electronic? The role of coding in qualitative data analysis. *Educational Research*, 45(2):143-154.
- Bednar, A.K., Cunningham, D., Duffy, T.M. & Perry, J.D. 1991. Theory into practice: how do we link? (In Anglin, G.J., ed. *Instructional technology: past, present, and future*. Englewood: Libraries Unlimited.
- Bentley, M.E., Boot, M.T., Gittelsohn, J. & Stallings, R.Y. 1994. Use of structured observations in the study of health behaviour. Occasional Paper. IRC/LSHTM.
- Berger, D. & James, C. 2002. *The Motley fool: UK investment guide*. 3rd ed. London: Boxtree.
- Bergman, M.M. 2008. *Advances in mixed methods research: theories and applications*. London: Sage.
- Berndt, A. & Petzer, D. 2011. *Marketing research*. Cape Town: Pearson.
- Bevan-Dye, A. & Surujlal, J. 2011. Attitude towards materialism in sport and materialism tendencies amongst black Generation Y students. *African Journal for Physical Health Education, Recreation and Dance*, 17(Supplement 2):43-55.
- Blackstone, A. 2016. *Principles of Sociological Inquiry—Qualitative and Quantitative Methods*.
- Blais, A.R. & Weber, E.U. 2006. A domain-specific risk-taking (DOSPERT) scale for adult populations. *Judgement and Decision Making*, 1(1):33-37.

Blandford, A. 2013. Semi-structured qualitative studies. (In Soegaard, M. & Dam R., eds. The encyclopedia of human-computer interaction. 3rd ed. Aarhus, Denmark: Interaction Design Foundation).

Bonoma, T.V. & Schlenker, B.R. 1978. The SEU calculus: Effects of response mode, sex, and sex role on uncertain decisions. *Decision Sciences*, 9(2):206-227.

Boyce, J. 2002. Marketing research in practice. Roseville: McGraw-Hill.

Bricki, N. & Green, J. 2002. A guide to using qualitative research methodology. *Medecins Sans Frontiers. Retrieved February*, 14:1-31.

Brown, K.M. 2004. Leadership for social justice and equity: Weaving a transformative framework and pedagogy. *Educational administration quarterly*, 40(1):77-108.

Burns, A.C. & Bush, R.F. 2010. Study guide and technology manual for SPSS: marketing research. Boston: Prentice Hall.

Campbell Wealth. 2013. Types of investment risk. <http://campbellwealth.com/wp-content/uploads/2013/10/Types-of-Investment-Risk.pdf> Date of access: 20 Oct. 2017.

Cant, M., Gerber-Nel, C., Nel, D. & Kotzè, T. 2005. Marketing research. 2nd ed. Pretoria: New Africa Books.

Capitec Bank. 2017. Save. <https://www.capitecbank.co.za/global-one/save/benefits> Date of access: 27 Mar. 2017.

Carducci, B.J. & Wong, A.S. 1998. Type A and risk taking in everyday money matters. *Journal of Business and Psychology*, 12(3):355-359.

Carson, D., Gilmore, A., Perry, C. & Gronhaug, K. 2001. Qualitative marketing research. London: Sage.

Chambers, R. 1994. Paradigm shifts and the practice of participatory research and development.

<https://opendocs.ids.ac.uk/opendocs/bitstream/handle/123456789/3712/WP2.pdf> Date of access: 26 Apr. 2017.

Charles, A. & Kasilingam, R. 2014. Do Investors' Emotions Determine their Investment Personality? *Journal of Management*, 10(2):45-60.

Charlett, D., Garland, R. & Marr, N. 1995. How damaging is negative word of mouth. *Marketing Bulletin*, 6(1):42-50.

Charmaz, K. 2006. Constructing grounded theory: a practical guide through qualitative analysis. London: Sage.

Chen, H. & Volpe, R.P. 1998. An analysis of personal financial literacy among college students. *Financial services review*, 7(2):107-128.

Cherryholmes, C.H. 1992. Notes on pragmatism and scientific realism. *Educational researcher*, 21(6):13-17.

Chesler, M.A. 1991. Participatory action research with self-help groups: an alternative paradigm for inquiry and action. *American Journal of Community Psychology*, 19(5):757-768.

Chuan, C.L. 2006. Sample size estimation using Krejcie and Morgan and Cohen statistical power analysis: A comparison. *Jurnal Penyelidikan IPBL*, 7:78-86.

Churchill, G. 1995. Marketing research methodological foundations. 6th ed. Fort Worth, Texas: The Dryden Press.

Churchill, G.A. & Iacobucci, D. 2010. Marketing Research: Methodological. Ohio: Thomson South-Western.

Clarke, V., Braun, V. & Hayfield, N. 2015. Thematic analysis. (*In Smith, J.A., ed.* Qualitative psychology: A practical guide to research methods. 3rd ed. London: Sage.

CMA. 2016. Investment. www.cma.org.sa Date of access: 15 Oct. 2017.

Cohen, L., Manion, L. & Morrison, K. 2013. Research methods in education. 6th ed. New York: Routledge.

Cohen, M. & Stebstad, J. 2003. Financial education for the poor. <http://www.mip.org/PDFS/AIMS/WDR%20REPORT.pdf> Date of access: 14 Sep. 2017.

Cohn, R.A., Lewellen, W.G., Lease, R.C. & Schlarbaum, G.G. 1975. Individual investor risk aversion and investment portfolio composition. *The Journal of Finance*, 30(2):605-620.

Constantine, M.G., Anderson, G.M., Berkel, L.A., Caldwell, L.D. & Utsey, S.O. 2005. Examining the cultural adjustment experiences of African international college students: A qualitative analysis. *Journal of Counseling Psychology*, 52(1):57-66.

Cooper, D.R. & Schindler, P.S. 2014. Business research methods. 14th ed. New York: McGraw-Hill.

Creswell, J.W. 2012. Qualitative inquiry and research design: choosing among five approaches. London: Sage.

Creswell, J.W. 2013. Research design: qualitative, quantitative, and mixed methods approaches. London: Sage.

Creswell, J.W. 2014. A concise introduction to mixed methods research. Thousand Oaks, CA: Sage.

Creswell, J.W., Klassen, A.C., Plano Clark, V.L. & Smith, K.C. 2011. Best practices for mixed methods research in the health sciences.

<https://pdfs.semanticscholar.org/867f/2d9a5491411530fa9b79fa020d4c63e83025.pdf>

Date of access: 15 Apr. 2017.

Creswell, J.W. & Plano Clark, V.L. 2007. Designing and conducting mixed methods research.

Creswell, J.W. & Plano Clark, V.L. 2010. Understanding research: a consumer's guide. New Jersey: Pearson Education.

Creswell, J.W. & Plano Clark, V.L. 2011. Designing and conducting mixed methods research. 2nd ed. London: Sage.

Creswell, J.W., Plano Clark, V.L., Gutmann, M.L. & Hanson, W.E. 2003. Advanced mixed methods research designs. *Handbook of mixed methods in social and behavioral research*:209-240.

Crue Invest. 2017. Financial advice in a junk status economy.

<https://cruechronicles.com/2017/05/09/financial-advice-in-a-junk-status-economy/> Date of access: 15 Nov. 2017.

Cudmore, B.A., Patton, J., Ng, K. & McClure, C. 2010. The millennials and money management. *Journal of Management and Marketing Research*, 4:1-28.

Dahlbäck, O. 1991. Saving and risk taking. *Journal of Economic Psychology*, 12(3):479-500.

Davidson, T. 2017. Perception. *Journal of philosophical studies*, 1(1):78-86.

Daymon, C. & Holloway, I. 2010. Qualitative research methods in public relations and marketing communications. London: Routledge.

de Vos, A.S., Strydom, H. & Delpport, C.S.L. 2011a. Building a scientific base for the helping professions. (*In De Vos, A.S., ed. Research at grass roots: for the social sciences and human service professions. Pretoria: Van Schaik.*

de Vos, A.S., Strydom, H., Fouché, C.B. & Delpport, C.S.L. 2011b. Research at grass roots: for the social sciences and human service professions. 4th ed. Pretoria: Van Schaik.

de Vos, A.S., Strydom, H., Schulze, S. & Patel, L. 2011c. The sciences and the professions. (*In De Vos, A.S., ed. Research at grass roots: for the social sciences and human service professions. 4th ed. Pretoria: Van Schaik.*

Delpport, C.S.L. & Fouché, C.B. 2011. Mixed methods research. (*In De Vos, A.S., ed. Research at grass roots: for the social sciences and the human services professions. 4th ed. Pretoria: Van Schaik).*

Delpport, C.S.L. & Roestenburg, W.J.H. 2011. Quantitative data-collection methods: questionnaires, structured observation and structured interview schedules. (*In De Vos, A.S., ed. Research at grass roots: for the social sciences and human service professions. 4th ed. Pretoria: Van Schaik.*

Delpport, C.S.V. & de Vos, A.S. 2011. Professional research and professional practice. (*In De Vos, A.S., ed. Research at grass roots: for the social sciences and human service professions. Pretoria: Van Schaik.*

Denscombe, M. 2008. Ground rules for good research: a 10-point guide for social researchers. London: Open University Press.

Denzin, N.K. & Lincoln, Y.S. 2011. Introduction: the discipline and practice of qualitative research. *The Sage handbook of qualitative research*. 4th ed ed. Thousand Oaks, CA: Sage.

DePoy, E. & Gilson, S.F. 2008. *Evaluation practice: How to do good evaluation research in work settings*. New York: Psychology Press.

DHET. 2017. *Universities in South Africa*.

<http://www.dhet.gov.za/SiteAssets/New%20site%20Documents/Universities%20in%20South%20Africa.pdf> Date of access: 27 Mar. 2017.

DiCicco-Bloom, B. & Crabtree, B.F. 2006. The Qualitative Research Interview. *Medical education*, 40(4):314-321.

Dillion, W.R., Madden, T.J. & Firtle, N.H. 1994. *Marketing research in a marketing environment*. 3rd ed. Burr Ridge: Irwin.

Driscoll, D.L., Appiah-Yeboah, A., Salib, P. & Rupert, D.J. 2007. Merging qualitative and quantitative data in mixed methods research: how to and why not. *Ecological and Environmental Anthropology, (University of Georgia):18*.

Edigheji, O. 2010. Constructing a democratic developmental state in South Africa: potentials and challenges. *Human Sciences Research Council:1-33*.

Ertmer, P.A. & Newby, T.J. 2013. Behaviorism, cognitivism, constructivism: comparing critical features from an instructional design perspective. *Performance Improvement Quarterly*, 26(2):43-71.

Falahati, L., Paim, L., Ismail, M., Haron, S.A. & Masud, J. 2011. Assessment of university students' financial management skills and educational needs. *African Journal of Business Management*, 5(15):6085.

- Feilzer, Y.M. 2010. Doing mixed methods research pragmatically: Implications for the rediscovery of pragmatism as a research paradigm. *Journal of mixed methods research*, 4(1):6-16.
- Flynn, L.R. & Goldsmith, R.E. 1999. A short, reliable measure of subjective knowledge. *Journal of business research*, 46(1):57-66.
- FNB. 2017a. Access immediately. <https://www.fnb.co.za/invest/access-my-money-immediately.html> Date of access: 27 Mar. 2017.
- FNB. 2017b. Demos. <https://www.fnb.co.za/demos/DemosPC.html> Date of access: 14 Oct. 2017.
- Fontana, A. & Frey, J. 1994. The art of science. (In Hadar, L. & Dahlbäck O., eds. *The handbook of qualitative research*. New York: McGraw-Hill. p. 361-376).
- Ford, M. & Kent, D. 2009. Gender differences in student financial market attitudes and awareness: An exploratory study. *Journal of education for business*, 85(1):7-12.
- Fouché, C.B. & Delport, C.S.L. 2011. Introduction to the research process. (In De Vos, A.S., ed. *Research at grass roots: for the social sciences and human service professions*. 4th ed. Pretoria: Van Schaik.
- Fouché, C.B., Delport, C.S.L. & De Vos, A.S. 2011. Quantitative research designs. (In De Vos, A.S., ed. *Research at grass roots: for the social sciences and human service professionals*. Pretoria: Van Schaik.
- Fraenkel, J.R. & Wallen, N.E. 2003. *How to design and evaluate research in education*. Boston, MA: McGraw-Hill Higher Education.

- Frels, R.K. & Onwuegbuzie, A.J. 2013. Administering quantitative instruments with qualitative interviews: A mixed research approach. *Journal of Counseling & Development*, 91(2):184-194.
- Friend, I. & Blume, M. 1975. The Demand for Risky Assets. *American Economic Review*,(65):900-922.
- Gedmintiene, D.D. & Visockaite, A. 2016. The importance of personal finance for investment and applying financial behaviour principles in personal finance investment decisions in Lithuania. *Socialiniu Mokslu Studijos*, 8(1):118-131.
- Gill, P., Stewart, K., Treasure, E. & Chadwick, B. 2008. Methods of data collection in qualitative research: interviews and focus groups. *British dental journal*, 204(6):291-295.
- Glicken, M.D. 2003. *Social research: a simple guide*. Boston: Allyn & Bacon.
- Gorter, J. & Bikker, J. 2011. Investment risk taking by institutional investors. https://www.dnb.nl/binaries/working%20paper%20294_tcm46-253007.pdf Date of access: 16 Oct. 2017.
- Grable, J. & 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. 1997. Investor risk tolerance: Testing the efficacy of demographics as differentiating and classifying factors. Virginia Polytechnic Institute and State University.
- 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. & Joo, S.-h. 1997. Determinants of risk preference: Implications for family and consumer science professionals. *Family Economics and Resource Management Biennial*, 2:19-24.
- Grable, J.E. & Joo, S.-H. 2006. Student racial differences in credit card debt and financial behaviors and stress. *College Student Journal*, 40(2):400-408.
- Grable, J.E. & Joo, S. 1999. Factors related to risk tolerance: A further examination. *Consumer Interests Annual*, 45:53-58.
- Grable, J.E. & Lytton, R.H. 2001. Assessing the concurrent validity of the SCF risk tolerance question. *Journal of Financial Counseling and Planning*, 12(2):43.
- Grable, J.E., McGill, S. & Britt, S. 2009. Risk tolerance estimation bias: The age effect. *Journal of Business & Economics Research (JBER)*, 7(7):1-12.
- Grable, J.E. & Roszkowski, M.J. 2007. Self-assessments of risk tolerance by women and men. *Psychological Reports*, 100(3):795-802.
- Grable, J.E. & Schumm, W. 2010. An estimate of the reliability of the Survey of Consumer Finances risk-tolerance question. *Journal of Personal Finance*, 9:117-131.
- Gravetter, F.J. & Forzano, L.-A.B. 2003. Research methods for the behavioral sciences. Belmont: Wadsworth/Thomson Learning.
- Greeff, M. 2011. Information collection: interviewing. (In De Vos, A.S., ed. Research at grass roots: for the social sciences and human service professions. 4th ed. Pretoria: Van Schaik.
- Greene, J.C. 2008. Is mixed methods social inquiry a distinctive methodology? *Journal of mixed methods research*, 2(1):7-22.

- Grimes, D.A. & Schulz, K.F. 2002. Descriptive studies: what they can and cannot do. *The Lancet*, 359(9301):145-149.
- Grinnell, R.M. & Unrau, Y.A. 2005. Social work research and evaluation: quantitative and qualitative approaches. 7th ed. New York: Oxford University Press.
- Guba, E.G. & Lincoln, Y.S. 1994. Competing paradigms in qualitative research. *Handbook of qualitative research*, 2:105-117.
- Guest, G., Bunce, A. & Johnson, L. 2006. How many interviews are enough? An experiment with data saturation and variability. *Field methods*, 18(1):59-82.
- Gujarati, D.N. & Porter, D.C. 1999. Essentials of econometrics. 4th ed. New York: McGraw-Hill.
- Gutter, M. & Copur, Z. 2011. Financial behaviors and financial well-being of college students: Evidence from a national survey. *Journal of Family and Economic Issues*, 32(4):699-714.
- Hadar, L., Sood, S. & Fox, C.R. 2013. Subjective knowledge in consumer financial decisions. *Journal of Marketing Research*, 50(3):303-316.
- Halcomb, E.J. & Davidson, P.M. 2006. Is verbatim transcription of interview data always necessary? *Applied Nursing Research*, 19(1):38-42.
- Haliassos, M. & Bertaut, C.C. 1995. Why do so few hold stocks? *The Economic Journal*, 105(432):1110-1129.
- 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, R., Rohm, A. & Crittenden, V.L. 2011. We're all connected: the power of the social media ecosystem. *Business Horizons*, 54(3):265-273.

- Hanna, S.D. & Lindamood, S. 2004. An improved measure of risk aversion. *Financial Counseling and Planning*, 15(2):27-38.
- Hanson, W.E., Creswell, J.W., Clark, V.L.P., Petska, K.S. & Creswell, J.D. 2005. Mixed methods research designs in counseling psychology. *Journal of counseling psychology*, 52(2):224-235.
- Harlow, W. & Brown, K.C. 1990. Understanding and assessing financial risk tolerance: a biological perspective. *Financial Analysts Journal*, 46(6):50-62.
- Hawley, C.B. & Fujii, E.T. 1993. An empirical analysis of preferences for financial risk: Further evidence on the Friedman–Savage model. *Journal of Post Keynesian Economics*, 16(2):197-204.
- Henry, R.A., Weber, J.G. & Yarbrough, D. 2001. Money management practices of college students. *College Student Journal*, 35(2):244-249.
- Heron, J. & Reason, P. 1997. A participatory inquiry paradigm. *Qualitative inquiry*, 3(3):274-294.
- Hilgert, M.A., Hogarth, J.M. & Beverly, S.G. 2003. Household financial management: The connection between knowledge and behavior. *Federal Reserve Bulletin*, 89(7):309-322.
- Hoevenaars, R.P., Molenaar, R.D., Schotman, P.C. & Steenkamp, T.B. 2008. Strategic asset allocation with liabilities: beyond stocks and bonds. *Journal of Economic Dynamics and Control*, 32(9):2939-2970.
- Holstein, J.A. & Gubrium, J.F. 1995. *The active interview*. Thousand Oaks, CA: Sage.
- Hong, H., Kubik, J.D. & Stein, J.C. 2004. Social interaction and stock-market participation. *The Journal of Finance*, 59(1):137-163.

Investopedia. 2017. Demo account. <http://www.investopedia.com/terms/d/demo-account.asp> Date of access: 14 Oct. 2017.

Irwin Jr, C.E. 1993. Adolescence and risk taking: How are they related.

Jackson, S.L. 2003. Research methods and statistics: a critical thinking approach. London: Thomson Wadsworth.

Jarbandhan, D.B. & Schutte, D. 2006. Using the survey procedure and interview data collection technique. *Journal of Public Administration*, 41(3):669-681.

Jianakoplos, N.A. & Bernasek, A. 2006. Financial risk taking by age and birth cohort. *Southern Economic Journal*, 25(7):981-1001.

Joffe, H. 2012. Thematic analysis. (In Kale, S., ed. Qualitative research methods in mental health and psychotherapy: A guide for students and practitioners. Hampshire: Sage. p. 210-223).

Johnson, R.B. & Onwuegbuzie, A.J. 2004. Mixed methods research: a research paradigm whose time has come. *Educational researcher*, 33(7):14-26.

Joo, S., Durband, D.B. & Grable, J. 2008. The academic impact of financial stress on college students. *Journal of College Student Retention: Research, Theory & Practice*, 10(3):287-305.

Joo, S., Grable, J.E. & Bagwell, D.C. 2003. Credit card attitudes and behaviors of college students. *College Student Journal*, 37(3):405-420.

Joshi, A., Kale, S., Chandel, S. & Pal, D. 2015. Likert scale: explored and explained. *British Journal of Applied Science & Technology*, 7(4):396.

JSE. 2017. Investing. <https://www.jse.co.za/grow-my-wealth/investing> Date of access: 27 Mar. 2017.

- Kannadhasan, M. & Nandagopal, R. 2010. Influence of decision makers' characteristics on risk analysis in strategic investment decisions. *Journal of Modern Accounting and Auditing*, 6(4):38-44.
- Kaplowitz, M.D. & Hoehn, J.P. 2001. Do focus groups and individual interviews reveal the same information for natural resource valuation? *Ecological Economics*, 36(2):237-247.
- Kim, B. 2001. Social constructivism. *Emerging perspectives on learning, teaching, and technology*, 1(1):16.
- Kitchenham, B. & Pfleeger, S.L. 2002. Principles of survey research: populations and samples. *Software Engineering Notes*, 27(5):17-20.
- Kondracki, N.L., Wellman, N.S. & Amundson, D.R. 2002. Content analysis: review of methods and their applications in nutrition education. *Journal of nutrition education and behavior*, 34(4):224-230.
- Konopásek, Z. 2007. Making thinking visible with Atlas. ti: Computer assisted qualitative analysis as textual practices. *Historical Social Research/Historische Sozialforschung. Supplement*:276-298.
- Krauss, S.E. 2005. Research paradigms and meaning making: a primer. *Qualitative Report*, 10(4):758-770.
- Kugler, T., Connolly, T. & Ordonez, L.D. 2010. Emotion, decision, and risk: Betting on gambles versus betting on people. *Journal of Behavioral Decision Making*, 25:123-134.
- Kuhnen, C.M. & Knutson, B. 2011. The influence of affect on beliefs, preferences, and financial decisions. *Journal of Financial and Quantitative Analysis*, 46(03):605-626.

Kumar, R. 2005. *Research methodology: a step-by-step guide for beginners*. 2nd ed. London: Sage.

Kuzniak, S., Rabbani, 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(2):177.

Lacey, A. & Luff, D. 2001. *Qualitative data analysis*.

<http://www.trentfocus.org.uk/Resources/Qualitative%20Data%20Analysis.pdf> Date of access: 01 Jun. 2017.

Lai, M. & Tan, W. 2009. An empirical analysis of personal financial planning in an emerging economy. *European Journal of Economics, Finance and Administrative Sciences*, 16:99-111.

Larson, L.R., Eastman, J.K. & Bock, D.E. 2016. A multi-method exploration of the relationship between knowledge and risk: the impact on Millennials' retirement investment decisions. *Journal of Marketing Theory and Practice*, 24(1):72-90.

Lawrence, A. 2013. *Managing investment risk* <http://www.lawrence.lib.ks.us/wp-content/uploads/2014/03/3-Managing-Investment-Risk.pdf> Date of access: 14 Oct. 2017.

Lee, H.K. & Hanna, S. 1995. Investment portfolios and human wealth. *Journal of Financial Counseling and Planning*, 6(2):147-153.

Lee, M.-C. 2009. Predicting and explaining the adoption of online trading: An empirical study in Taiwan. *Decision Support Systems*, 47(2):133-142.

Leedy, P.D. & Ormrod, J.E. 2005. *Practical research: planning and design*. 8th ed. New Jersey: Pearson.

- Lefcourt, H.M. 1965. Risk taking in Negro and white adults. *Journal of Personality and Social Psychology*, 2(5):765-770.
- Leigh, J.P. 1986. Accounting for tastes: correlates of risk and time preferences. *Journal of Post Keynesian Economics*, 9(1):17-31.
- Lennart, S. 2000. Factors in risk perception. *Journal of Risk Analysis*, 20(1):1-11.
- Lennart, S., Bjørg-Elin, M. & Torbjørn, R. 2004. Explaining risk perception: An evaluation of the psychometric paradigm in risk perception research.
http://www.svt.ntnu.no/psy/Torbjorn.Rundmo/psychometric_paradigm.pdf Date of access: 01 Nov. 2017.
- Lewis, J. & Ritchie, J. 2003. Generalising from qualitative research. (In Babbie, E. & Rabbani A., eds. *Qualitative Research Practice: A guide for social science students and researchers*. London: McGraw-Hill. p. 347-362).
- Lockwood, P. & Kunda, Z. 1997. Superstars and me: Predicting the impact of role models on the self. *Journal of Personality and Social Psychology*, 73(1):91-103.
- Luborsky, M.R. & Rubinstein, R.L. 1995. Sampling in qualitative research rationale, issues, and methods. *Research on aging*, 17(1):89-113.
- Lusardi, A., Mitchell, O.S. & Curto, V. 2010. Financial literacy among the young. *Journal of Consumer Affairs*, 44(2):358-380.
- MacCrimmon, K.R. & Wehrung, D.A. 1990. Characteristics of risk taking executives. *Management Science*, 36(4):422-435.
- Mack, N., Woodsong, C., MacQueen, K.M., Guest, G. & Namey, E. 2005. *Qualitative research methods: a data collectors field guide*. North Carolina: Family Health International.

- Mackenzie, N. & Knipe, S. 2006. Research dilemmas: Paradigms, methods and methodology. *Issues in educational research*, 16(2):193-205.
- Mahoney, J. & Goertz, G. 2006. A tale of two cultures: contrasting quantitative and qualitative research. *Political analysis*, 14(3):227-249.
- Malhotra, N.K. 2010. Marketing research: an applied orientation. 6th ed. Upper Saddle River: Pearson.
- Mandell, L. & Klein, L.S. 2009. The impact of financial literacy education on subsequent financial behavior. *Journal of Economic and Financial Sciences*, 5(26):121-135.
- Marais, H.T. 2013. Black Generation Y students' attitudes towards sales promotion techniques on low involvement products. North-West University. (*Dissertation*).
- Markiewicz, Ł. & Weber, E.U. 2013. DOSPERT's Gambling Risk-Taking Propensity Scale Predicts Excessive Stock Trading. *Journal of Behavioral Finance*, 14(1):65-78.
- Markovich, C.A. & DeVaney, S.A. 1997. College seniors' personal finance knowledge and practices. *Journal of Family and Consumer Sciences*, 89(3):61-65.
- Marlow, C. & Boone, S. 2005. Research methods for generalist social work. Belmont, CA: Brooks/Cole-Thomson Learning Inc.
- Marshall, M.N. 1996. Sampling for qualitative research. *Family practice*, 13(6):522-526.
- Martin, C.A. & Bush, A.J. 2000. Do role models influence teenagers' purchase intentions and behavior? *Journal of Consumer Marketing*, 17(5):441-453.
- Marx, J., Mpofu, R.T., De Beer, J.S., Mynhardt, R.H. & Nortje, A. 2013. Investment management. 4th ed. Pretoria: Van Schaik.

- Mason, M. 2010. Sample size and saturation in PhD studies using qualitative interviews. (In. Forum qualitative Sozialforschung/Forum: qualitative social research organised by.
- McDaniel, C. & Gates, R. 2010. Marketing research essentials. 7th ed. USA: John Wiley & Sons.
- McInish, T.H. 1982. Individual investors and risk-taking. *Journal of Economic Psychology*, 2(2):125-136.
- McLendon, T. 2016. The Millennial investor: mutual funds versus exchange traded funds. University of Arkansas. (*Mini-dissertation*).
- Mertens, D.M. 2012. Transformative mixed methods: Addressing inequities. *American Behavioral Scientist*, 56(6):802-813.
- Messy, F. & Monticone, C. 2012. The status of financial education in Africa: OECD working papers. www.oecd-ilibrary.org/finance.../the-status-offinancial-education-in-
Date of access: 16 Aug. 2017.
- Moller, N.P., Timms, J. & Alilovic, K. 2009. Risky business or safety net? Trainee perceptions of personal therapy: a qualitative thematic analysis. *European Journal of Psychotherapy and Counselling*, 11(4):369-384.
- Monette, D.R., Sullivan, T.J. & DeJong, C.R. 2013. Applied social research: a tool for the human services. 9th ed. Belmont, CA: Cengage Learning.
- Moorman, C., Diehl, K., Brinberg, D. & Kidwell, B. 2004. Subjective knowledge, search locations, and consumer choice. *Journal of Consumer Research*, 31(3):673-680.
- Morgan, D.L. 1997. Focus groups as qualitative research. Thousand Oaks, CA: Sage.

- Morgan, D.L. 2007. Paradigms lost and pragmatism regained methodological implications of combining qualitative and quantitative methods. *Journal of mixed methods research*, 1(1):48-76.
- Morse, J. 1991. Qualitative nursing research: a contemporary dialogue. Newbury Park: Sage
- Morse, J. & Niehaus, L. 2009. Principles and procedures of mixed methods design. Walnut Creek, CA: Left Coast Press.
- Morse, J.M. 1994. Designing funded qualitative research. (In Denzin, N.K. & Lincoln Y.S., eds. Handbook of qualitative research. California: Thousand Oaks. p. 220-235).
- Mottola, G.R. 2014. The financial capability of young adults - a generational view. *In* Insights: Financial Capability. Washington DC: FINRA Investor Education Foundation.
- Mouton, J. & Babbie, E. 2001. The practice of social research. Cape Town: Wadsworth Publishing Company.
- Mulhall, A. 2003. In the field: notes on observation in qualitative research. *Journal of Advanced Nursing*, 41(3):306-313.
- Mundy, S. & Moseke, C. 2011. Towards an effective framework for financial literacy and financial protection in Uganda. Available: www.bou.or.ug/.../Financial_Literacy/Framework/.../Framework_for_ Date of access: 15 Aug. 2017.
- Nabi, R.L., Roskos-Ewoldsen, D. & Dillman Carpentier, F. 2008. Subjective knowledge and fear appeal effectiveness: Implications for message design. *Health communication*, 23(2):191-201.

Nedbank. 2017. Savings Accounts.

<https://www.nedbank.co.za/content/nedbank/desktop/gt/en/personal/save-and-invest/savings-accounts.html> Date of access: 27 Mar. 2017.

Nell, H.W. 2005. A postmodern, sociological exploration of current dream-related discourses and practices. North-West University. (Thesis - PhD).

Norvilitis, J.M., Merwin, M.M., Osberg, T.M., Roehling, P.V., Young, P. & Kamas, M.M. 2006. Personality factors, money attitudes, financial knowledge, and credit-card debt in college students¹. *Journal of Applied Social Psychology*, 36(6):1395-1413.

NWU. 2017. Manual for Master's and Doctoral studies.

<http://library.nwu.ac.za/sites/library.nwu.ac.za/files/files/documents/manualpostgrad.pdf>
Date of access: 29 Mar. 2017.

OANDA. 2017. CFD and forex demo trading account. <https://www.oanda.com/forex-trading/platform/fxtrade-demo-platform> Date of access: 15 Sep. 2017.

Oliver, D.G., Serovich, J.M. & Mason, T.L. 2005. Constraints and opportunities with interview transcription: Towards reflection in qualitative research. *Journal of Social and Behavioral Sciences*, 84(2):1273-1289.

Östlund, U., Kidd, L., Wengström, Y. & Rowa-Dewar, N. 2011. Combining qualitative and quantitative research within mixed method research designs: a methodological review. *International journal of nursing studies*, 48(3):369-383.

Pallant, J.F. 2007. SPSS survival manual: A step-by-step guide to data analysis with SPSS (3rd ed.). New York: McGraw-Hill.

Pålsson, A.-M. 1996. Does the degree of relative risk aversion vary with household characteristics? *Journal of Economic Psychology*, 17(6):771-787.

Parasuraman, A. 1991. *Marketing research*. 2nd ed. Reading: Addison Wesley.

Park, P. 1992. The discovery of participatory research as a new scientific paradigm: personal and intellectual accounts. *The American Sociologist*, 23(4):29-42.

Pedhazur, E.J. & Schmelkin, L.P. 1991. *Measurement, design, and analysis: an integrated approach*. Hillsdale, New Jersey: Lawrence Erlbaum Associates.

Phillips, D.C. & Burbules, N.C. 2000. *Postpositivism and educational research*. Oxford: Rowman & Littlefield.

Poland, B.D. 1995. Transcription quality as an aspect of rigor in qualitative research. *Qualitative Inquiry*, 1(3):290-310.

Ponterotto, J.G. 2005. Qualitative research in counseling psychology: a primer on research paradigms and philosophy of science. *Journal of counseling psychology*, 52(2):126-136.

Power, L., Hobbs, J. & Ober, A. 2011. An Empirical analysis of the effect of financial education on graduating business students' perceptions of their retirement planning familiar, motivation, and preparedness. *Journal of Risk Management and Insurance Review*, 14(1):89-105.

Psacharopoulos, G. 1994. Returns to investment in education: A global update. *World Development*, 22(9):1325-1343.

Quinlan, C. 2011. *Business research methods*. Hampshire: Cengage Learning.

Quinlan, C., Babin, B., Carr, J., Griffin, M. & Zikmund, W. 2015. *Business research methods*. Andover: Cengage Learning.

Radcliffe, R.C. 1990. *Investment: concepts, analysis, strategy*. New York: Scott Foresman.

- Raju, P.S., Lonial, S.C. & Mangold, W.G. 1995. Differential effects of subjective knowledge, objective knowledge, and usage experience on decision making: An exploratory investigation. *Journal of consumer psychology*, 4(2):153-180.
- Reilly, F.K. & Brown, K.C. 2011. Investment analysis and portfolio management: Cengage Learning.
- Riley, S. & Reason, P. 2015. Cooperative inquiry: an action research practice. (In Smith, J.A., ed. *Qualitative psychology: a practical guide to research methods*. London: Sage.
- Ritchie, J. & Lewis, J. 2003. *Qualitative research practice: a guide for social science students and researchers*. London Sage.
- Ritchie, J., Lewis, J., Nicholls, C.M. & Ormston, R. 2013. *Qualitative research practice: a guide for social science students and researchers*. London: Sage.
- Ritchie, J. & Spencer, L. 2002. Qualitative data analysis for applied policy research. *The Qualitative Researcher's Companion*, 573:305-329.
- Robb, C.A. 2011. Financial knowledge and credit card behavior of college students. *Journal of Family and Economic Issues*, 32(4):690-698.
- Roets, C.R.Q. 2013. Black Generation Y students' attitudes towards the demarketing of smoking and alcohol consumption. North-West University. (*Dissertation - MCom*).
- Rootman, C. & Antoni, X. 2015. Investigating financial literacy to improve financial behaviour among Black consumers. *Journal of Economic and Financial Sciences*, 8(2):474-494.

- 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*, 6:42-53.
- Roszkowski, M.J., Snelbecker, G.E. & Leimberg, S. 1993. Risk tolerance and risk aversion. *The Tools and Techniques of Financial Planning*, 4:213-225.
- Rule, S. 2015. Examining the influences of an audience and individual differences on risk-taking behavior. Appalachian State University.
- Rutgers. 2017. Investment risk tolerance quiz.
<https://njaes.rutgers.edu/money/riskquiz/> Date of access: 14 Oct. 2017.
- Ryan, A.B. 2006. Post-positivist approaches to research. (In Ryan, A.B., ed. *Researching and Writing your Thesis: a guide for postgraduate students*. Maynooth: Mace.
- Sabherwal, S., Sarkar, S.K. & Zhang, Y. 2008. Online talk: does it matter? *Managerial Finance*, 34(6):423-436.
- Sabri, M.F., MacDonald, M., Hira, T.K. & Masud, J. 2010. Childhood consumer experience and the financial literacy of college students in Malaysia. *Family and Consumer Sciences Research Journal*, 38(4):455-467.
- Sabri, N.A.A. 2016. The relationship between the level of financial literacy and investment decision-making Millennials in Malaysia. *Taylor's Business Review*, 6:39-47.
- Sam, Y. & Geetha, C. 2012. What were the factors that influence financial management behavior of undergraduates? *International Journal of Business Trends and Technology*, 1(2):1-10.

Sanlam. 2017. Risk profiling questionnaire. <https://www.sanlamreality.co.za/wealth-sense/risk-profiling-questionnaire/> Date of access: 5 Oct. 2017.

Sarantakos, S. 2012. Social research. 4th ed. Hampshire: Palgrave Macmillan.

SAS. 2017. Statistical analysis. https://www.sas.com/en_za/insights/analytics/statistical-analysis.html Date of access: 07 Jul. 2017.

Schooley, D.K. & Worden, D.D. 1996. Risk aversion measures: Comparing attitudes and asset allocation. *Financial Services Review*, 5(2):87-99.

Schurink, W., Fouche, C.B. & De Vos, A.S. 2011. Qualitative data analysis. (In De Vos, A.S., ed. Research at grass roots: for the social sciences and human service professions. 4th ed. Pretoria: Van Schaik).

Schwandt, T.A. 2000. Three epistemological stances for qualitative inquiry: Interpretivism, hermeneutics, and social constructionism. (In Denzin, N.K. & Lincoln Y.S., eds. Handbook of qualitative research. Thousand Oaks, CA: Sage.

Sebstad, J., Cohen, M. & Stack, K. 2006. Assessing the outcome of financial education. <http://microfinanceopportunities.org/docs/Assessing%20the%20Outcomes%20of%20Financial%20Education.pdf> Date of access: 27 Aug. 2017.

Seidman, I. 1998. Interviewing as qualitative research: a guide for researchers in education and the social sciences. 2nd ed. New York: Teachers College Press.

Shukla, P. 2008. Essentials of marketing research. <http://bookboon.com/en/business-ebooks/marketing-ebooks/essentials-of-marketing-research-part-ii> Date of access: 11 Jun. 2017.

- Shuttleworth, C.C. 2011. A financial literacy education framework for non-financial individual in organisations. *Progressio*, 33(1):94-115.
- Silver, L., Stevens, R., Wrenn, B. & Loudon, D. 2013. The essentials of marketing research. 3rd ed. New York: Routledge, Taylor & Francis Group.
- Sindhu, K.P. & Kumar, S.R. 2014. Influence of risk perception of investors on investment decisions: an empirical analysis. *Journal of Finance and Bank Management*, 2(2):15-25.
- Slovic, P. 1972. Psychological study of human judgment: Implications for investment decision making. *The Journal of Finance*, 27(4):779-799.
- Snelbecker, G.E., Roszkowski, M.J. & Cutler, N.E. 1990. Investors' risk tolerance and return aspirations, and financial advisors' interpretations: A conceptual model and exploratory data. *Journal of Behavioral Economics*, 19(4):377-393.
- Standard Bank. 2017. Savings and investments.
<http://www.standardbank.co.za/standardbank/Personal/Banking/Savings-and-investments#tab1> Date of access: 27 Mar. 2017.
- Statman, M. 2000. Socially responsible mutual funds (corrected). *Financial Analysts Journal*, 56(3):30-39.
- StatsSA. 2016. Mid-year population estimates.
<https://www.statssa.gov.za/publications/P0302/P03022016.pdf> Date of access: 21 Mar. 2016.
- Stebbins, R.A. 2001. Exploratory research in the social sciences: qualitative research methods. Thousand Okas, CA: Sage.

- Struwig, F. & Stead, G.B. 2013. Research: planning, designing and reporting. 2nd ed. Cape Town: Pearson.
- Strydom, H. 2011a. Participatory action research. (*In De Vos, A.S., ed. Research at grass roots: for the social sciences and human services professions. Pretoria: Van Schaik.*
- Strydom, H. 2011b. Sampling in the quantitative paradigm. (*In De Vos, A.S., ed. Research at grass roots: for the social sciences and human service professionals. 4th ed. Pretoria: Van Schaik.*
- Sudman, S. & Blair, E. 1998. Marketing research: A problem-solving approach. Boston: McGraw-Hill.
- Sung, J. & Hanna, S. 1996. Factors related to risk tolerance. *Journal of Financial Counseling and Planning*, 7:11-19.
- Swart, N. 2012. Personal financial management: the Southern African guide to personal financial planning. 3rd ed. Claremont: Juta.
- Synodinos, C. 2013. Black generation Y students' environmental concerns, attitudes towards green advertising and environmental behaviour. North-West University. (*Dissertation - MCom*).
- Tansey, O. 2007. Process tracing and elite interviewing: a case for non-probability sampling. *Political Science & Politics*, 40(4):765-772.
- Teddlie, C. & Yu, F. 2007. Mixed methods sampling: A typology with examples. *Journal of mixed methods research*, 1(1):77-100.
- Tracy, S.J. 2013. Qualitative research methods: collecting evidence, crafting analysis, communicating impact. Malden, Massachusetts: Wiley-Blackwell.

Tse, A., Chua, J., Chua, J., Wu, N. & Lan, T. 2010. Introduction to personal investing. Singapore: IMAS.

Underdahl, J., Palacio-Cayetano, J. & Stevens, R. 2001. Practice makes perfect. *Learn. Lead. Techn*, 28:26-31.

Unrau, Y.A., Gabor, P.A. & Grinnell, R.M. 2007. Evaluation in social work: the art and science of practice. New York: Oxford University Press.

Van Auken, H., Fry, F.L. & Stephens, P. 2006. The influence of role models on entrepreneurial intentions. *Journal of Developmental Entrepreneurship*, 11(02):157-167.

Van den Berg, R.G. 2017. Introduction to SPSS. <https://www.spss-tutorials.com/spss-what-is-it/> Date of access: 18 Jun. 2017.

Van der Merwe, E.K. 2009. A psychological perspective on God-belief as a source of meaning and well-being. North-West University. (*Thesis - PhD*).

Van Deventer, M. 2013. Black Generation Y students' knowledge of and attitudes towards personal financial management. North-West University. (*Dissertation*).

Vanguard. 2016. Investment fundamentals guide. <https://www.vanguard.co.uk/documents/portal/literature/investment-fundamentals-guide.pdf> Date of access: 15 Oct. 2017.

Visa. 2012. Connecting with the Millennials - a Visa study. http://www.visa-asia.com/ap/sea/mediacenter/pressrelease/includes/uploads/Visa_Gen_Y_Report_2012_LR.pdf Date of access: 21 Mar. 2017.

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

- Volpe, R.P., Kotel, J.E. & Chen, H. 2002. A survey of investment literacy among online investors. *Journal of Financial Counseling and Planning*, 13(1):1-9.
- Wallach, M.A. & Kogan, N. 1961. Aspects of judgment and decision making: Interrelationships and changes with age. *Systems Research and Behavioral Science*, 6(1):23-36.
- Wang, H. & Hanna, S. 1997. Does risk tolerance decrease with age? *Journal of Financial Counseling and Planning*, 8(2):27-32.
- Wang, L. & Chartrand, T.L. 2015. Morningness–Eveningness and Risk Taking. *The Journal of Psychology*, 149(4):394-411.
- Ward, S. 1974. Consumer socialization. *Journal of Consumer Research*, 1(2):1-14.
- Weber, E.U., Blais, A.R. & Betz, N.E. 2002. A domain-specific risk-attitude scale: Measuring risk perceptions and risk behaviors. *Journal of behavioral decision making*, 15(4):263-290.
- Welman, J.C., Kruger, F. & Mitchell, B. 2005. Research methodology. Cape Town: Oxford.
- Williams, M. 2000. Interpretivism and generalisation. *Sociology*, 34(2):209-224.
- Winger, B.J. & Frasca, R.R. 2006. Personal financial planning: an integrated approach. 7th ed. Upper Saddle River: Prentice Hall.
- Wynd, C.A., Schmidt, B. & Schaefer, M.A. 2003. Two quantitative approaches for estimating content validity. *Western Journal of Nursing Research*, 25(5):508-518.
- Xiao, J.J. 2008. Handbook of consumer finance research: Springer.
- Xiao, J.J., Tang, C. & Shim, S. 2009. Acting for happiness: Financial behavior and life satisfaction of college students. *Social indicators research*, 92(1):53-68.

- Yao, R., Sharpe, D.L. & Wang, F. 2011. Decomposing the age effect on risk tolerance. *Journal of Socio-Economics*, 40(211):879-887.
- Yin, R. 2009. Case study research: design and methods essential guide to qualitative methods in organizational research. Thousand Oaks, CA: Sage.
- Yoong, J. 2010. Behavioural economics and financial education. *Journal of Economic and Financial Sciences*, 8(2):56-71.
- Zhong, L.X. & Xiao, J.J. 1995. Determinants of family bond and stock holdings. *Journal of Financial Counseling and Planning*, 6:1-8.
- Zikmund, W.G. & Babin, B. 2013. Essentials of marketing research. 5th ed. China: South-Western Cengage Learning.

ANNEXURE A: FINAL INTERVIEW SCHEDULE

1. Where did you learn about investing?
2. What motivated you, as a student, to start investing?
3. What are some of the barriers/difficulties you faced when you first started investing?
4. What is the source of the money you use to invest?
5. Why did you decide to invest your money, instead of saving it?
6. Tell me about what you are investing in.
7. How long have you been investing in those instruments?
8. What is your investment structure? (Independent, group, financial advisors)
9. What do you think about investing now compared to before you began investing?
10. What do you enjoy about investing? (apart from making money)
11. What do you dislike about investing? (apart from losing money)
12. In your opinion, what are some of the advantages of being a student investor?
13. Ultimately, what would you say does investing mean to you?
14. If you could start over, in terms of your investing, what would you do differently?
15. Are there any recommendations you have for students who want to start investing?
16. Is there anything else you would like to share with me about being a student investor?

ANNEXURE B: QUESTIONNAIRE



Measuring student investment potential: a mixed methods approach

Please do not put your name, surname, student number or any identifying marks on your questionnaire.

You are being invited to take part in a research project that forms part of a MCom study in Risk Management. The purpose of the study is to measure student investment potential by identifying and analysing the extent of South African students' investing behaviour

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 no, 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 did agree to take part. You are kindly requested not to withdraw without careful consideration, since it may have a detrimental effect on, inter alia, the statistical reliability of the project.

By agreeing to take part in the project, you are also giving consent for the data that will be generated to be used by the researchers for scientific purposes as they see fit. The data will be **confidential** and your results will be reported in aggregate (as part of the whole sample) and not individually. The questionnaire should take, on average, less than 30 minutes to complete.

This study has received ethical clearance from the Social and Technological Sciences Research Ethics Committee of the Faculty of Economic Sciences & IT of the North-West University and received the following ethics clearance number: ECONIT-2017-022. The study has also received clearance from the NWU Research Data Gatekeeper Committee (NWU-RDGC) with the following reference number: ECONIT-2017-022. The study will be conducted according to the ethical guidelines and principles as prescribed to by the North-West University (www.nwu.ac.za). 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.

Should you have any queries please contact Rearabetswe Masenya at riahmasenya@gmail.com or Antonios Evangelou at evangelou.antonios@gmail.com. Alternatively, you can contact Dr Diana Viljoen at (016) 910-3403, Diana.Viljoen@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 the Social and Technological Sciences Research Ethics Committee (Prof Dawid Jordaan) at (016) 910-3260 or Dawid.Jordaan@nwu.ac.za.

SECTION A

Age	
------------	--

Gender	Male	1
	Female	2

Race	African	1
	White	2
	Coloured	3
	Asian/Indian	4

Marital status:	Never married	1
	Married	2
	Divorced	3

Nationality	South African	1
--------------------	---------------	---

Other: _____

What is your home province (if you live in South Africa?)	
--	--

What language do you mostly speak at home?	Sesotho	1	Tshivenda	4	SiSwati	7	Setswana	10
	IsiZulu	2	IsiNdebele	5	English	8	Xitsonga	11
	Sepedi	3	IsiXhosa	6	Afrikaans	9	Other	12

What degree are you enrolled in?	1	BA
	2	BCom
	3	BEEd
	4	BSc
	5	BTech
	6	Diploma
	7	Other

Which academic year of study are you in?	1	1 st
	2	2 nd
	3	3 rd / 4 th
	4	Hons
	5	MCom
	6	PhD

Indicate your current situation:	Full-time student only	Part-time student only	Full-time student/Part-time worker	Part-time student/Full-time worker
---	------------------------	------------------------	------------------------------------	------------------------------------

Indicate your monthly income/allowance:	R500 or less	R1001 to R1500	R2001 to R2500	More than R3000
	R501 to R1000	R1501 to R2000	R2501 to R3000	

Most of your income/allowance comes from?	Allowance (Parents/Relatives)	Bursary/Scholarship	Salary (Part-time or full-time job)	Savings
	Other (specify):			

Do you have any dependents?	1	Yes
	2	No

If yes, please indicate the number of dependents:	
--	--

SECTION B

Do you save?	1	Yes
	2	No

If yes, what type of savings account do you have?	1	Flexible savings
	2	Fixed-term savings
	3	Tax-free savings/call account
	4	Call deposit
	5	Not sure

Do you invest? If yes, please move to <u>Section C</u>. If no, continue below.	1	Yes
	2	No

What are your reasons for not investing?	1	Don't know where to start
	2	Lack of investment knowledge
	3	Too much effort
	4	Lack of time
	5	Investing is intimidating
	6	Other (specify):

If you do not invest, would you consider investing?	1	Yes
	2	No

What percentage of your income <u>would</u> you invest?	1	0% - 5%
	2	5% - 10%
	3	10% - 25%
	4	25% - 50%
	5	50% or more

SECTION C

1	What type of investments do you have?
1	Money market account
2	Government bonds
3	Pension/Retirement annuity
4	Stocks/Shares
5	Derivatives (FOREX, ETFs)
6	Investment club/group (e.g. stokvel)
7	Other (specify):

What percentage of your income do you invest?	1	0% - 5%
	2	5% - 10%
	3	10% - 25%
	4	25% - 50%

	5	50% or more
--	---	-------------

2	How long have you had the investments mentioned in Question 1?
	a) Less than 6 months
	b) 6 months
	c) 1 year
	d) More than 1 year
	e) 2-5 years
	f) 5 years or more

SECTION D

For each of the following statements, please indicate how risky you perceive each activity or behaviour to be.

		Extremely unlikely	Moderately unlikely	Somewhat unlikely	Not sure	Somewhat Likely	Moderately Likely	Extremely Likely
1	Betting a day's income at the horse races	1	2	3	4	5	6	7
2	Investing 10% of your annual income in a moderate growth mutual fund	1	2	3	4	5	6	7
3	Investing 5% of your annual income in a very speculative stock	1	2	3	4	5	6	7
4	Betting a day's income on the outcome of a sporting event	1	2	3	4	5	6	7
5	Investing 10% of your annual income in a new business venture	1	2	3	4	5	6	7

SECTION E

1	When you hear "financial risk", what do you think of? Choose one.
	a) Loss
	b) Uncertainty
	c) Opportunity
	d) Thrill
2	In general, how would you describe yourself as a financial risk taker?
	a) Willing to take as much risk as possible to get desired profit
	b) Willing to take risks after completing adequate research
	c) Cautious

	d) Avoid risk as much as possible
3	You are on a TV game show and can choose one of the following. Which would you choose (one option only)?
	a) R 1 000 in cash
	b) A 50% chance to win R 5 000
	c) A 25% chance to win R 10 000
	d) A 5% chance to win R100 000
4	You have just finished saving for a “once-in-a-lifetime” holiday. Three weeks before you plan to leave, you lose your job. You would:
	a) Cancel the holiday
	b) Take a much more modest vacation
	c) Go as scheduled, reasoning that you need the time to prepare for a job search
	d) Extend your vacation, because this might be your last chance to go first-class
5	If you unexpectedly received R 20 000 to invest, what would you do?
	a) Deposit it in a bank account, money market account, or an insured certificate of deposit (low risk)
	b) Invest it in safe high-quality bonds or bond mutual funds (medium risk)
	c) Invest it in stocks or stock mutual funds (high risk)
6	In terms of experience, how comfortable are you investing in high or medium risk investments such as stocks or stock mutual funds?
	a) Not at all comfortable
	b) Somewhat comfortable
	c) Very comfortable
7	Some experts are predicting prices of assets such as gold, jewels, and real estate (hard assets) to increase in value. Bond prices (low risk) may fall as a result. If most of your investments are in high interest government bonds, what would you do?
	a) Keep the bonds
	b) Sell the bonds, put half the money into a high interest savings account, and purchase hard assets with the other half
	c) Sell the bonds and put all the money into hard assets
	d) Sell the bonds, put all the money into hard assets, and borrow money to buy more
8	Given the best and worst case returns of the four investment choices below, which would you prefer?
	a) R 200 gain best case; R 0 gain/loss worst case
	b) R 800 gain best case; R 200 loss worst case
	c) R 2 600 gain best case; R 800 loss worst case

	d) R 4 800 gain best case; R 2 400 loss worst case
9	In addition to whatever you own, you have been given R 2 000. You are now asked to choose between:
	a) A sure gain of R 500
	b) A 50% chance to gain R 1 000 and a 50% chance to gain nothing
10	In addition to whatever you own, you have been given R 2 000. You are now asked to choose between:
	a) A sure loss of R 500
	b) A 50% chance to lose R 1 000 and a 50% chance to lose nothing
11	Suppose a relative left you an inheritance of R 100 000, stipulating in the will that you invest ALL the money in ONE of the following choices. Which one would you select?
	a) A savings account or money market mutual fund (low risk)
	b) A mutual fund that owns stocks and bonds (medium risk)
	c) A portfolio of 15 stocks (high risk)
	d) Commodities like gold, silver, and oil (high risk)
12	If you had to invest R 20 000, which of the following investment choices would you find most appealing?
	a) 60% in low-risk investments, 30% in medium-risk investments, 10% in high-risk investments
	b) 30% in low-risk investments, 40% in medium-risk investments, 30% in high-risk investments
	c) 10% in low-risk investments, 40% in medium-risk investments, 50% in high-risk investments
13	Your trusted friend and neighbour, an experienced geologist, is putting together a group of investors to fund an exploratory gold mining venture. The venture could pay back 50 to 100 times the investment if successful. If the mine is a bust, the entire investment is worthless. Your friend estimates the chance of success is only 20%. If you had the money, how much would you invest?
	a) Nothing
	b) One month's salary
	c) Three month's salary
	d) Six month's salary

SECTION F

Which of the following statements comes closest to the amount of financial risk that you 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

For each of the following statements, please indicate the degree to which you agree or disagree with the following statement.

		Extremely unlikely	Moderately unlikely	Somewhat unlikely	Somewhat Likely	Moderately Likely	Extremely Likely
1	I know much about investment	1	2	3	4	5	6
2	I know how to judge the quality of an investment opportunity	1	2	3	4	5	6
3	I think I know enough about investment to feel pretty confident when I make an investment decision	1	2	3	4	5	6
4	I do not feel very knowledgeable about investment	1	2	3	4	5	6
5	Among my circle of friends, I'm one of the experts on investment	1	2	3	4	5	6
6	Compared to most other people, I know less about investment	1	2	3	4	5	6
7	I have heard of most of the new investment products that are around	1	2	3	4	5	6
8	When it comes to investment, I really don't know a lot	1	2	3	4	5	6
9	I can tell if an investment is worth the price or not	1	2	3	4	5	6

THANK YOU!