Evaluating the effect of fair value adjustments to investment property on profitability ratios

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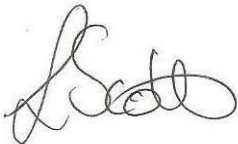
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The responsibility of implementing the recommended language changes rests with the author of the document.

Yours truly,

Linda Scott

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ABSTRACT

Keywords: financial ratios, Top 40 companies, JSE listed companies, financial management, investor decisions, profitability ratios, fair value adjustments, investment property, profit or loss

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South African investors buy and sell shares on the Johannesburg Stock Exchange (JSE) and attention is often directed towards the Top 40 JSE listed companies, that hold the highest market capitalisations (Sharenet, 2019). From an accountancy standpoint, JSE listed companies prepare financial statements on the basis of IFRS principles (PWC, 2011). Among these standards, IAS 40 is to be found. This standard regulates the accounting treatment of investment property, which permits that changes in value to such property may be recognised through the fair value model. The fair value model entails that fair value adjustments are posted to profit or loss accounts, despite the fact that these line items are intangible estimations (IASPlus, 2019). Researchers such as Al-Khadash and Khasawneh (2014:98), Andrews (2014) and Gjorgieva-Traijkovska, Temjanovski and Koleva (2016:7) theorise that profits are distorted by fair value accounting, as fair value adjustments are often dependent on market situations, which leaves accounting transactions subject to possible manipulation and they cannot be expressed as exact values. Yet, investors greatly rely on profitability information to make informed investment decisions (Dillalo, 2015). Profitability ratios are calculated in order to analyse profits.

This study was undertaken to determine whether the recognition of fair value adjustments affect the profitability ratios of sampled companies. A Wilcoxon rank test and Cohen's d-value were used as statistical measures to fulfil this objective. The Top 40 JSE listed entities were populated and judgment sampling was applied in order to calculate the sampling frame. This study was able to demonstrate that 50% to 75% of the sampled companies had profitability ratios, which were impacted by the recognition of fair value adjustments. The study, ultimately, recommends that the prospective investor should eliminate fair value adjustments when profitability ratios are calculated. Financial information cannot be studied in isolation and it is important to explore other avenues such as cash flow availability and qualitative financial factors.

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d	:	Cohen's d-value
IAS	:	International Accounting Standard
IFRS	:	International Financial Reporting Standard
Insig.	:	Insignificant
JSE	:	Johannesburg Stock Exchange
N	:	Number of observations
OCI	:	Other comprehensive income
P	:	Probability value
Par.	:	Paragraph
PPE	:	Property, plant and equipment
PwC	:	PricewaterhouseCoopers
ROA	:	Return on assets
ROE	:	Return on equity
ROI	:	Return on investment
RONA	:	Return on net assets
Sig.	:	Significance

NOTES TO THE READER

The author would like to bring the following under the attention of the reader:

- Referencing in the mini-dissertation was applied as set out in the North West University's referencing guide of 2020. This guide is available at: http://library.nwu.ac.za/sites/library.nwu.ac.za/files/files/documents/referencing-guide-2020b.pdf; and
- In Chapter 3 of this mini-dissertation, the author adopted the statistical guidelines of Pallant (2016). These guidelines were published in the 6th edition of *SPSS survival manual*.

CHAPTER 1:

INTRODUCTION AND BACKGROUND TO THE STUDY

"Understanding how to be a better investor, also makes you a better business manager."
– Charlie Munger

1.1 INTRODUCTION

Investors analyse financial statements when making financial and investment decisions (Correia *et al.,* 2011:5-11). Among such analyses, the investor may be especially interested in analysing the profitability of the entity (Dillalo, 2015). Investors often consider profits generated by an entity to be the cornerstone of their decision, as a return on investment is required (Dillalo, 2015). Due to the inherent nature of accountancy, it is possible to influence profit generation through the application of accounting standards. One such instance is the recognition of fair value adjustments. Such adjustments may be recognised through profit or loss accounts, which, in return, may lead to increases or decreases in net profit for the year. Under these circumstances, it becomes evident that no cash was generated, yet profits may be affected. International Financial Accounting Standard 40 (IAS 40) serves as an example where fair values are recognised through profit or loss when revaluations of investment properties occur (IAS, 2017a:A16).

From a South African perspective, investors buy and sell their shares on the Johannesburg Stock Exchange (JSE). The JSE monitors top performing companies and these companies become the main investment attraction to investors (JSE, 2013). Among these top listed entities, attention is often directed towards the publication of the Top 40 JSE listed companies (Sharenet, 2019). Such companies are selected on the basis of their market capitalisations. Thus, the Top 40 JSE listed entities consists of a variety of companies that hold the highest market capitalisations in South Africa (JSE, 2013). From an accountancy standpoint, JSE listed companies are obliged to prepare financial statements on the basis of IFRS principles (PricewaterhouseCoopers (PwC), 2011), however, some IFRS principles and standards may pose a threat of distorting profits (Al-Khadash & Khasawneh, 2014:98).

Chapter 1 provides an overview of the core concepts that significantly affect the research. A background is set in order to establish an understanding around the

importance of the Top 40 JSE listed companies, how ratio analysis relates to the financial analysis of such companies and how the application of different accounting standards may distort ratio analysis of these companies. Furthermore, attention is given to the concept of 'fair value' and its effect on profits. Par. 1.2 commences this chapter, highlighting the advantages, listing requirements and research importance of the JSE Top 40 entities.

1.2   JSE LISTED COMPANIES

Companies may list on the JSE for different reasons. There are many advantages to such listing. According to the JSE (2013), the following advantages may occur when companies list on the Exchange:

- The entity can trade its securities efficiently;
- It serves as a marketing tool to attract new investors;
- It facilitates broad-based economic empowerment dealings;
- It provides technology to reach large numbers of investors; and
- It provides training opportunities to senior management of the entity.

Companies cannot list on the JSE prior to meeting certain specific listing requirements. The JSE (2016:8) set out the following requirements for listing:

- The subscribed capital (including reserves, but excluding minority interest and revaluations) should amount to R50 000 000;
- Company should issue at least 25 000 000 equity shares;
- The company must hold a satisfactory audit report for at least three consecutive financial years;
- The latest audit profit before tax should at least amount to R15 000 000; and
- 20% of each class of equity share must be held by the public.

Since 1995, the JSE has predominantly focused on the 40 largest companies listed on the JSE (JSE, 2013). These companies are monitored as an overall benchmark that measures the performance of local exchange (JSE, 2013). The Top 40 companies are ranked in terms of market capitalisation (Sharenet, 2019). Thus, the Top 1 company holds the highest market capitalisation on the exchange. Market capitalisation is calculated by multiplying the number of issued shares by the company's market price per share (Chron, 2018). The Top 40 JSE listed companies

have been used as a source of population in research by researchers such as De Villiers (2013), Robbetze (2015) and Saunders (2016).

Clearly, the Top 40 enjoys great research attention, as researchers wish to understand the financial behaviour of these companies. Par. 1.3 explores how companies can be analysed to obtain an understanding of financial performance.

1.3 FINANCIAL ANALYSIS OF ENTITIES

Ratio analysis is a predictive tool for analysing the performance of prospective investments. It measures profitability, liquidity, operational performance, debt management and market performance (Marx *et al.*, 2017:66-80). Such analysis consists of the application of mathematical calculations, which are applied horizontally or vertically. Horizontal analysis requires that the performance of different companies is compared for a specific financial year. Vertical analysis refers to the comparison of different years' performance of the same company (Lovemore & Brummer, 2010:85-87). It is submitted that such ratio analysis may be useful to investors who wish to invest in any company, but also in the Top 40 companies as described in par. 1.1. This application can lead to valuable comparisons, which investors may employ as a measurement of performance.

As established, analysis of profitability is of great importance to investors (par. 1.1). Furthermore, listed companies should apply the IFRS and its principles (PwC, 2011). Among these standards, IAS 40 is found. IAS 40 regulates the recognition of transactions that relate to investment properties, which are kept for capital appreciation and/or rental income (IAS, 2017a:A16). This standard makes provision for subsequent measurement of investment property assets by means of applying a cost model or a fair value model. The cost model is applied in the instance where the fair value of the asset under review cannot accurately be determined. Thus, no fair value adjustment is recorded for investment property held as such. The fair value model is applied in all other instances and requires that the value of the investment property is either increased or decreased to its fair value by means of recording a fair value adjustment (Service, 2020:521-522). The recognition of fair value adjustments is done through profit or loss, where the fair value model is applied. Profits may be impacted by such fair value adjustments. The calculation of certain financial ratios

requires the incorporation of profit before interest and tax, profit for the year, as well as asset values (Gitman & Zutter, 2012:80). Clearly, adjustments made to profit will, therefore, influence ratio calculations. For this reason, the research mainly focuses on the impact that fair value adjustments may have on profitability ratios. The concept of fair value measurement is explored in par. 1.4.

1.4   THE CONCEPT OF FAIR VALUE

Since 1973, accounting regulators have proposed the application of fair value accounting, rather than traditional accounting (Biondi, 2011:2). The International Financial Reporting Standard (IFRS) 13 defines fair value as *the price to be received for an asset or paid to transfer a liability in an orderly transaction between market participants on measurement date* (IFRS, 2017a:A635).

Al-Khadash and Khasawneh (2014:98) highlight that fair value is subject to criticism as it leads to the distortion of profit; these adjustments are not exact; valuations are costly to generate; it leaves valuations subject to manipulation; and replaces historical accounting concepts which are well understood. Andrews (2014) adds to this view by stating that fair value accounting does not promote financial transparency. It goes against the fundamental purpose of accounting and creates uncertainty for investors (Andrews, 2014). Gjorgieva-Traijkovska, Temjanovski and Koleva (2016:7) posit that fair value measurements have a number of disadvantages, namely they lead to large changes in value and can occur more than once per annum; downward valuations create investor dissatisfaction as decreases in the value of assets lead to losses for the investor; and valuations depend on market situations. Despite critique against fair value, several accounting standards allow for fair value measurement (Gjorgieva-Traijkovska *et al.,* 2016:5-6). As mentioned previously, IAS 40 predominantly focuses on the valuation of investment properties (IASPlus, 2019). Subsequently, the recognition of fair value adjustments from increases or decreases in investment property value, can impact profits as stated in the Statement of Profit or Loss.

1.5   PROBLEM STATEMENT AND CORE RESEARCH QUESTION

IAS 40 allows for investment property to be revaluated through the application of the fair value model. The fair value model permits fair value adjustments to investment property through profit or loss (IASPlus, 2019). Fair value measurement represents a

number of limitations (Al-Khadash & Khasawneh, 2014:98, Gjorgieva-Traijkovska *et al.,* 2016:5-6, Andrews, 2014):

- It distorts profit, as it does not relate to day-to-day operations;
- It is not exact, as it relies on best estimates;
- Valuations may be manipulated through over- or under estimation;
- Valuations may be performed more than once annually; and
- It creates uncertainty for investors, as changes in fair values may occur often.

Despite these limitations, investors are particularly interested in scrutinising profitability of entities (Dillalo, 2015). Users of financial reports can analyse financial statements through ratio analysis in order to evaluate financial performance, including profitability (Correia *et al.*, 2011:5-11). The above listed limitations of fair value measurements can possibly influence ratio analysis and investor decision making, if items in the ratio calculations include fair value adjustments recognised through profit or loss. From the above-mentioned discussion, the following research question was derived: Does fair value adjustment to investment property affect the profitability ratios of sampled companies?

1.6   RESEARCH OBJECTIVES TO THE STUDY

For the purpose of this section, a primary objective is identified. Thereafter, secondary objectives, which support the primary objective, are discussed.

1.6.1   Primary research objective

The primary objective of the study is to determine whether fair value adjustments to investment property affect the profitability ratios of sampled listed companies.

To further support the primary objective, the following theoretical and empirical objectives are applicable.

1.6.2 Theoretical objectives
- To analyse the different levels that fair value measurements are categorised by;
- To analyse the accounting standard that relate to fair value measurement;
- To explore differences in the treatment of fair value adjustments, in terms of IAS 40 and IAS 16;

- To identify different categories of ratios, in terms of monitoring profitability, liquidity, operations, debt and market performance; and
- To analyse the category of profitability ratios in detail, through exploring the gross profit margin, operating profit margin, net profit margin, return on investment, return on equity and return on net assets.

1.6.3 Empirical objectives

- To analyse whether the mean scores of profitability ratios (inclusive of fair value adjustments) and recalculated profitability ratios (exclusive of fair value adjustments) differ significantly, through the application of t-testing;
- To determine whether profitability ratios (inclusive of fair value adjustments) and recalculated profitability ratios (exclusive of fair value adjustments) differ significantly, through application of Cohen's d; and
- To provide an explanation of managerial implications, relating to empirical findings.

1.7 IMPORTANCE AND BENEFITS OF THE PROPOSED STUDY

The contribution of the study will be focused toward deciding whether fair value adjustments (favourable or unfavourable) relating to IAS 40 could affect the decisions taken by users of the financial statements. Fair value adjustments affect either profit or loss, as well as the value of investment property assets. Investors perform financial ratio analysis and such calculations may include profit and loss as reported in the income statement or the value of the investment property as reported in the balance sheet. Significant changes to profit or loss and/or investment property may significantly impact ratio analysis outcomes and, therefore, investor decision making.

1.8 DELIMITATIONS AND ASSUMPTIONS

1.8.1 Delimitations (Scope)

The scope of the study is limited to two variables: Investment property valuation (IAS 40) and its effect on profitability ratios. The study will not consider any other accounting standard or liquidity, solvency, operational, debt or market performance ratios.

1.8.2   Assumptions

The study is subjected to the following assumptions:

- The financial statements that are analysed were accurately audited and that figures included for empirical analysis are free from material error or misstatement;
- That financial statements are easily accessible per the applicable database (IRESS); and
- That investors value profitability analysis and calculate profitability ratios upon making investment decisions.

1.9   RESEARCH METHODOLOGY

This section provides an overview of the research methodology to be applied to this research.

1.9.1   Nature of the research

This research is quantitative in nature. According to Pallant (2016:27), quantitative research is aimed at collection of data, which are expressed in numerical terms. Field (2009:18) adds to this view by positing that quantitative data necessitates statistical analysis. In the light of these opinions it is submitted that this research is quantitative in nature. The researcher intends to collect data relating to the value of investment property and profitability ratios. Such data are expressed in numerical terms. Furthermore, the research analysis will be analysed statistically to obtain research conclusions.

Kumar (2012:44) states that cross-sectional research observes variables at a single point in time. In contrast, Mouton (2011:28) indicates that longitudinal research attempts to make conclusions about variables over a selected period of time. This study is longitudinal in nature. The researcher will analyse data for a period of five years. According to Field (2009:112), data should be analysed for a minimum of five years if the researcher intends to obtain reliable research findings. The period under review will be 2015 to 2019. This period is selected to include the most recently available/published data, which is data relating to 2019. The researcher then counts five years in reverse, from this point, to determine the entire review period. This review

period encumbers the most recent financial data published by the population of companies.

1.9.2 Population

Kumar (2012:33) states that a population can be described as all the possible participants or study subjects that the researcher wishes to draw conclusions about. Bell (2012:41) indicates that a population is represented by all elements that the researcher studies.

In this research, the research population will consist of the Top 40 JSE listed companies. A number of previous studies have made use of the Top 40 JSE listed companies as population. These include:

- Determining the impact of capitalising long-term operating leases on the financial ratios of the Top 40 JSE listed companies by De Villiers (2013);
- The effect of earnings per share categories on the share prices of the Top 40 JSE listed companies by Robbetze (2015); and
- Identifying the optimum ownership structure as a tax avoidance strategy of multinational entities: a JSE Top 40 perspective by Saunders (2016).

It is clear that the Top 40 companies, as population, possess all the necessary characteristics to comply with the undertaken research. These characteristics are:
- These companies are reputable, which contributes to reliable findings;
- These companies have the highest market capitalisations and are financially flourishing;
- Such listed companies are required by the Companies Act (No. 71 of 2008) to publish financial information publicly; and
- The data of such companies are made available on data platforms that are recognised for research, such as IRESS.

1.9.3　　Sample of the study

Bell (2012:47) posits that statisticians mainly divide sampling methods into two categories – probability sampling and non-probability sampling. Probability sampling assumes that all elements of a population have an equal chance to be selected

(Kumar, 2012:40). Non-probability sampling assumes that elements from the population do not have an equal chance of selection (Mouton, 2011:50).

For the purpose of this research, non-probability sampling is applied in the form of judgement sampling. Judgement sampling entails that the researcher applies his/her own judgement in determining the sampling. This method requires the researcher to compile criteria with which the element needs to comply, if included in the sample (Creswell, 2015:122-123).

The following criteria were set up for sampling selection:
- Data relating to the company should be made available by IRESS;
- Data relating to investment property value should be available on IRESS for all years under review, to ensure consistency; and
- The companies should be JSE listed for the entire period of review. Companies listed after 2014 will be excluded, as five years' information will not be available.

1.9.4 Data collection

According to Mouton (2011:54), the nature of data can be categorised in three main categories. These are demonstrated in Figure 1.1.
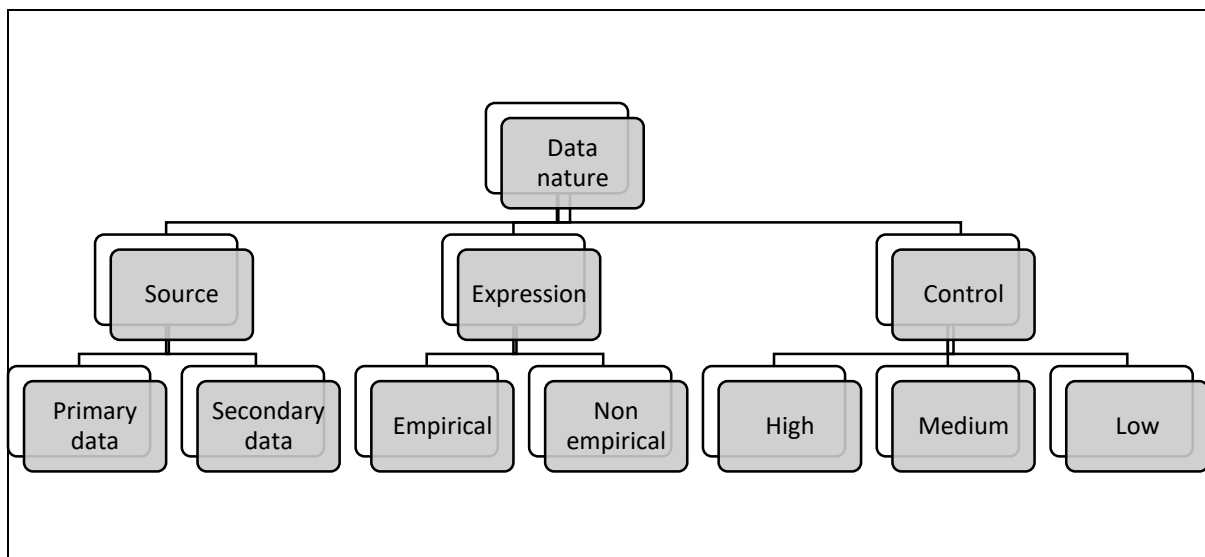
Figure 1.1: Categories of the nature of data
Source: Adapted from Mouton (2011:54-58)

Mouton (2011:55) indicates that data can either be primary or secondary in nature. Kumar (2012:40) posits that primary data refers to data collected by the researcher

himself, while secondary data are already in existence and the researcher will not collect it from a primary source, such as questionnaires or interviews. This study will collect secondary data. The data needed to answer the primary research question already exists in the form of financial data published on IRESS.

Mouton (2011:56) further explains that data can be empirical or non-empirical. Empirical data are data that require numerical analysis, while non-empirical data are expressed in language or words (Bell, 2012:13). This study is aimed toward the collection of empirical data. Two types of data are collected: data relating to ratios and investment property values. Both these variables are expressed in numerical terms.

Lastly, Mouton (2012:58) suggests that the researcher needs to consider the level of control over the data. In the instance of primary data collection, the researcher has high control over the data collected, as he/she will set a questionnaire or interview questions. In the instance of scientific research, the researcher will have less control over data (Mouton, 2012:58). For the purpose of this study, the researcher has medium control over data. The researcher may select the sample through the application of judgement sampling, but the financial data published cannot be influenced by the researcher.

The process of data collection is demonstrated by Figure 1.2.
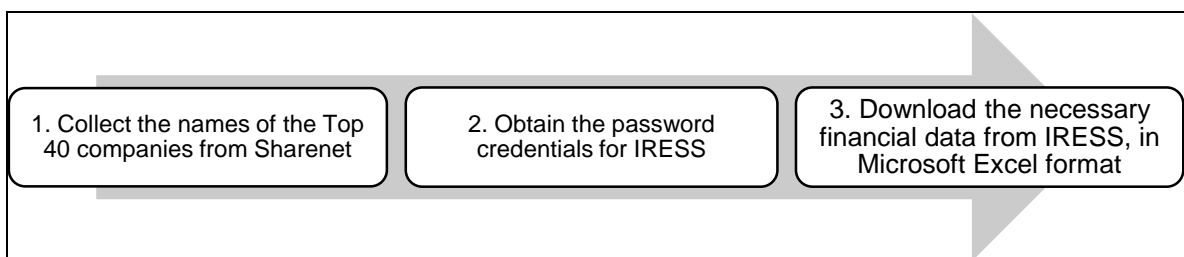
Figure 1.2: Data collection process
Source: Author

Figure 1.2 demonstrates that data collection entails three steps. First, the researcher needs to establish the names of the Top 40 JSE listed companies. Thereafter, access to IRESS is required. Lastly, financial information is downloaded from this database and saved in Microsoft Excel format to ensure easy analysis in SPSS.

1.9.5 Data analysis

Data are to be analysed statistically. The data analysis process is summarised in Figure 1.3.
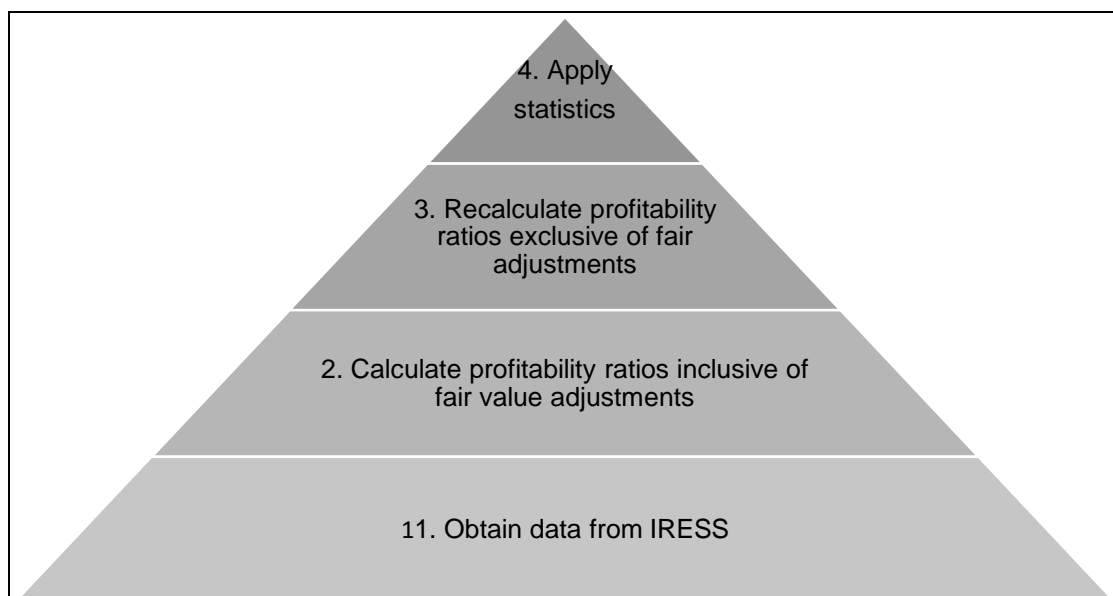
Figure 1.3: Data analysis process
Source: Author

Figure 1.3 demonstrates that statistical analysis will be approached in four steps. In the first step, financial data will be retrieved from IRESS. Thereafter, the data are used to calculate profitability ratios, with fair value adjustment included in calculations. Subsequently, the financial data of the sampled companies are adjusted to exclude the fair value adjustments of the sampled companies. The profitability ratios are then recalculated to observe changes in the different ratios.

Two different statistical tests will be performed: paired t-testing and measurement of Cohen's d-value. Welman and Kruger (2011:209) state that paired t-testing involves the measurement of differences in mean scores, when the same group of participants are tested under different circumstances. For the purpose of this research, the same group of sampled entities are tested under two different conditions: profitability ratios, including fair value adjustments and profitability ratios, excluding fair value adjustments. Statistical analysis will further entail the measurement of Cohen's d-value. Cohen's d-value is a measurement that expresses the size effect of differences in means scores. Cohen's d ranges between -1 and 1 (Welman & Kruger, 2011:282).

Per synopsis, it is submitted that a t-test will be applied to establish whether mean scores differ significantly, while Cohen's d measures how large (or small) the significant difference is.

1.10   DEFINITION OF KEY TERMS

The following are important key terms, which the reader should take note of:

Fair value: The price to be received for an asset or paid to transfer liability in an orderly transaction between market participants on measurement date (IFRS, 2017a:A635).

Ratio analysis: Calculations, which are performed in order to analyse the financial performance of entities from the statement of financial position and statement of profit or loss and other comprehensive income (Marx, de Swardt, Pretorius, Rosslyn-Smith, 2017: 68).

Financial statements: Structured representation of an entity's performance and financial position, which indicates the results of management's stewardship of assets entrusted to them (Service, 2019:79).

Profitability: The ability of the entity to maintain the accumulation of profits (Marx *et al.,* 2017:69)

Investment property: Land and buildings that are kept for the purpose of generating rental income and/or capital appreciation (Koppeschaar *et al.,* 2014:760).

1.11 CHAPTER LAYOUT

This dissertation consists of the following chapters:

Chapter 1:   **Introduction and background to the study**
This chapter aims to set a backdrop against which the research question can be formulated. Furthermore, it sets out theoretical and empirical objectives and explains

the research methods to be applied. Lastly, it indicates how the research is structured, by giving a chapter layout.

Chapter 2: **An overview of the literature**

Chapter 2 is directed towards fulfilling the theoretical objectives. Here, the concept of fair value and fair value adjustments are studied extensively and the difference in the way they are accounted for under IAS 40. Furthermore, the chapter focuses on establishing an understanding of ratio analysis, with an emphasis on profitability analysis.

Chapter 3: **Research design, methodology and empirical results**

This section of the research provides a detailed analysis of the design and methods that were applied to the study. Here, the population, sampling method, size and frame are discussed in greater detail, as well as the data collection and statistical analysis. It presents the empirical results in a tabled format and provides overviews of how the statistical results may be interpreted.

Chapter 4: **Research conclusion**

In the final chapter, it is clearly indicated how all research objectives were satisfied and the research question was answered. Lastly, recommendations are made around the effect that fair value adjustments, in terms of IAS 40, have on the profitability analysis of the sampled companies.

1.12   CHAPTER SUMMARY

The purpose of this chapter was to create a background against which the research can be successfully conducted. The introduction proposed the importance of profitability analysis to investors and the problem of profit distortion of JSE listed entities by recognising fair value adjustments under IAS 40. The chapter further provided a brief overview of performance analysis through ratio calculations, as well as fair value measurement, through IFRS 13. In par. 1.5, the research problem was described and the research question formulated: "Does fair value adjustments to investment property affect the profitability ratios of sampled companies?". Par. 1.6 was dedicated to formulating the primary and secondary objectives to the research. Here, both theoretical and empirical objectives were articulated. Par. 1.7 and par. 1.8 summarised the importance and the limitations of the research, respectively.

Par 1.9 encapsulated the research design and methods in detail, indicating the population, sampling method, method of data collection and proposed statistical analysis to be applied. It was indicated that the Top 40 JSE listed companies make up the research population, while judgement sampling is applied in order to establish the sampling frame. Figures 1.1 and 1.2 illustrated the data collection methods and process in a detailed manner, by referring to the necessary quoted sources. Lastly, par. 1.10 set out definitions for the most frequently used terms throughout this dissertation, while par. 1.11 described the structure of this mini dissertation, by discussing the chapter layout.

In the next chapter (Chapter 2), the execution of the research commences through the performance of a literature review. This review is set up with the intention of fulfilling the theoretical objectives to the study. It entails the establishment of an in-depth understanding of fair value, its regulatory standard and application. It also focuses on financial analysis and the possible profitability ratios to be included in the empirical study.

CHAPTER 2:
LITERATURE OVERVIEW

"Stealing ideas from one person, is plagiarism. Stealing ideas from many, is research."
– Steven Wright

2.1   INTRODUCTION

The purpose of a literature review is to create a foundation upon which existing knowledge around a topic can be explored (Bell, 2012:117). It summarises and integrates what is known about a research area and allows for gaps in the literature to be identified. Overall, a literature review establishes the credibility of a research idea and serves as a starting point for new research undertakings (Hofstee, 2018:13).

This chapter aims to fulfil the theoretical objectives of the study, as indicated in par. 1.6.1. A theoretical analysis of the different levels of fair value adjustment measurements is performed, IFRS 13 is investigated and the differences in treatment of fair value adjustments among IAS 40 and IAS 16 are executed. Furthermore, the different categories of ratios are discussed and profitability ratios are explored in detail. The chapter commences with the examination of the different fair value categories.

2.2   FAIR VALUE CATEGORIES

The IFRS 13, defines fair value as the price to be received for an asset or paid to transfer a liability in an orderly transaction between market participants on measurement date (IFRS, 2017a:A635). Fair value may be measured in a number of ways. According to PricewaterhouseCoopers (PwC) (2008), three different levels of fair value measurement exist:

- Level 1, which refers to quoted prices of identical assets or liabilities in an active market. These estimates are considered most reliable;

- Level 2, which are quoted prices of similar assets or liabilities in an active market, or identical or similar assets or liabilities that do not trade in an active market. These estimates are considered less reliable than those of Level 1; or

- Level 3, which are unobservable inputs for assets and liabilities, which are based on the available information. These estimates are most subjective and generally considered less reliable than levels 1 and 2.

Figure 2.1 illustrates how the level of fair value adjustment can practically be applied.
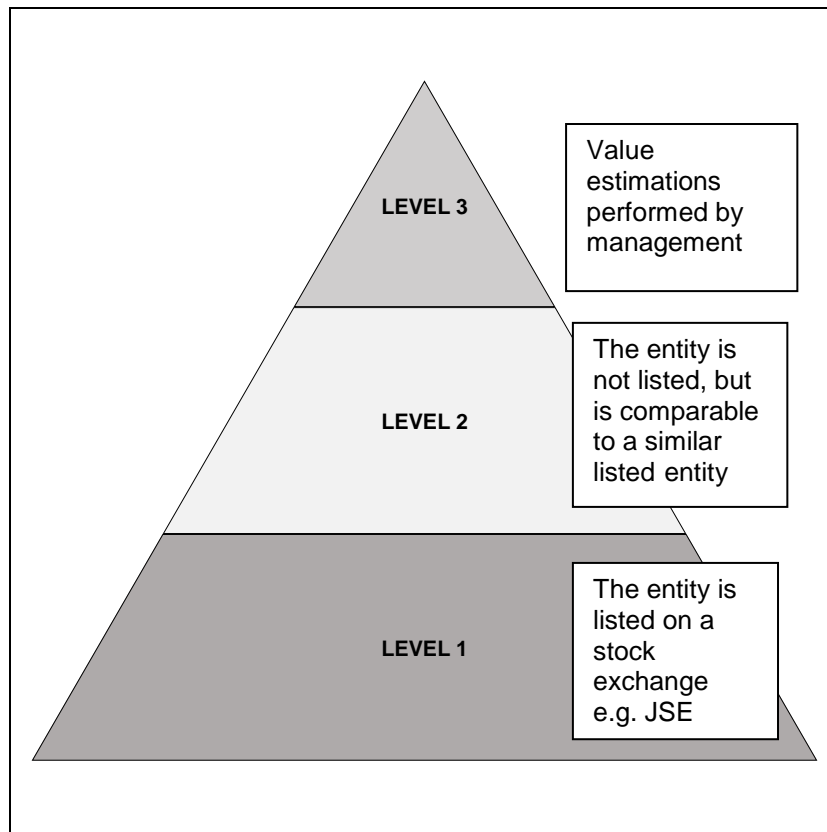
Figure 2.1: Application of fair value categories
Source: Author

Figure 2.1 demonstrates that three different levels of fair value may be identified. Level 1 is simple, as the value is derived from readily available sources, such as a stock exchange, for example, the share price of a listed entity in South Africa can be obtained from the JSE.

Level 2 of the fair value categories consists of entities that are not listed, but are similar in size and nature to other listed companies, for example, Dischem Pharmacies is a listed pharmaceutical company, whilst Alpha Pharm is also a large pharmacy, which is not listed on the JSE. Management of Alpha Pharm may argue that the share value of Alpha Pharm is comparable to that of Dischem Pharmacies, as both are large companies situated across South Africa.

Level 3 entails that no comparison among entities can be done. Management, therefore, applies its own judgement in evaluating the entity's fixed assets. Methods such as the free cash flow model may be applied here, to place a value on the fixed assets based on its potential to generate future profit.

In par. 2.3 a discussion of how fair value relates to the presentation of financial statements, in term of accounting standards, follows.

2.3 ANALYSIS OF IFRS 13 – FAIR VALUE ACCOUNTING

In terms of accounting standards, fair value accounting is addressed by IFRS 13. IFRS 13 encompasses the following: an objective, a scope, measurement, initial recognition and disclosure. Figure 2.2 demonstrates these components, which are discussed in the following paragraphs.

IFRS 13		
	Objective	Par. 2.3.1
	Scope	Par. 2.3.2
	Measurement	Par. 2.3.3
	Initial recognition	Par. 2.3.4
	Disclosure	Par. 2.3.5
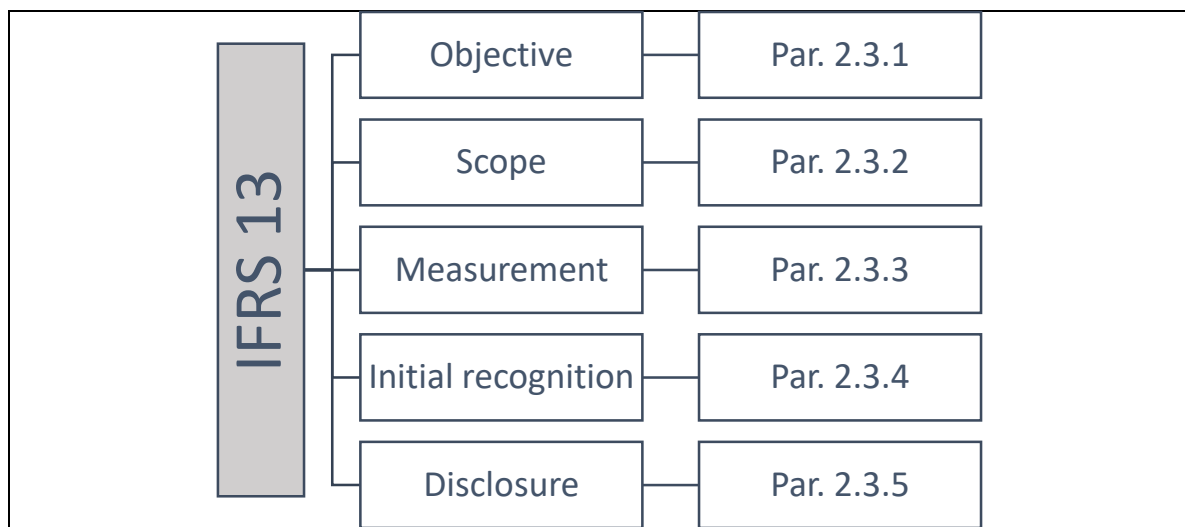
Figure 2.2: IFRS 13 components
Source: Koppeschaar *et al.* (2016:772)

Figure 2.2 indicates that components of IFRS 13 will be discussed in paragraphs 2.3.1, 2.3.2, 2.3.3, 2.3.4 and 2.3.5.

2.3.1 Objective of IFRS 13

According to Koppeschaar *et al.* (2016:772), the objective of IFRS 13 is to state a definition for fair value measurement, the measurement methods available and how fair value adjustments should be disclosed in the financial statements of an entity.

2.3.2 Scope of IFRS 13

The scope of IFRS 13 encumbers all accounting standards that permit fair value recognition, but specifically exclude the following standards (Koppeschaar *et al.,* 2016:772):

- IFRS 2: Share-based payment;
- IFRS 16: Leases;
- IAS 2: Inventories;
- IAS 36: Impairment losses;
- IAS 19: Employee benefits; and
- IAS 26: Retirement benefit plans.

Since IAS 40 is not explicitly excluded from the scope of this standard, it may be posited that its fair value measurements are subject to IFRS 13.

2.3.3   Measurement

The standard distinguishes between non-financial assets and financial assets and liability and equity instruments. Figure 2.3 was constructed to explain these concepts.
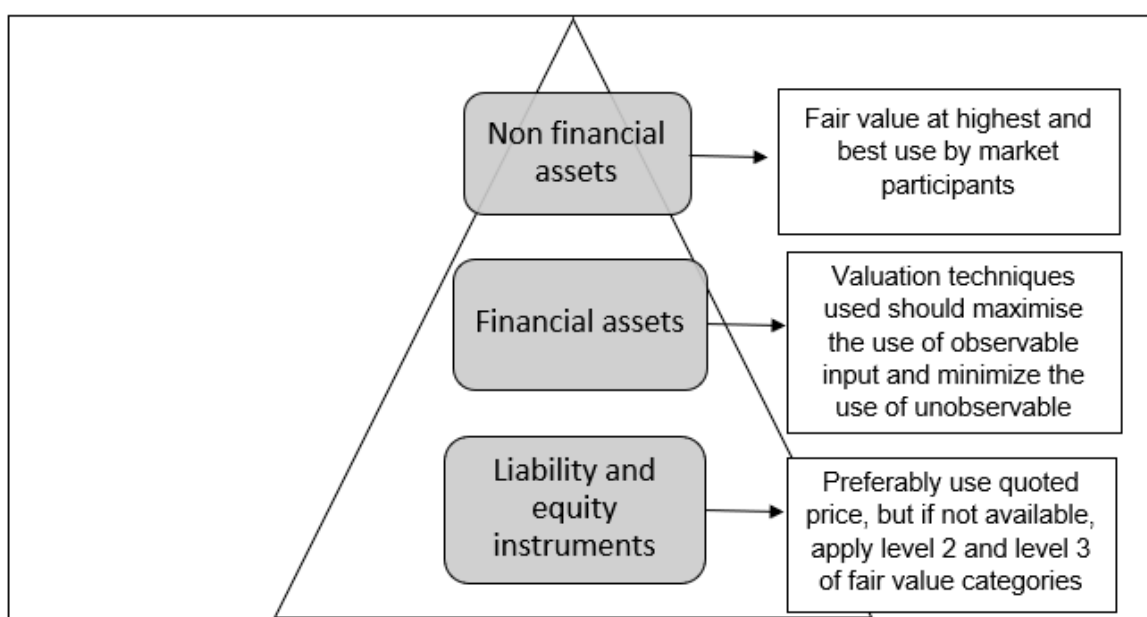
Figure 2.3: Measurement in terms of IFRS 13
Source: Adapted from Koppeschaar *et al.* (2016:773)

Figure 2.3 demonstrates that non-financial assets, financial assets and liability and equity are measured in different ways. Non-financial assets necessitate that the highest and best use is determined by market participants. Financial assets should be valued by applying observable inputs rather than unobservable inputs. Liabilities and equity are valued per the fair value hierarchy as explained in Figure 2.3.

2.3.4   Initial recognition

Initial measurement of all financial assets and liabilities should be done in terms of fair value at the time that the transactions take place. Although the transaction value and fair value may differ, recognition is done at fair value (Koppeschaar *et al.,* 2016:280).

For non-financial assets (such as investment property), initial recognition is done at cost and subsequently accounting policies that should indicate how and when remeasurement may occur in order to record the asset at its fair value.

2.3.5   Disclosure in terms of IFRS

Disclosure is affected by the fair value hierarchy level used to determine the fair value (refer to Figure 2.1). If level 1 or level 2 are applied in valuation, disclosure will consist of:

- Valuation techniques and inputs used to develop the fair value measurement; and
- The effect of fair value adjustments on profit/loss or OCI.

If level 3 is applied in calculating the fair value, disclosure should be more comprehensive. Quantitative information relating to valuation techniques should be disclosed. Such valuation techniques may be based on the market approach, cost approach and income approach. The following explains these approaches briefly (Koppeschaar *et al.,* 2016:781-782):

- **Market approach**: Relates to prices used in market transactions that relate to similar assets or liabilities. Such information may be extracted from an inactive market;
- **Cost approach:** Refers to the replacement cost when replacing an asset, as is in its current condition and form;
- **Income approach:** Refers to an effort to convert potential future cash flows to a single discounted present value. This present value should reflect the current market expectations and future amounts.

Furthermore, a reconciliation should be performed between opening and closing balances. A description of the valuation process used should be indicated and a sensitive analysis should be performed if unobservable inputs are changed from previous estimates.

In paragraph 2.4, a discussion of how fair value relates to presentation of financial statements, in term of accounting standards, follows.

2.4 THE APPLICATION OF FAIR VALUE IN ACCOUNTING STANDARDS

Taplin, Yuan and Brown (2014:103) highlight that several accounting standards allow for fair value adjustment recognition. Among these are IAS 40 and IAS 16. IAS 40 makes provision for two valuation models, namely the cost and fair value models (IASPlus, 2019). If entities decide to apply the fair value model, gains and losses that arise from valuation are recognised through profit or loss and are listed in the Statement of Profit or Loss and Other Comprehensive Income (Koppeschaar, Rossouw, Deysel, Sturdy, Van Wyk, Gaie-Booysen, Papageorgiou, Smith, Van Der Merwe & Schmulian, 2014:760).

Notably, the fair value of investment property should be disclosed in footnotes, if the entity opts to carry investment property on the cost model (Taplin *et al.,* 2014:103). Property is defined as land and buildings, part of a building or both. Undeveloped land may also be categorised as investment property (Koppeschaar *et al.,* 2014:797). IAS 40.30 states that it is unlikely for such property to be fairer represented by the cost model than the fair value model, therefore, a switch from fair value model to cost model is prohibited (IFRS, 2017b:B112).

The application of the fair value model is contradictory to accounting principles applied to property, plant and equipment (PPE) in IAS 16. When PPE is revaluated, gains and losses are treated as other comprehensive income (OCI) (Koppeschaar *et al.,* 2014:216-217). OCI is considered a non-distributable reserve, not forming part of profit or loss (Service, 2019:420). It is submitted that both IAS 40 and IAS 16 deal with land and buildings, yet fair value adjustments to investment property are recognised through profit or loss. The differentiation in treatment of gains and losses purely arises from intention of use. Figure 2.4 was constructed to demonstrate the differences in treatment of fair value adjustments among IAS 40 and IAS 16.
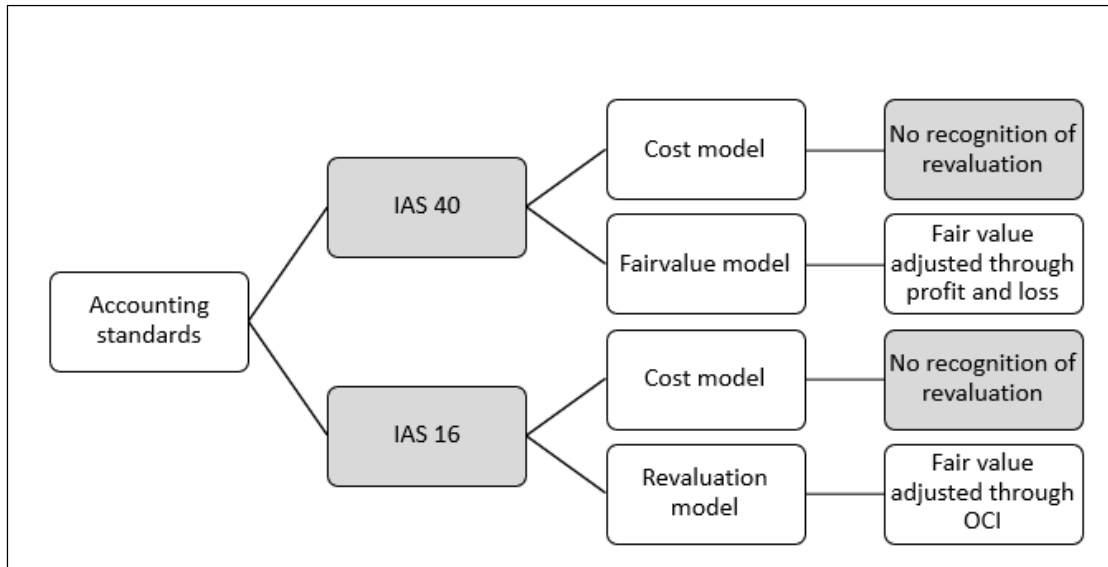
Figure 2.4: Differences in treatment of fair value adjustment
Source: Author

Figure 2.4 illustrates that IAS 40 and IAS 16 treat fair value adjustments differently. IAS 40 only allows adjustments if the fair value model is applied. Under such circumstances, the fair adjustments effect the net profit or loss. This is not the case for IAS 16. This standard allows fair value adjustments if the revaluation model is applied and the value of the asset increases above the historical carrying value. However, the adjustment is not recorded as part of net profit or loss, but recognised as other comprehensive income (OCI). OCI is not considered as an inclusion when profitability ratios are analysed. On the contrary, net profit or loss is included in profitability ratio analysis, therefore, fair value adjustments that arise from IAS 40 affect profitability ratios, while IAS 16 does not. Par. 2.5 explores the different financial ratios and places focus on understanding the latter mentioned profitability ratios.

2.5   FINANCIAL RATIOS AND ANALYSIS

The concept of duality requires for debits and credits to be equal (Myburgh *et al.,* 2015:33). Therefore, fair value accounting transactions implicate consequences not only for the Statement of Profit or Loss, but also effect the Statement of Financial Position. Correia *et al.* (2011:5-12) state that users analyse these financial statements. Such analysis necessitates the calculation of ratios, which imply profitability, liquidity, operations, debt and market performance (Marx *et al.,* 2017:67). Each category requires a number of ratios to be calculated. Table 2.1 indicates each ratio category with their ratios.

Table 2.1: Ratio categories

Category	Explanation of category	Ratios relating to category
Profitability	The ability to apply the entity's assets in such a way that revenue and returns are generated.	• Gross profit margin; • Operating profit margin; • Net profit margin; • Return on investment; • Return on equity; and • Return on net assets.
Liquidity	The ability of the entity to meet short term obligations.	• Current ratio; • Acid test ratio; and • Net working capital.
Operations	The management of fixed assets, inventory, debtor collection and creditor payments. This category is mainly concerned with the management of the working capital cycle.	• Fixed asset turnover; • Inventory turnover; and • Average collection and payment period.
Debt	The ability to manage debt and ensure that the entity remains solvent.	• Debt ratio; • Debt to equity ratio; • Total interest cover; and • Fixed payment coverage ratio.
Market performance	The ability to ensure that the company generates earnings and distributes such earnings to the shareholders by means of dividend declarations.	• Earnings per share; • Dividends per share; • Price-earnings ratio; • Earnings yield; and • Dividend yield.

Source: Adapted from Lovemore and Brummer (2010:89-105) and Marx *et al.* (2017:66-80)

Table 2.1 indicates the wide range of ratios, which can be calculated. Some of these ratios are potentially affected by fair value accounting. In their study, Taplin *et al.* (2014:111) found that fair value accounting is significantly related to earnings management, since changes in fair value are recognised through profit or loss. Christensen and Nikolaev (2008) posit that debt-to-asset ratios are affected by fair value adjustments, as increases in asset values will lead to a decrease in such a ratio. A South African study by Philander (2016:iv) found that fair value adjustments affect five ratios: interest cover, financial leverage, net current assets per share, tangible assets value per share and equity-to-debt. From these findings, it is apparent that fair value measurements may impact financial statement analysis for users. The focus of this study is only directed towards profitability ratios, as investors are mainly

concerned with profitability of entities (Dillalo, 2015). In the paragraphs hereafter, profitability ratios are analysed in detail.

2.5.1   Profitability ratios

Profitability refers to the ability to generate profit. According to Correia *et al.* (2007:5-17) profitability shows the combined effect of liquidity, asset management and debt management on the entity's operations. Thus, it is considered an 'all-in-one' indication of how efficiently management has conducted business.

As indicated in Table 2.1, there are several profitability ratios, which can be calculated. Each of these ratios are discussed in paragraphs a to f.

a) Gross profit margin

The gross profit margin measures the gross profit as a percentage of sales in order to determine how much of the profit is retained after cost of sales was deducted from sales (Marx *et al.,* 2017:67). This is represented in a ratio-format as follows:

Formula 2.1: Gross profit margin

$$Gross\ profit\ margin: \frac{Gross\ profit}{Sales}\ x\ 100$$

Source: Marx *et al.* (2017:67)

This formula indicates that gross profit is mathematically divided by sales and expressed as a percentage. For the purpose of this research, the gross profit margin is not included for empirical analysis, as it is not affected by the fair value measures. Fair value adjustments are not included in gross profit, only in net profit.

b) Operational profit margin

Gitman and Zutter (2012:80) posit that the operational profit margin is calculated to determine the percentage of profit that remains after all operational expenses were deducted from the sales. This margin is presented in ratio format as:

Formula 2.2: Operational profit margin

$$Operational\ profit\ margin: \frac{Operational\ profit}{Sales}\ x\ 100$$

Source: Gitman and Zutter (2012:80)

From this ratio, it may be deducted that operational profit (before interest and tax) is divided by sales and expressed as a percentage. This margin will be included in the

empirical analysis because the fair value adjustments are included in the calculations of operational profit.

c) Net profit margin

The net profit margin measures the percentage of sales that remain after deducting all operational expenses, interest charges and income taxes (Gitman & Zutter, 2012:80). The net profit margin is calculated by applying the following ratio:

Formula 2.3: Net profit margin

$$Net\ profit\ margin: \frac{Net\ profit}{Sales}\ x\ 100$$

Source: Gitman and Zutter (2012:80)

This ratio indicates that net profit (after tax) is divided by sales and expressed as a percentage. The net profit margin will be included for the purpose of the empirical analysis, as net profit includes fair value adjustments.

d) Return on investment (ROI)

Return on investment measures the effectiveness of management in generating profits with its available assets (Marx *et al.,* 2017:70). It is calculated by dividing net profit by the total assets of the entity. The ratio is expressed as follows:

Formula 2.4: Return on investment

$$Return\ on\ investment: \frac{Net\ profit}{Total\ assets}\ x\ 100$$

Source: Marx *et al.* (2017:70)

From the ratio, it can be observed that net profit is expressed as a percentage of total assets. This ratio will be included in the empirical chapter for analysis, as fair value adjustments are included in net profit.

e) Return on equity

Return on equity measures the net profit as a percentage of total share capital (Marx *et al.,* 2017:71). This serves as an indication of what investors earn as a percentage of their total amount invested in the entity. The ratio is expressed as follows:

Formula 2.5: Return on equity

$$Return\ on\ equity: \frac{Net\ profit}{Total\ share\ capital} \times 100$$

Source: Marx *et al*. (2017:71)

From the ratio, is deduced that net profit is divided by total share capital and multiplied by 100 to calculate the return on equity percentage. For the purpose of this research, return on equity will be included for quantitative analysis, as it included fair value adjustments.

f) Return on net assets

Return on net assets is related to return on equity. It measures the return that is generated as percentage of net assets. Net assets are calculated as total assets minus total liabilities (Marx *et al.,* 2017:71). The ratio is expressed as:

Formula 2.6: Return on net assets

$$Return\ on\ net\ assets = \frac{Net\ profit}{Total\ assets - Total\ liabilities} \times 100$$

Source: Marx *et al.* (2017:71)

As can be observed, the ratio divides net profit by net worth of the company and multiplies by a factor of 100 to obtain a percentage. This ratio will be included in the empirical chapter of this research as it takes the fair value adjustments into account.

In par. 2.6 the chapter is concluded by means of summarisation. The chapter summary provides an overview of the concepts that were covered by the chapter.

2.6   CHAPTER SUMMARY

In the introduction to this chapter it was stated that Chapter 2 intended to fulfil the theoretical objectives to the research. The chapter accomplished this by addressing all theoretical concepts that relate to the objectives.

In par. 2.2, the chapter commenced with a detailed discussion around the three levels of fair value measurement. It was established that level 1 entails the identification quotes prices of listed assets, or fair value information that is readily available and reliable. Level 2 refers to the quoted price of similar listed assets and is considered less reliable than the latter level. Level 3 relies heavily on estimations, as inputs are

unobservable. This level is less reliable than level 1 and level 2. Figure 2.1 can be referred to for a detailed example.

The chapter further investigated the regulatory standard – IFRS 13. In par. 2.3, IFRS 13 was analysed in detail by studying the objective, scope, measurement, initial recognition and disclosure (Figure 2.2). It was highlighted that initial recognition was to be done at fair value (as per levels described in par. 2.2) and that subsequent changes to investment properties (IAS 40) are to be recognised through profit or loss. In par. 2.4, this subsequent disclosure in terms of IAS 40 was compared to that of IAS 16 (PPE) and it became apparent that disclosure requirements differ. IAS 16 sets out to record subsequent changes in value through OCI, if the revaluation model is applied. From an investor perspective, it is clear that IAS 16 does not pose a threat of distorting profit ratios due to OCI allocation, as OCI is treated as a non-distributable reserve that does not impact net profit for the year. Yet, IAS 40 proved to do the opposite, as the fair value model compels the accountant to allocate changes in asset value to profit or loss accounts, which in return may distort profit.

The last section of the chapter explored the analysis of financial statements. It was indicated that financial information may be analysed to determine profitability, liquidity, operations, debt and market performance (Table 2.1). This chapter focused mainly on the measurement of profitability ratios, as these seem to be of great interest to the investor. In par.2.5.1, different profitability ratios were discussed, including gross profit margin, net profit margin, operating profit margin, return on equity, return on investment and return on net assets. It was also clearly indicated, which of these formulae were to be included for empirical analysis (see Formula 2.1 to Formula 2.6).

Chapter 3 provides a detailed explanation of the research philosophy, design and methodology. It also illustrates the empirical research results, together with detailed interpretations of these results.

CHAPTER 3:
RESEARCH DESIGN, METHODOLOGY AND EMPIRICAL RESULTS

"It is a mark of true intelligence, to be moved by statistics." – George Barnard Shaw

3.1   INTRODUCTION

The purpose of this chapter is to provide a detailed explanation of the research design and research methods that were applied. Thereafter, empirical findings are demonstrated and discussed in depth. Research is the process of making observations and finding reasons for occurrences (Black, 1999:2). The foundation of any viable research lies in the identification of a proper research problem or question (Mouton, 2017:49). The research question of this study was stated in Chapter 1, par. 1.5*:* Does fair value adjustment to investment property affect the profitability ratios of sampled companies?

The quality of research is mainly affected by the research design and methods that are applied during execution (Hofstee, 2018:51). The research design and methods should contribute to the logical solving of the research problem. The design and methods should therefore be focused toward finding a solution to the specific problem, without any deviation from the research objectives (Trochim & Donnelly, 2008:152).

Paragraphs that follow, are aimed at describing the research design and methodology, as well as implications of the research, research ethics and quality assurance of the research. This chapter commences with an explanation of the research design.

3.2   THE RESEARCH PHILOSOPHY

Philosophy is concerned with the way knowledge is generated (Brown & Baker, 2007:9). Knowledge is defined as understanding information and developing skills through participation in education (OED, 2020). Saunders (2009:3) highlights that the process of generating knowledge is greatly influenced by the researcher's beliefs and assumptions. Such individual convictions have led to the identification of several research philosophies: critical realism, interpretivism, post modernism, pragmatism and positivism (Saunders, 2009:4). Table 3.1 was constructed as a summary, which explains each of these concepts.

Table 3.1: Research philosophies

Research philosophy	Description	Source
Critical realism	Theories around critical realism focus on what is 'real' vs what is 'observable'. According to this branch of philosophy, 'realness' depend upon the perceptions of individuals and is not necessarily observable. It can be greatly affected by human experiences. Observable facts, on the other hand, are more scientific in nature. Such facts are accumulated through rigorous procedure and testing. It is mainly directed toward scientific research.	Nickels (2020)
Interpretivism	Interpretivism focuses on how individuals interpret the world around them. It is concerned with how meaning is brought to circumstances and how individuals behave in order to make sense of their world. This philosophy necessitates research that is qualitative in nature, as numbers often cannot express emotion.	Stainton (2018)
Post modernism	Postmodernism is applied where the researcher wishes to obtain an understanding of social circumstances within the modern times. This branch of philosophy dismantles traditional thinking about how reality should work. This type of philosophy is mostly applicable to educational realms.	Zeeman (2012:96)
Pragmatism	Pragmatism posits that past experiences influence human action and that human behaviour cannot be separated from previous experiences. Results of past actions are utilised to predict future consequences for similar behaviour. This research philosophy submits that consequences affect human actions.	Kaushik and Walsh (2019:3)
Positivism	Positivism is normally associated with natural sciences. It is a black-or-white philosophy that does not allow for interpretation. Findings are either logically or it is not. This branch of philosophy relies heavily on logically reasoning and deductive concluding.	Stainton (2018)

Sources: Sources as listed

For the purpose of this research, a positivism research philosophy is followed. Due to the nature of the research questions, the findings of the empirical study will confirm whether statistical variables are related or not. Statistical deducing will be purely logical and unrelated to individual perception or opinion.

3.3   DESCRIPTION OF OVERALL RESEARCH DESIGN

Research design serves as a blueprint to research. It supports the process of how the identified problem will be solved (Mouton, 2017:55). According to Trochim and Donnelly (2008:152), research design structures a research project and indicates how major parts of the project are brought into unity. The research design of a study relies heavily on several research design factors. These factors are summarised in Table 3.2.

Table 3.2: Research design factors

Research factor	Category	Description
Type of research	Empirical research	Exploratory research
		Descriptive research
		Causal research
		Evaluative research
		Predictive research
		Historical research
	Non empirical research	Meta-analytical research
		Conceptual research
		Theoretical research
		Philosophical research
Type of study	Qualitative research	Language approach
	Quantitative research	Mathematical approach
	Mixed methods	Combination of qualitative and quantitative research
Type of data	Primary data	Collection by researcher
	Secondary data	Existing data
Time	Longitudinal research	Over longer periods
	Cross sectional research	Between different populations or variables

Source: Author

From Table 3.2, it can be observed that research design is divided into four different factors. The first factor considers whether research is empirical or non-empirical in nature. Empirical research refers to circumstances where information is collected through experience and direct data collection (Black, 1999:3). Empirical research may be divided into sub-categories: exploratory research, descriptive research, casual research, evaluative research, predictive research and historical research (Mouton, 2017: 53-55). Exploratory research sets out to find new research frontiers. It is mainly concerned with finding new ideas, revelations and insights (Pratap, 2018). It normally refers to initial research surrounding a hypothesis (Shinn, 2020).

Descriptive research describes existing circumstances within a research framework (Trochim & Donnelly, 2008:5). Descriptive research examines conditions as they are (Leedy & Ormrod, 2012:183). Mahmud (2013:35) posits that descriptive research mainly investigates social behaviour or relationships.

Causal research is aimed at determining whether one or more variables affect each another (Trochim & Donnelly, 2008:5). It is mainly focused towards understanding cause and effect. It ultimately indicates that if one variable is manipulated, it can affect outcomes significantly (Shinn, 2020).

Evaluative research is geared towards problem solving, through implementation of ideas and policies and correcting any errors that are pointed out by evaluative research (Childers, 1990:251). It is therefore concerned with evaluating product, services, ideas and policies, in order to support stages of development or validate improvement (Herrod, 2017).

Predictive research is aimed at predicting future conditions. According to Shmueli (2010:291), predictive research applies modelling to use past data to predict future observations. The main goal of predictive research is to generate good predictions of future circumstances (Meyer, 2019).

Historical research is concerned with understanding the past and collecting sources such as letters, diaries, newspaper articles and photographs, which relate to past events (University of Wisconsin, 2020). Wesner (1994) posits that historical research gathers preserved facts and aims to sequences such facts into interpretable information about the past.

In terms of non-empirical research, meta-analytical research, conceptual research, theoretical research and philosophical research may be performed. Meta-analysis research refers to the analysis of research insights. It questions how research methods were retrieved, selected and statistically executed in order to draw conclusions (Bowen, 2016:281). Conceptual research is aimed at stimulating thinking, to generate ideas and concepts that can be further developed (Aven, 2018:2421). Theoretical research, on the other hand, strives to create an understanding around existing theories and scrutinising current concepts. It does not intend to bring about social change, but simply establish a better understanding (De Gooyert & Grobler, 2018:575).

Philosophical research aims at questioning underlying assumptions around social research. It is concerned with the reasons for undertaking research and how such research can contribute to knowledge, learning and understanding the human state (Worthham, 2015:126).

For the purpose of this research, it is submitted that empirical causal research is performed. This study aims to understand how fair value adjustments affect profitability ratios and investor decisions.

The second factor of research design determines whether research is qualitative or quantitative in nature. Qualitative research refers to circumstances where research data are collected mainly through language and words (Bell, 2012:13). Quantitative research refers to data collection through mathematical approaches where data are statistically analysed (Bell, 2012:14). Lastly, a mixed methods approach may be applied by the researcher, where both qualitative and quantitative research methods are combined. This research is quantitative in nature, as financial figures are collected and statistically analysed.

The third factor of research design considers the type of data collected. Primary data refers to data that are collected by the researcher for the first time and did not previously exist (Kumar, 2012:40). Secondary data refers to the collection of existing data (Kumar, 2012:40). This research relies on the collection of secondary data, as financial information already exists and is simply collected for analysis.

The last factor of research design is research timing. Longitudinal research is performed under circumstances where the same variables are tested over a period of many years (Mouton, 2011:28). Cross-sectional research refers to research conditions where differences between variables or populations are tested in the short term (Kumar, 2012:44). This research is longitudinal in nature, as the same variables (profitability ratios including and excluding fair value adjustments of the sampled listed companies) are tested over a period of five years.

3.4 RESEARCH METHODOLOGY

Research methodology refers to the systematic and methodical application of the research design, through the identification of a thorough process that results in methods which effectively support the fulfilment of the research objective (Bell, 2012:111). Paragraphs 3.4.1 to 3.4.5 aim to provide a detailed explanation of such methods and commence with the explanation of the population.

3.4.1 Population to the study

A population is the sum total of all possible research participants or objects from which a representative sample may be selected (Black, 1999:111). A population should share a set of common traits that the researcher wishes to study (Black, 1999:111). The population of this research is the Top 40 JSE listed companies as in 2019. Table 3.3 was constructed to clearly indicate the companies that formed part of the population.

Table 3.3: The Top 40 JSE listed companies

COMPANY NAME	MARKET CAPITALISATION IN RAND (MILLIONS)
Anheuser-Busch InBev SA NV x	1,845,041
Absa Group Limited	147,483
Anglo American Platinum Corporation Ltd	186,325
Anglo American PLC	496,369
AngloGold Ashanti Ltd	79,625
Aspen Pharmacare Holdings	66,778
BHP Group PLC	684,881
Bid Corp Ltd	98,273
Bidvest Group Ltd	65,864

COMPANY NAME	MARKET CAPITALISATION IN RAND (MILLIONS)
British AM. Tobacco PLC	1,270,826
Capitec Ltd	139,538
Compagnie Fin Richemont	528,055
Discovery Holdings Ltd	93,951
Exxaro Resources Ltd	56,593
FirstRand Ltd	351,995
Glencore Xstrata PLC	801,074
Growthpoint Properties Ltd	73,561
Hammerson PLC	52,782
Investec PLC	60,701
Kumba Iron Ore Ltd	120,833
MediClinic International	42 517
Mondi PLC	125,945
Mr Price Group Ltd	53,501
MTN Group Ltd	159,032
Naspers Ltd	1,340,506
Nedbank Group Ltd	142,066
Nepi Rockcastle PLC	71
Old Mutual Ltd	124,638
Pepkor Holdings Ltd	66,24
PSG Group Ltd	57,564
Rand Merchant Holdings Ltd	52,782
Redefine Properties Ltd	56,62
Remgro Ltd	104,631
RMB Holdings Ltd	109,745
Sanlam Ltd	169,899
Sasol Ltd	253,652
Shoprite Holding Ltd	95,406
South32 Ltd	193,37
Standard Bank Group Ltd	304,523
Vodacom Group Ltd	211,858

Source: Sharenet (2019)

3.4.2   Sampling method

Sampling is the process of selecting participants or items from a population for statistical testing. Such a sample should represent the population in research (Gravetter *et al.,* 2018: 4). There are mainly two categories of sampling – probability sampling and non-probability sampling. Table 3.4 was constructed as an explanation.

Table 3.4: Sampling categories

Sampling category	Sub category
Probability sampling	Simple random sampling
	Stratified sampling
	Cluster sampling
	Systematic sampling
Non probability sampling	Convenience sampling
	Quota sampling
	Snowball sampling
	Expert sampling
	Judgment sampling

Source: Author

Table 3.4 indicates that probability sampling consists of simple random sampling, stratified sampling, cluster sampling and systematic sampling. Simple random sampling is described as a sampling method where all items within a population fall within the sampling frame and any such items can randomly be selected from testing (Elfil & Negida, 2016:2). According to Bowen (2016:5), a sample is only random if sample selection occurs entirely by chance.

Stratified sampling is applied in situations where population variation is extreme. The researchers identify homogenous subgroups called 'strata'. A random sample from each stratum is selected (Bowen, 2016:6). Taherdoost (2016:21) states that strata division relies on natural characteristics of a population, such as gender, age and size.

Cluster sampling requires that the population is divided into natural groupings, such as dividing students on a campus into groups as per their university course of choice. Researchers select a random cluster and sample all participants within that cluster (Bowen, 2016:6). This method is especially used where participants are spread over a large demographical area (Taherdoost, 2016:21).

Systematic sampling requires that a systematic rule is established, whereby participants are randomly chosen by means of fixed intervals, for example, every fifth participant is selected from a list (Elfil & Negida, 2016:2). Bowen (2016:5) posits that such fixed intervals should be determined beforehand.

Non-probability sampling consists of convenience sampling, quota sampling, snowball sampling, expert sampling and judgment sampling. Convenience sampling refers to situations where participants are sampled based on their accessibility. Thus, it is easy for the researcher to reach such participants (Etikan, Abubakai & Alkassim, 2015:2). Convenience may also refer to the willingness of participants to participate in the undertaken research (Bowen, 2016:4).

Quota sampling involves the identification of subgroups within a sample that was not randomly selected (Lavrakas, 2008). Subgroups are identified by means of certain characteristics, such as age or gender (BusinessDictionary, 2020).

Snowball sampling is applied when smaller studies are executed. Participants are identified by referral by other participants (Taherdoost, 2016:22). Snowball sampling may affect research when no referrals by participants are possible (Sharma, 2017:752).

Expert sampling is applied in research that is highly complex. Researchers appeal to experts in the field to advise, which participants should be sampled. This sampling method is most applicable where observational evidence is lacking (Etikan *et al.,* 2015:3).

Judgement sampling replies on the choice of the researcher. The researcher is required to create criteria for sample selection and participants are recruited for testing through application of such criteria (Elfil & Negid, 2016:3). Participants are thus selected as it is believed that their characteristics warrant inclusion.

For the purpose of this research, judgment sampling was applied. The researcher drafted specific criteria that sampled companies need to comply with (see par. 3.4.3) and only companies with predetermined characteristics were sampled for further testing.

3.4.3 Sampling frame

The sampling frame of the study is influenced by the selected sampling method, as indicated in par. 3.4.2. As judgment sampling is applied, criteria have been developed for sampling inclusion:

The following criteria were set up for sampling selection:

- Criterion 1: Data relating to the company should be made available by IRESS;
- Criterion 2: The entity sampled should own investment property;
- Criterion 3: Data relating to fair value adjustments to investment property should be available on IRESS for all years under review to ensure consistency;
- Criterion 4: Data relating to profits should be available on IRESS for all years under review to ensure consistency;
- Criterion 5: The companies should be JSE listed for the entire period of review. Companies listed after 2015 will be excluded, as five years' information will not be available.

Table 3.5 indicates which companies were included in the sample and provides a reason as to why other companies were excluded from the sample.

Table 3.5: Sampled companies

COMPANY NAME	Included/ Excluded	Reason for exclusion
Anheuser-Busch InBev SA NV x	X	Criterion 3
Absa Group Limited	✓	
Anglo American Platinum Corporation Ltd	X	Criterion 3
Anglo American PLC	X	Criterion 3
AngloGold Ashanti Ltd	X	Criterion 3
Aspen Pharmacare Holdings	X	Criterion 3
BHP Group PLC	X	Criterion 3
Bid Corp Ltd	X	Criterion 3
Bidvest Group Ltd	X	Criterion 3
British AM. Tobacco PLC	X	Criterion 3
Capitec Ltd	X	Criterion 2
Compagnie Fin Richemont	X	Criterion 4
Discovery Holdings Ltd	X	Criterion 2
Exxaro Resources Ltd	X	Criterion 3

COMPANY NAME	Included/ Excluded	Reason for exclusion
FirstRand Ltd	✓	
Glencore Xstrata PLC	X	Criterion 5
Growthpoint Properties Ltd	✓	
Hammerson PLC	✓	
Investec PLC	✓	
Kumba Iron Ore Ltd	X	Criterion 3
MediClinic International	x	Criterion 2
Mondi PLC	X	Criterion 3
Mr Price Group Ltd	X	Criterion 3
MTN Group Ltd	X	Criterion 3
Naspers Ltd	X	Criterion 3
Nedbank Group Ltd	✓	
Nepi Rockcastle PLC	✓	
Old Mutual Ltd	✓	
Pepkor Holdings Ltd	X	Criterion 3
PSG Group Ltd	X	Criterion 2
Rand Merchant Holdings Ltd	X	Criterion 2
Redefine Properties Ltd	✓	
Remgro Ltd	✓	
RMB Holdings Ltd	X	Criterion 2
Sanlam Ltd	✓	
Sasol Ltd	X	Criterion 3
Shoprite Holding Ltd	X	Criterion 3
South32 Ltd	X	Criterion 2
Standard Bank Group Ltd	✓	
Vodacom Group Ltd	X	Criterion 3

Source: Author

3.4.4   Data collection

As explained in Chapter 1, the data collection is directed towards collecting three different variables' information:

- Profitability ratios (including fair value adjustments) of the sampled companies; and
- Profitability ratios (excluding fair value adjustments) of the sampled companies.

Share prices are collected from IRESS (formerly known as Mcgregor BFA). Profitability ratios are calculated by the researcher to ensure that the exact same formulae are applied in calculating the profitability ratios before and after including fair value adjustments. This contributes to consistency. Figure 3.1 was constructed to indicate how the calculation process works.
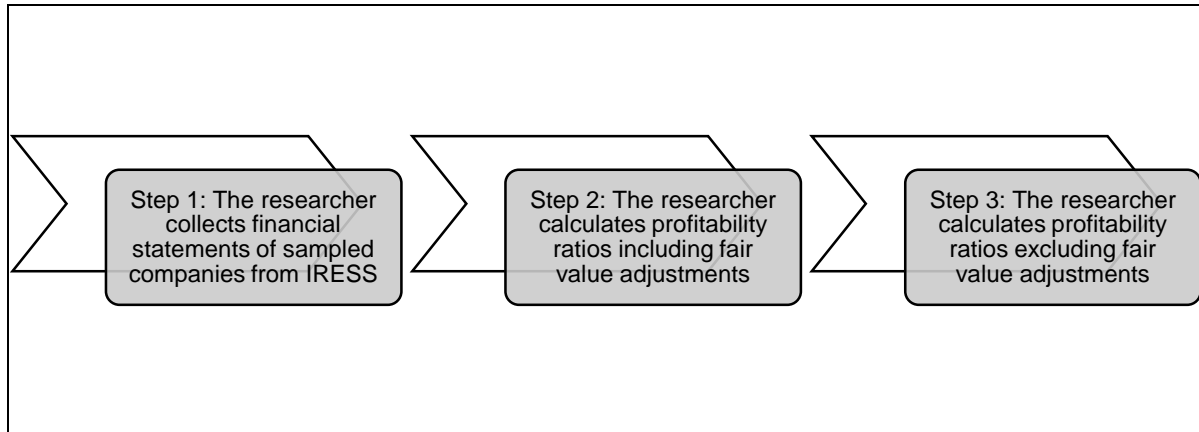
Figure 3.1: Process for calculating profitability ratios
Source: Author

Figure 3.1 illustrates that financial statements for sampled companies are collected from IRESS. The researcher calculates profitability ratios from this information to obtain the ratios including fair value adjustment. Thereafter, the fair value adjustments are added back to profit figures and profitability ratios are recalculated. The calculation process will be repeated for all years under review.

As indicated in Chapter 1, par 1.9.1, five years' financial data were analysed. This represents the most recent financial performance of selected companies.

3.4.5   Data analysis

Data analysis refers to the process of dismantling the collected data to draw conclusions and answer research questions (Mouton, 2011:118). The analysis of research is greatly impacted by whether the data are normally or abnormally distributed (Pallant, 2016:76). As indicated in Chapter 1 (par. 1.9.5), it is intended for research variables to be tested through paired t-testing. Figure 3.2 was constructed as explanation.
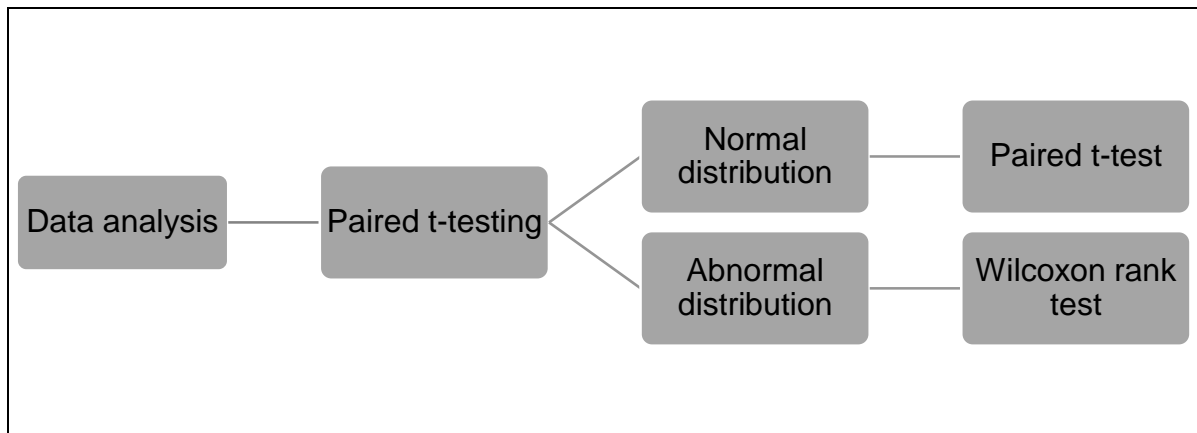
Figure 3.2: Data analysis and distribution
Source: Adapted from Pallant (2016:76-80)

Figure 3.2 illustrates that the type of t-testing that is performed, is impacted by data distribution. If data are normally distributed, a paired t-test is performed. If data are skewed, Wilcoxon rank test is calculated. Figure 3.3 was constructed to clearly show the method of data analysis.
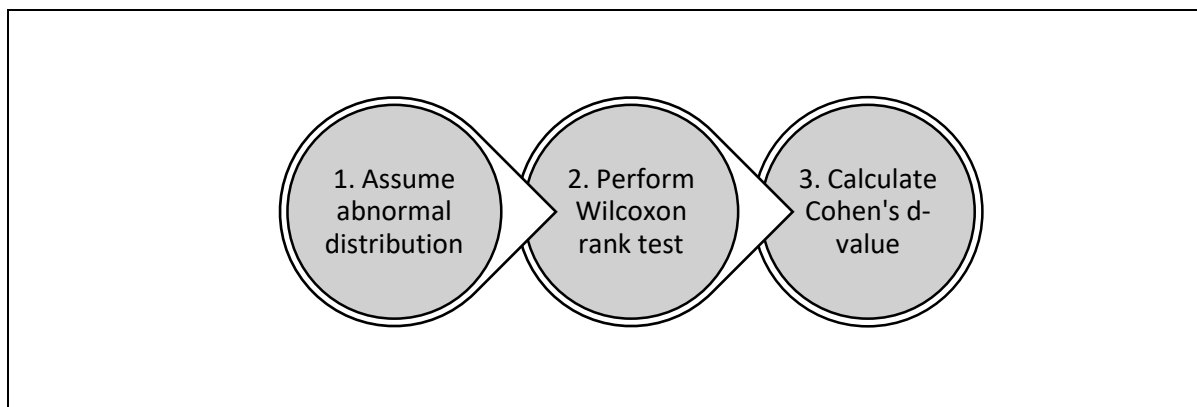
Figure 3.3: Steps to following in the data analysis process
Source: Author

Figure 3.3 indicates that three steps were followed for the purpose of statistical analysis. In step one, it is assumed that the data is non-normally distributed, as only five observations (i.e. five years' data per company) are collected. According to Field (2009:172), the assumptions of normality do not apply when the number of observations (N) are less than 30. In step two, a Wilcoxon rank test was performed, as abnormality was assumed (see Figure 3.2). The Wilcoxon rank test determines whether mean scores differ significantly between profitability ratios excluding fair value adjustments, and profitability ratios including fair value adjustments. Lastly, in step

three, Cohen's d-value is calculated. Effect size (Cohen's d) expresses the magnitude of the effect that variables have on one another (Field, 2009:79). In laymen's terms, it measures whether differences in mean scores are large or minor. For the purpose of this research, it is assumed that ratios before and after fair value adjustment inclusion should reflect each other to a greater degree. After all, the exact same ratios are applied in analysis, except for fair value adjustments being eliminated in the case of the ratio being calculated exclusive of the fair value adjustment. Thus, the researcher can posit that, objectively, the size effect of paired ratios should display a small effect size. If not, it can be posited that fair value adjustments distort ratio measurements.

3.5   RESEARCH ETHICS

Leeuw, Hox and Dillman (2012:79) state that research ethics entails that research participants should be treated fairly and not be put in any harm. A number of ethical principles were identified by Leeuw *et al.* (2012:80-85):

- Consent principle, which requires that participants should provide consent before participating in research;
- Anonymity principle, which requires that the research participants need not provide details around their name, contact number or address;
- Confidentiality principle, which requires that the participant's answers may not be made available to any party outside the research convention; and
- Diplomacy principle, which entails that the researcher may not ask questions that are sensitive in nature.

This research is not concerned with individuals, but with legal persons. Therefore, geographical constraints are not considered. Secondary data relating to these companies were collected from IRESS. As indicated previously, the population companies are compelled to publish financial data publicly and due to this necessity, the data can be extracted from a research-related database. Ethical clearance (NWU-00894-20-A4), as required by the North West University, is included under Appendix A to ensure adherence to the university's ethical research standard.

3.6   RESEARCH RESULTS

This section is undertaken to display research results that were obtained after the research methodology (as described in par. 3.4) was applied. Analysis was performed by examining each sampled company (see Table 3.4) individually. Profitability ratios of the same nature, including and excluding fair value adjustments were paired

together. For example, the net profit ratios, including and excluding fair value adjustments, were matched as a pair for the purpose of interpretation. Figure 3.4 was constructed to indicate the sequence in which sampled companies are analysed.
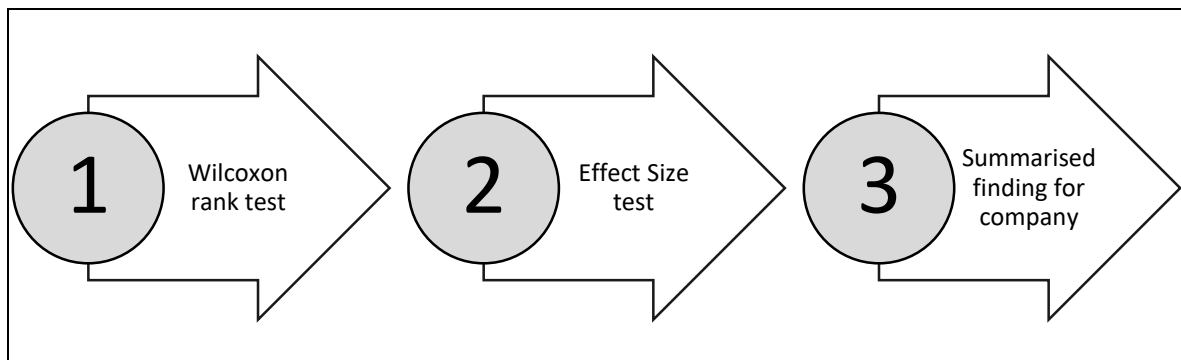
Figure 3.4: Sequence of research results per company
Source: Author

Figure 3.4 illustrates that research results are sequenced in three stages. For the first stage, the Wilcoxon rank test results are displayed. In terms of this rank test, the significance score (i.e. 'P'), indicates whether a significant difference exists among the mean scores of the paired profitability ratios. According to Pallant (2016:240), a P-value equal to or lesser than 0.05 reveals significance. Stage two necessitates the calculation of the effect size measure. The effect size measure is calculated by dividing the z-score by the square root of the number of observations, namely 'N' (Pallant, 2016:240). This theory posits:

- An effect size measure smaller than or equal to 0.1 indicates a small effect;
- An effect size measure of 0.3 indicates a medium effect; and
- An effect size measure of 0.5 indicates a larger effect.

Stage three provides a conclusion of findings that were obtained for the specific company. Sampled companies are discussed in alphabetical order, starting with Absa in par. 3.6.1, hereafter.

3.6.1   Results for Absa

As indicated in Figure 3.4, the Wilcoxon rank test is displayed. Table 3.6 was constructed to demonstrate testing among the profitability ability ratios (including and excluding fair value adjustments).

Table 3.6: Wilcoxon rank test for Absa (2015 – 2019)

Details	Operating profit margin before and after fair value adjustment	Net profit margin before and after fair value adjustment	Return on investment before and after fair value adjustment	Return on equity before and after fair value adjustment	Return on net assets before and after fair value adjustment
Z score	-0,405	-0,405	-0,405	-1,483	-0,405
Significance (P)	0,686	0,686	0,686	0,038	0,686

Source: Author

As can be observed from Table 3.6, the paired operating profit margins, net profit margins, ROI ratios and RONA ratios did not generate P-values that were of significance (smaller than 0.05). It must be noted that paired ROE ratios delivered a much smaller P-value than other paired ratios, where $P < 0.05$. To explore the difference further, Table 3.7 was constructed to display Cohen's d.

Table 3.7: Effect size for Absa (2015 – 2019)

Details	Operating profit margin before and after fair value adjustment	Net profit margin before and after fair value adjustment	Return on investment before and after fair value adjustment	Return on equity before and after fair value adjustment	Return on net assets before and after fair value adjustment
Z score	-0,405	-0,405	-0,405	-1,483	-0,405
N	5	5	5	5	5
Cohen d	-0,1811	-0,1811	-0,1811	-0,6632	-0,1811

Source: Author

Table 3.7 displays the effect sizes obtained for paired profit margins. In terms of paired operating profit margins, net profit margins, paired ROI ratios and paired RONA ratios, the effect was negative (decreasing the mean) and small. Thus, a small magnitude of difference was obtained in these instances. For the paired ROE ratios, a negative and large effect size was obtained (d = -0.6632). It is therefore posited that a large and negative difference was only generated for the paired ROE ratios. To summarise results for Absa, it can be argued that only the paired ROE ratios were affected by the fair value adjustment recognition, where d = -0.6632.

3.6.2   Results for FirstRand

For the sampled company, FirstRand, the same procedures were followed as described in Figure 3.4. Table 3.8 indicates the results of the Wilcoxon rank test, while Table 3.9 shows results for the effect size test.

Table 3.8: Wilcoxon rank test for FirstRand (2015 – 2019)

Details	Operating profit margin before and after fair value adjustment	Net profit margin before and after fair value adjustment	Return on investment before and after fair value adjustment	Return on equity before and after fair value adjustment	Return on net assets before and after fair value adjustment
Z score	-1,069	-1,069	-1,069	-1,461	-1,069
Significance (P)	0,285	0,285	0,285	0,044	0,285

Source: Author

As per Table 3.8, all generated P-values were larger than 0.05. Again, the paired ROE ratios generated a smaller significance value than other paired ratio types, $P < 0.05$. Table 3.9 displays the effect size test to demonstrate the magnitude of differences.

Table 3.9: Effect test for FirstRand (2015 – 2019)

Details	Operating profit margin before and after fair value adjustment	Net profit margin before and after fair value adjustment	Return on investment before and after fair value adjustment	Return on equity before and after fair value adjustment	Return on net assets before and after fair value adjustment
Z score	-1,069	-1,069	-1,069	-1,461	-1,069
N	5	5	5	5	5
Cohen d	-0,4781	-0,4781	-0,4781	-0,6534	-0,4781

Source: Author

For paired operating profit margins, paired net profit margins, paired ROI ratios and paired RONA ratios, a negative medium size affect was generated (d = -0.4781). For the paired ROE ratios, a negative and large size effect was calculated, where d = -0.6534. To summarise, the ROE ratio of FirstRand proved to be sensitive to the recognition of fair value adjustments, as d = -0.4781. This finding is in line with the same ROE ratio behaviour as observed in results for Absa.

3.6.3   Results for Growthpoint

Growthpoint was also sampled as a Top 40 company that recognises fair value adjustments on its investment property. Again, a Wilcoxon rank test (Table 3.10) and a size effect (Table 3.11) were measured for this entity.

Table 3.10: Wilcoxon rank test for Growthpoint (2015 – 2019)

Details	Operating profit margin before and after fair value adjustment	Net profit margin before and after fair value adjustment	Return on investment before and after fair value adjustment	Return on equity before and after fair value adjustment	Return on net assets before and after fair value adjustment
Z score	-2,023	-2,023	-2,023	-2,023	-2,023
Significance (P)	0,043	0,043	0,043	0,043	0,043

Source: Author

As per Table 3.10, the mean scores for all paired profitability ratios of Growthpoint differed significantly, where P = 0.043. It can be posited that the mean scores of all profitability ratios were sensitive to the recognition of fair value adjustments. Table 3.11 explores this finding further.

Table 3.11: Effect test for Growthpoint (2015 – 2019)

Details	Operating profit margin before and after fair value adjustment	Net profit margin before and after fair value adjustment	Return on investment before and after fair value adjustment	Return on equity before and after fair value adjustment	Return on net assets before and after fair value adjustment
Z score	-2,023	-2,023	-2,023	-2,023	-2,023
N	5	5	5	5	5
Cohen d	-0,9047	-0,9047	-0,9047	-0,9047	-0,9047

Source: Author

As per the measured size effect, all paired profitability ratios reflected d = -0.9047. This indicates a negative and large difference in magnitude. To summarise, all the profitability ratios of Growthpoint were significantly impacted by the recognition of fair value adjustments to investment property, as P = 0.043 and d = -0.9047

3.6.4   Results for Hammerson

This paragraph intends to analyse research findings that relate to Hammerson. As with all sampled entities, a Wilcoxon rank test and size effect test were performed. Tables 3.12 and 3.13 display such results.

Table 3.12: Wilcoxon rank test for Hammerson (2015 – 2019)

Details	Operating profit margin before and after fair value adjustment	Net profit margin before and after fair value adjustment	Return on investment before and after fair value adjustment	Return on equity before and after fair value adjustment	Return on net assets before and after fair value adjustment
Z score	-0,674	-0,674	-2,023	-0,674	-2,023
Significance (P)	0,5	0,5	0,043	0,5	0,043

Source: Author

Table 3.12 demonstrates that the paired operating profit and net profit margins and paired ROE ratios did not generated significant differences in means scores. Paired ROI ratios and paired RONA ratios proved to have means scores that were impacted significantly by fair value adjustment recognition, as P = 0.043. Table 3.13 further investigates this result.

Table 3.13: Effect test for Hammerson (2015 – 2019)

Details	Operating profit margin before and after fair value adjustment	Net profit margin before and after fair value adjustment	Return on investment before and after fair value adjustment	Return on equity before and after fair value adjustment	Return on net assets before and after fair value adjustment
Z score	-0,674	-0,674	-2,023	-0,674	-2,023
N	5	5	5	5	5
Cohen d	-0,3014	-0,3014	-0,9047	-0,3014	-0,9047

Source: Author

Table 3.13 displays similar findings to Table 3.12, as paired operating profit margins, paired net profit margins and paired ROE ratios generated d-values that were negative and medium (d = -0,3014). Again, paired ROI ratios and paired RONA ratios displayed large and negative d-values, where d = -0.9047. To recapitulate findings, it is posited that paired ROI ratios and paired RONA ratios were sensitive to the recognition of fair

value adjustments, where P = 0.043 and d = -0.9047. This is not in line with findings for Growthpoint, FirstRand and Absa.

3.6.5 Results for Investec

Another JSE Top 40 entity to be analysed, is Investec. Tables 3.14 and 3.15 were constructed to apply research procedures as indicated by Figure 3.4.

Table 3.14: Wilcoxon rank test for Investec (2015 – 2019)

Details	Operating profit margin before and after fair value adjustment	Net profit margin before and after fair value adjustment	Return on investment before and after fair value adjustment	Return on equity before and after fair value adjustment	Return on net assets before and after fair value adjustment
Z score	-1,826	-1,826	-1,826	-1,214	-1,826
Significance (P)	0,068	0,068	0,068	0,225	0,068

Source: Author

As per findings displayed in Table 3.14, it can be observed that all paired profitability ratio types generated a P-value that is larger than 0.05. For this reason, all paired profitability ratios proved not to produce significance in mean score values. It can, however, also be observed that paired operating margins, paired net profit margins, paired ROI ratios and paired RONA ratios generated P-values that were significantly lower than that of paired ROE ratios. Table 3.15 further investigates this observation.

Table 3.15: Effect test for Investec (2015 – 2019)

Details	Operating profit margin before and after fair value adjustment	Net profit margin before and after fair value adjustment	Return on investment before and after fair value adjustment	Return on equity before and after fair value adjustment	Return on net assets before and after fair value adjustment
Z score	-1,826	-1,826	-1,826	-1,214	-1,826
N	5	5	5	5	5
Cohen d	-0,8166	-0,8166	-0,8166	-0,5429	-0,8166

Source: Author

From Table 3.15 it is clear that paired operating margins, paired net profit margins, paired ROI ratios and paired RONA ratios resulted in negative and very large d-values (d = -0,8166). The paired ROE ratios generated d = -0,5429. Although this is a large magnitude as well, it is clearly smaller than that of the rest of the findings. To sum up,

it can be submitted that paired operating margins, paired net profit margins, paired ROI ratios and paired RONA ratios were more sensitive to fair value adjustment recognition than paired ROE ratios. This finding is more in line with that of Hammerson.

3.6.6 Results for Nedbank

A financial entity that was also sampled for recognising fair value adjustments, is Nedbank. As per Figure 3.4, this paragraph provides a detailed overview of t-testing results and size effect measures. Tables 3.16 and 3.17 were constructed for this purpose.

Table 3.16: Wilcoxon rank test for Nedbank (2015 – 2019)

Details	Operating profit margin before and after fair value adjustment	Net profit margin before and after fair value adjustment	Return on investment before and after fair value adjustment	Return on equity before and after fair value adjustment	Return on net assets before and after fair value adjustment
Z score	-0,365	-0,365	-0,365	-1,753	-0,365
Significance (P)	0,715	0,715	0,715	0,080	0,715

Source: Author

From Table 3.16, it is evident that all paired profitability ratios resulted in significance values that were larger than 0.05. It is also clear that paired ROE ratios generated a smaller P-value than other paired profitability ratios. Table 3.17 further explores this observation.

Table 3.17: Effect test for Nedbank (2015 – 2019)

Details	Operating profit margin before and after fair value adjustment	Net profit margin before and after fair value adjustment	Return on investment before and after fair value adjustment	Return on equity before and after fair value adjustment	Return on net assets before and after fair value adjustment
Z score	-0,365	-0,365	-0,365	-1,753	-0,365
N	5	5	5	5	5
Cohen d	-0,1632	-0,1632	-0,1632	-0,7840	-0,1632

Source: Author

Table 3.17 demonstrates that paired operating profit margins, paired net profit margins, paired ROI ratios and paired RONA ratios generated d-values that displayed small differences. Paired ROE ratios generated a d-value that was negative and large

(d = -0,7840). To recapitulate results, paired ROE ratios proved to the sensitive to the recognition of fair value adjustment in terms of IAS 40. This finding is in line with that of FirstRand and Absa.

3.6.7   Results for Nepi

For the sampled company Nepi, the same procedures were followed as described in Figure 3.4. Table 3.18 indicates the results of the Wilcoxon rank test, while Table 3.19 shows results for the effect size test.

Table 3.18: Wilcoxon rank test for Nepi (2015 – 2019)

Details	Operating profit margin before and after fair value adjustment	Net profit margin before and after fair value adjustment	Return on investment before and after fair value adjustment	Return on equity before and after fair value adjustment	Return on net assets before and after fair value adjustment
Z score	-2,023	-2,023	-2,023	-2,023	-2,023
Significance (P)	0,043	0,043	0,043	0,043	0,043

Source: Author

From Table 3.18, it is clear that all paired profitability ratios generated a significance between mean score measures, where P = 0.043. Table 3.19 further confirms this result.

Table 3.19: Effect test for Nepi (2015 – 2019)

Details	Operating profit margin before and after fair value adjustment	Net profit margin before and after fair value adjustment	Return on investment before and after fair value adjustment	Return on equity before and after fair value adjustment	Return on net assets before and after fair value adjustment
Z score	-2,023	-2,023	-2,023	-2,023	-2,023
N	5	5	5	5	5
Cohen d	-0,9047	-0,9047	-0,9047	-0,9047	-0,9047

Source: Author

A negative and large effect size (d = -0.9047) was obtained for all paired profitability ratios in Table 3.19. To sum up, it can be submitted that all profitability ratios were sensitive to the recognition of fair value adjustments. This finding is in line with that of Growthpoint.

3.6.8 Results for Old Mutual

This paragraph intends to analyse research findings that relate to Old Mutual. As with all sampled entities, a Wilcoxon rank test and size effect test were performed. Tables 3.20 and 3.21 display these results.

Table 3.20: Wilcoxon rank test for Old Mutual (2015 – 2019)

Details	Operating profit margin before and after fair value adjustment	Net profit margin before and after fair value adjustment	Return on investment before and after fair value adjustment	Return on equity before and after fair value adjustment	Return on net assets before and after fair value adjustment
Z score	-2,023	-2,023	-2,023	-0,405	-2,023
Significance (P)	0,043	0,043	0,043	0,686	0,043

Source: Author

Table 3.20 indicates that paired operating profit margins, paired net profit margins, paired ROI ratios and paired RONA ratios resulted in significant differences in mean score values (P = 0.043). Paired ROE ratios delivered insignificant differences in means scores, where P = 0.686. Table 3.21 displays similar findings.

Table 3.21: Effect test for Old Mutual (2015 – 2019)

Details	Operating profit margin before and after fair value adjustment	Net profit margin before and after fair value adjustment	Return on investment before and after fair value adjustment	Return on equity before and after fair value adjustment	Return on net assets before and after fair value adjustment
Z score	-2,023	-2,023	-2,023	-0,405	-2,023
N	5	5	5	5	5
Cohen d	-0,9047	-0,9047	-0,9047	-0,1811	-0,9047

Source: Author

From Table 3.21, it can be observed that paired operating profit margins, paired net profit margins, paired ROI ratios and paired RONA ratios generated differences in magnitude that were large and negative (d = -0,9047). Paired ROE ratios proved to have small but negative differences in term of d-values.

To summarise, it can be posited that paired operating profit margins, paired net profit margins, paired ROI ratios and paired RONA ratios were sensitive to fair value adjustment recognition. This finding is in line with that of Hammerson.

3.6.9   Results for Redefine

Redefine was also sampled as a Top 40 company that recognises fair value adjustments on its investment property. Again, a Wilcoxon rank test (Table 3.22) and a size effect (Table 3.23) were measured for this entity.

Table 3.22: Wilcoxon rank test for Redefine (2015 – 2019)

Details	Operating profit margin before and after fair value adjustment	Net profit margin before and after fair value adjustment	Return on investment before and after fair value adjustment	Return on equity before and after fair value adjustment	Return on net assets before and after fair value adjustment
Z score	-2,023	-2,023	-2,023	-2,023	-2,023
Significance (P)	0,043	0,043	0,043	0,043	0,043

Source: Author

Table 3.22 shows that all profitability ratios revealed the same finding, where P = 0.043. This is smaller than 0.05 and is indicative of significance in differences of mean scores. Table 3.23 further elaborates on this finding.

Table 3.23: Effect test for Redefine (2015 – 2019)

Details	Operating profit margin before and after fair value adjustment	Net profit margin before and after fair value adjustment	Return on investment before and after fair value adjustment	Return on equity before and after fair value adjustment	Return on net assets before and after fair value adjustment
Z score	-2,023	-2,023	-2,023	-2,023	-2,023
N	5	5	5	5	5
Cohen d	-0,9047	-0,9047	-0,9047	-0,9047	-0,9047

Source: Author

Table 3.23 displays a d-value of -0.9047, which is a large negative difference, obtained for all profitability ratios under review. To sum up, all profitability ratios of Redefine were sensitive to the recognition of fair value adjustments to investment property. This is in line with findings for Growthpoint and Nepi.

3.6.10   Results for Remgro

Remgro was sampled as a Top 40 company, which held investment property and recognised fair value adjustments through profit and loss. Tables 3.24 and 3.25 display this entity's analysis in terms of Figure 3.4.

Table 3.24: Wilcoxon rank test for Remgro (2015 – 2019)

Details	Operating profit margin before and after fair value adjustment	Net profit margin before and after fair value adjustment	Return on investment before and after fair value adjustment	Return on equity before and after fair value adjustment	Return on net assets before and after fair value adjustment
Z score	-2,023	-2,023	-2,023	-0,405	-2,023
Significance (P)	0,043	0,043	0,043	0,686	0,043

Source: Author

From Table 3.24 a significant difference in mean scores was obtained for paired operating profit margins, paired net profit margins, paired ROI ratios and paired RONA ratios, where P = 0.043. Paired ROE ratios did not display significant differences in mean scores, as P = 0.686. Table 3.25 demonstrates corresponding effect sizes.

Table 3.25: Effect test for Remgro (2015 – 2019)

Details	Operating profit margin before and after fair value adjustment	Net profit margin before and after fair value adjustment	Return on investment before and after fair value adjustment	Return on equity before and after fair value adjustment	Return on net assets before and after fair value adjustment
Z score	-2,023	-2,023	-2,023	-0,405	-2,023
N	5	5	5	5	5
Cohen d	-0,9047	-0,9047	-0,9047	-0,1811	-0,9047

Source: Author

For Remgro, all profitability ratios (except paired ROE ratios) generated large and negative d-values, where d = 0.9047. For paired ROE ratios, a negative and small d-value was obtained, where d = -0.1811.

As an overall observation, it may be posited that paired operating profit margins, paired net profit margins, paired ROI ratios and paired RONA ratios were sensitive to the recognition of fair value adjustments to profit or loss. This finding is similar to those of Investec and Old Mutual.

3.6.11 Results for Sanlam

Due to the nature of the business, Sanlam was identified as a top entity that holds investment property. Tables 3.26 and 3.27 illustrate the research results that were generated for the period 2015 to 2019.

Table 3.26: Wilcoxon rank test for Sanlam (2015 – 2019)

Details	Operating profit margin before and after fair value adjustment	Net profit margin before and after fair value adjustment	Return on investment before and after fair value adjustment	Return on equity before and after fair value adjustment	Return on net assets before and after fair value adjustment
Z score	-2,023	-2,023	-2,023	-0,135	-2,023
Significance (P)	0,043	0,043	0,043	0,893	0,043

Source: Author

Paired operating profit margins, paired net profit margins, paired ROI ratios and paired RONA ratios proved to generate significant differences in mean scores (P = 0.043) in Table 3.26. Paired ROE ratios demonstrated to have an insignificant P-value, where P = 0,893. Table 3.27 contains effect size measures.

Table 3.27: Effect test for Sanlam (2015 – 2019)

Details	Operating profit margin before and after fair value adjustment	Net profit margin before and after fair value adjustment	Return on investment before and after fair value adjustment	Return on equity before and after fair value adjustment	Return on net assets before and after fair value adjustment
Z score	-2,023	-2,023	-2,023	-0,135	-2,023
N	5	5	5	5	5
Cohen d	-0,9047	-0,9047	-0,9047	-0,060	-0,9047

Source: Author

As per Table 3.27, paired operating profit margins, paired net profit margins, paired ROI ratios and paired RONA ratios displayed large and negative d-values (d = - 0.9047). Paired ROE ratios, displayed a very small and negative d-value (d = -0.060).

To outline the foregoing analysis, it can be stated that paired operating profit margins, paired net profit margins, paired ROI ratios and paired RONA ratios were sensitive to the recognition of fair value adjustments. This is in line with Old Mutual, Investec and Remgro.

3.6.12 Results for Standard Bank

Like other financial institution such as Absa, Old Mutual, Nedbank and FirstRand, Standard Bank also disclosed investment property by applying the fair value model. This paragraph provides the analysis for this entity, for the period 2015 to 2019.

Table 3.28: Wilcoxon rank test for Standard Bank (2015 – 2019)

Details	Operating profit margin before and after fair value adjustment	Net profit margin before and after fair value adjustment	Return on investment before and after fair value adjustment	Return on equity before and after fair value adjustment	Return on net assets before and after fair value adjustment
Z score	-2,023	-2,023	-2,023	-1,214	-2,023
Significance (P)	0,043	0,043	0,043	0,225	0,043

Source: Author

As per Table 3.28, paired operating profit margins, paired net profit margins, paired ROI ratios and paired RONA ratios generated significant differences in mean scores, where P = 0.043. Paired ROE ratios generated insignificant differences in mean values, where P = 0.225. Table 3.29, further explores this research result.

Table 3.29: Effect test for Standard Bank (2015 – 2019)

Details	Operating profit margin before and after fair value adjustment	Net profit margin before and after fair value adjustment	Return on investment before and after fair value adjustment	Return on equity before and after fair value adjustment	Return on net assets before and after fair value adjustment
Z score	-2,023	-2,023	-2,023	-1,214	-2,023
N	5	5	5	5	5
Cohen d	-0,9047	-0,9047	-0,9047	-0,5429	-0,9047

Source: Author

Table 3.29 illustrates that paired operating profit margins, paired net profit margins, paired ROI ratios and paired RONA ratios resulted in very large and negative d-values (d = -0.9047). Paired ROE ratios, demonstrated a large negative d-value as well, but it was smaller than that of other paired profitability ratios. To sum up, paired operating profit margins, paired net profit margins, paired ROI ratios and paired RONA ratios were sensitive to recognition of fair value adjustments, in the income statement, relating to IAS 40. This finding is similar to the findings for Old Mutual, Investec, Remgro and Sanlam.

3.7   MANAGERIAL IMPLICATIONS OF RESEARCH RESULTS

From a managerial perspective, empirical research results have the following implication:

- It assists to understand how profitability, including and excluding fair value measures, affect investors when fair value accounting is applied. This study demonstrated that profitability ratios of sampled entities were indeed sensitive to fair value adjustments posted through profit or loss accounts. Between 50% and 75% of the companies sampled were affected by this recognition;

- The research established an understanding that fair value is not a tangible increase/decrease due to business performance, but rather an estimated change in the value of an asset held for capital appreciation or rental income. Due to the nature of this line item and the high probability of effect on profitability ratios, it is advisable for the investor to calculate these ratios excluding the fair value adjustment;

- Research results can make investors aware that fair value adjustments upward can increase the net value of the entity. However, this increase is 'artificial' as no guarantee exists that such an adjustment may materialise upon disposal of investment property. Thus, these adjustments are estimates only and should be ignored in the case of profitability analysis;

- Research results can make investors aware that profits and cash flows are not the same. Profits contain non-cash items such as fair value adjustment and depreciation. Furthermore, profits are calculated on the basis of accrual accounting. Thus, increases in profitability do not reflect actual money balances;

- From this research it is apparent that investors value profitability measures in determining probable returns. Increases in fair value are not reflected in dividend payments, as dividend payments are a consequence of available cash flow, rather than available profit. It is therefore suggested that investors also consider the analysis of cash flow measures when making investment decisions.

3.8   CHAPTER SUMMARY

Chapter 3 was undertaken to provide a detailed, scientific analysis of the research design, research methodology and empirical research results. The chapter commenced with the discussion of the applicable research philosophy, where it was indicated early on that a positivistic approach was to be followed throughout the remainder of the chapter.

The research design was dismantled by means of identifying the type of research (empirical research), type of study (quantitative research), type of data (secondary data collection) and time of study (longitudinal study); thereafter, the research methodology was dealt with. The population of the study was identified as the Top 40 JSE listed entities, as demonstrated in Table 3.2. The sampling method of the study was also discussed in par 3.4.2 and 3.4.3. It was further elaborated on by stating that a non-probability sampling method, in the form of judgment sampling, was applied. In order to support this sampling method decision, sampling criteria were created. The sampling frame for the study was demonstrated in Table 3.5, where the companies to be sampled were ticked for inclusion and reasons were provided for exclusion of other companies.

In term of data analysis, Figure 3.3 was constructed with the purpose of indicating that data skewness was assumed and that non-parametric testing was to be applied by means of the Wilcoxon rank test and the measurement of Cohen's d-value. The sampled companies were statistically analysed in Tables 3.6 to 3.29. Each sampled company was analysed individually and conclusions drawn based on the data behaviour of the entity under review.

The statistical results found that between 25% and 67% of the companies had profitability ratios with mean scores that were significantly affected by fair value adjustments. It further indicated that 67% to 75% of the sampled entities delivered large Cohen d-values, implicating that differences in mean scores were large. Tables 4.2 and 4.3 in the next chapter provide detailed illustrations.

The managerial implications of the research are that profitability ratios of sampled entities were affected by the recognition of fair value adjustments and that the investor should eliminate fair value adjustment measures when profitability is analysed. Fair

value adjustments are estimations of value increases or decreases relating to investment property. Fair value does not encapsulate any actual business performance. Investors are therefore made aware that other measures, especially those that analyse cash flow, should be studied when estimating tangible returns. Dividend payments should, after all, be done from available cash balances.

In the next chapter, the research conclusion is formulated. This chapter is dedicated to indicating how the primary and secondary objectives of the research are fulfilled and to answer the research question.

CHAPTER 4:
RESEARCH CONCLUSION

"Smart are never offended. They come to conclusions." – Agatha Christie

4.1   INTRODUCTION

Chapter 4 provides a research conclusion by delivering a detailed explanation of how the research objectives were fulfilled and how the research question may be answered successfully.

The chapter is sequenced by applying the research objectives in different headings. Paragraphs 4.2 to 4.4.4 discuss the fulfilment of individual objectives. The last section of the chapter (par. 4.5) deduces an answer to the research question, after all objectives were contemplated. The chapter commences with par. 4.2, which deals with the fulfilment of the primary objective.

4.2   PRIMARY OBJECTIVE

The primary objective of the study was originally stated in Chapter 1, par. 1.6.1. This objective aimed to determine whether fair value adjustments to investment property affect the profitability ratios of sampled listed companies. Table 4.1 was constructed as a summary of the overall findings.

Table 4.1: Findings to support the primary objective

Company name	Operating profit margin including and excluding fair value adjustments	Net profit margin including and excluding fair value adjustments	ROI ratio including and excluding fair value adjustments	ROE ratio including and excluding fair value adjustments	RONA ratio including and excluding fair value adjustments
Absa	x	x	x	✓	x
FirstRand	x	x	x	✓	x
Growthpoint	✓	✓	✓	✓	✓
Hammerson	x	x	✓	x	✓
Investec	✓	✓	✓	x	✓
Nedbank	x	x	x	✓	x

Company name	Operating profit margin including and excluding fair value adjustments	Net profit margin including and excluding fair value adjustments	ROI ratio including and excluding fair value adjustments	ROE ratio including and excluding fair value adjustments	RONA ratio including and excluding fair value adjustments
Nepi	✓	✓	✓	✓	✓
Old Mutual	✓	✓	✓	x	✓
Redefine	✓	✓	✓	✓	✓
Remgro	✓	✓	✓	x	✓
Sanlam	✓	✓	✓	x	✓
Standard Bank	✓	✓	✓	x	✓
% of companies affected	**67%**	**67%**	**75%**	**50%**	**75%**

Source: Author

In terms of the empirical analysis, as performed in Chapter 3 (see Tables 3.6 through 3.29), it can be posited that 67% of the sampled companies had an operating profit margin that was affected by fair value recognition. Within the same sample, 67% also displayed a net profit margin that was sensitive to fair value adjustment recognition. A total of 75% of the sampled entities had ROI and RONA ratios that were sensitive to fair value recognition. The ROE ratio seemed to be least affected, although 50% of the sampled organisations proved to be sensitive to fair value adjustment recognitions.

It is posited that the primary objective was fulfilled by demonstrating statistically that at least half of the selected companies were affected in terms of profitability ratios by the recording of fair value adjustments pertaining to IAS 40. This measurement can be as high as 75% when specific ratios such as ROI and RONA are studied.

Par. 4.3 explores the secondary objectives of the study, while par. 4.3.1 to 4.3.5 are dedicated to demonstrating the fulfilment of the theoretical objectives.

4.3 SECONDARY THEORETICAL OBJECTIVES

Theoretical objectives were stated in par. 1.6.2, in Chapter 1. The fulfilment of each theoretical objective is demonstrated hereafter.

4.3.1 Analysing the different levels of fair value measurements categories

In Chapter 2, par. 2.2, three different levels of fair value measurement were identified. Level 1 represented the fair value by means of observable inputs, where the asset value is deduced from quoted prices in active markets. Level 2 was considered less reliable than level 1, as in level 2 that quoted prices of similar assets in active markets were applied in the estimation of fair value. Lastly, level 3 was the least reliable measure, where the fair value of an asset was calculated from unobservable inputs (Figure 2.1). It was theorised that the market approach, cost approach and income approach can be applied to estimate the fair value. The market approach can be used to estimate values or prices from inactive markets. The cost approach assumes the value of an asset is based on the cost of replacing that very asset, taking into account the current condition and form of the asset. Lastly, the income approach may be applied where the asset value is deduced by calculating the present value of all future potential cash flows that the asset is able to generate (Chapter 2, par. 2.3.5).

4.3.2 Analysing the accounting standard for fair value measurement

In Chapter 2, par. 2.3, IFRS 13 was analysed in detail. As per Figure 2.2, this standard was analysed in terms of its objective, scope, measurement, initial recognition and disclosure.

It was discovered that the objective was directed towards providing a definition of fair value, measuring methods for fair value disclosure (Chapter 2, par. 2.3.1). The scope of the standard excluded only a few international accounting standards:

- IFRS 2: Share based payment;
- IFRS 16: Leases;
- IAS 2: Inventories;
- IAS 36: Impairment losses;
- IAS 19: Employee benefits; and
- IAS 26: Retirement benefit plans.

It was posited that that IAS 40 was not excluded and thus subject to IFRS 13 (Chapter 2.3, par. 2.3.2). In terms of measurement, it was found that financial assets and non-financial assets are measured through different approaches. Financial assets had to be measured in terms of observable inputs (i.e. level 1 of fair value measurement). Liabilities and equity instruments are valued by means of determining the highest and best use of the instruments.

IFRS 13 continued to explain initial recognition, where it was determined that such recognition should be done by means of measuring fair value, as per the definition set out in the objective. Finally, disclosure was discussed in Chapter 2, par. 2.3.5. It was stated that disclosure depends upon the fair value level, which applies to the instrument under review. Again, levels 1, 2 or 3 may apply, as well as the application of either the mark, cost or income approaches.

4.3.3 Differences in treatment of fair value adjustments, IAS 40 vs IAS 16

In Chapter 2, Figure 2.4, the differences in accounting treatment of revaluations were explored. It was found that IAS 16 allows for one of two valuation models to be applied: the cost model or the revaluation model (Chapter 2, par. 2.4). In applying the cost model, revaluations to PPE are not recognised and the asset is simply depreciated over an economic useful life. Should the revaluation model be applied under IAS 16, it implies that revaluations to assets are recognised, but allocated to OCI. OCI is not regarded as a distributable profit and is disclosed under non-distributable reserves. It was derived that OCI entries do not affect profit for the year.

IAS 40 follows a different approach. Even though investment property and PPE may resemble the same type of assets, there is a difference in intention of use. IAS 40 dictates that investment property is held to collect rent income or capital appreciation. In this case, a cost model or fair value model may be applied. The cost model is applied in situations where the fair value of the asset is unattainable. Otherwise, the fair value model is applied and revaluations to the assets are recognised as fair value adjustments that are posted to profit or loss accounts. Here, it was derived that such fair value adjustments may affect or distort profits and thus affect profitability ratios.

4.3.4 Monitoring profitability, liquidity, operations, debt and market performance

Chapter 2, par. 2.5 set out to identify the different categories of ratios – including profitability, liquidity, operations, debt and market performance ratios (Table 2.1, Chapter 2). Profitability ratios are used to determine whether the entity is able to apply assets in such a manner that it generates returns. Liquidity is concerned with the ability to meet short-term obligations use such as paying off debts and paying salaries to employees. Operational ratios test whether the entity is generally effectively managed. It is concerned with the inventory held, the timing of debtor collection and creditor payment, as well as the generation of income by fixed assets. The debt ratios were concerned with the capability of the entity to pay for debts and remain solvent. Finally, market performance ratios measured the ability of the entity to declare returns (such as dividends) to investors and monitor earnings and share price behaviour.

4.3.5 Analysing the category of profitability ratios in detail

In par. 2.5.1, Chapter 2, the categories of profitability ratios were discussed. It was found that the gross profit margin expresses gross profit as a percentage of sales, which is an instrument for regulating cost of sales. For this reason, the gross profit margin is not affected by fair value adjustments.

The operating profit margin divides EBIT by sales and expresses an answer as a percentage. The operating profit margin is affected by fair values, as fair value adjustments are included in either operating income or operating expenses. The net profit margin was also discussed in subparagraph c, in par. 2.5.1. This formula expresses net profit as a percentage of sales. Again, the net profit margin is affected by fair value adjustments, as operating income and expenses are included in the final net profit total.

The ROI ratio divides net profit by total assets. It expresses net profit as a percentage of total assets held. It measures the degree to which total assets are able to generate net profit. The ROE ratio similarly expressed net profit as a percentage of share capital. This ratio determines the degree to which capital is employed in order to generate net profit. Lastly, the RONA ratio was discussed. This ratio aimed to analyse how net profit relates to net equity (i.e. assets minus liabilities). This determines the extent to which

net equity generates net profit. The formulae for each of these ratios can be observed in Chapter 2, Formulae 2.1 to 2.6.

4.4   SECONDARY EMPIRICAL OBJECTIVES

The empirical objectives to the study were stated in Chapter 1, par. 1.5.3. This section of Chapter 4 is undertaken to demonstrate how these empirical objectives were fulfilled by applying the research design and research methodology, as described in Chapter 3. Paragraphs 4.3.1 to 4.3.3 are dedicated to setting out explanations of each objective's fulfilment.

4.4.1   Determining whether mean scores differ significantly

In order to fulfil this empirical objective, the Wilcoxon rank test was applied in order to measure whether significant differences existed within the mean scores of profitability ratios, including and excluding fair value adjustment. Refer to Figure 3.3, which serves as explanation in terms of a statistical approach. In accordance with the chosen statistical measure (Wilcoxon rank test), the probability score should be 0.05 or less, in order to result in a statistical significance. Table 4.2 serves as a summary to demonstrate the significance (Sig.) or insignificance (Insig.) of the findings relating to the Wilcoxon rank test.

Table 4.2: Wilcoxon rank test results

Company name	Operating profit margin including and excluding fair value adjustments	Net profit margin including and excluding fair value adjustments	ROI ratio including and excluding fair value adjustments	ROE ratio including and excluding fair value adjustments	RONA ratio including and excluding fair value adjustments
Absa	Insig.	Insig.	Insig.	Insig.	Insig.
FirstRand	Insig.	Insig.	Insig.	Insig.	Insig.
Growthpoint	Sig.	Sig.	Sig.	Sig.	Sig.
Hammerson	Insig.	Insig.	Sig.	Insig.	Insig.
Investec	Insig.	Insig.	Insig.	Insig.	Insig.
Nedbank	Insig.	Insig.	Insig.	Insig.	Insig.
Nepi	Sig.	Sig.	Sig.	Sig.	Sig.
Old Mutual	Sig.	Sig.	Sig.	Insig.	Sig.

Company name	Operating profit margin including and excluding fair value adjustments	Net profit margin including and excluding fair value adjustments	ROI ratio including and excluding fair value adjustments	ROE ratio including and excluding fair value adjustments	RONA ratio including and excluding fair value adjustments
Redefine	Sig.	Sig.	Sig.	Sig.	Sig.
Remgro	Sig.	Sig.	Sig.	Insig.	Sig.
Sanlam	Sig.	Sig.	Sig.	Insig.	Sig.
Standard Bank	Sig.	Sig.	Sig.	Insig.	Sig.
% of companies significant	**58%**	**58%**	**67%**	**25%**	**58%**

Source: Author

As can be observed from Table 4.2, the percentage of companies that resulted in significant mean score differences range between 25% and 67%. For the operating and net profit margins, as well as the RONA ratio, 58% of companies demonstrated significant differences in mean scores. The ROI ratio proved to provide the highest percentage in significance, totalling 67% of companies sampled. The sampled entities proved to deliver the lowest significance rate in terms of ROE ratios. Thus, it can be posited that fair value adjustments have a profound effect on the mean values of ROI ratios. In addition, fair value adjustments least affect the mean scores of ROE ratios.

4.4.2 Determining whether ratios differ significantly, through Cohen's d

As was illustrated in Figure 3.3 in Chapter 3, Cohen's d-value was applied to measure the size effect in mean scores. The size effect ranged between small, medium or large, where 0,1 was small, 0,3 was medium and 0,5 or more was classified as large. Table 4.3 was constructed to add the aggregate of the size affect outcomes.

Table 4.3: Cohen d-value results

Company name	Operating profit margin including and excluding fair value adjustments	Net profit margin including and excluding fair value adjustments	ROI ratio including and excluding fair value adjustments	ROE ratio including and excluding fair value adjustments	RONA ratio including and excluding fair value adjustments
Absa	Small	Small	Small	Large	Small
FirstRand	Medium	Medium	Medium	Large	Medium
Growthpoint	Large	Large	Large	Large	Large
Hammerson	Small	Small	Large	Small	Large
Investec	Large	Large	Large	Large	Large
Nedbank	Small	Small	Small	Large	Small
Nepi	Large	Large	Large	Large	Large
Old Mutual	Large	Large	Large	Small	Large
Redefine	Large	Large	Large	Large	Large
Remgro	Large	Large	Large	Small	Large
Sanlam	Large	Large	Large	Small	Large
Standard Bank	Large	Large	Large	Large	Large
% of companies with small size effect	**25%**	**25%**	**17%**	**33%**	**17%**
% of companies with medium size effect	**8%**	**8%**	**8%**	**0%**	**8%**
% of companies with large size effect	**67%**	**67%**	**75%**	**67%**	**75%**

Source: Author

From Table 4.3, the effect sizes of the different profitability ratios can be observed. In terms of the operating and net profit margin, it can be derived that 25% of the companies demonstrated a small Cohen d-value, 8% demonstrated a medium Cohen d-value and 67% demonstrated a large Cohen d-value. The ROI and RONA ratios both indicated that 17% of the companies demonstrated a small Cohen d-value, 8% demonstrated a medium Cohen d-value and 75% of the companies demonstrated a

large Cohen d-value. For the ROE ratio, it was discovered that 33% of the companies demonstrated a small Cohen d-value, while 67% of the companies demonstrated a large Cohen d-value. No medium size effect was recorded.

From the above discussions, it is clear that 67% to 75% of companies recorded a large Cohen d-value, which means that fair value adjustments resulted a large difference in mean score values.

4.4.3   Explanation of managerial implications, relating to empirical findings

In total, 50% to 75% of the sampled companies had profitability affected by fair value adjustments. Focus needs to be placed on the fact that fair value adjustments are estimations rather than tangible increases or decreases. The nature of fair value adjustments and the effect on profitability ratios resulted in managerial proof that profitability ratios should be calculated excluding fair value adjustments, when IAS 40 is applied. Awareness should be brought to the investors that tangible returns, such as dividends, depend on the availably of cash and the necessary cash flow. Therefore, cash flow line items should also be analysed.

4.5   ANSWER TO THE RESEARCH QUESTION

The research question of the study was stated in Chapter 1, par. 1.5. The research question was formulated as: Does fair value adjustments to investment property affect the profitability ratios of sampled companies? After all the research objectives were fulfilled, the research question could be answered.

Subsequent to the statistical results of the research, it is posited that the profitability ratios of the sampled entities are indeed affected by the recognition of fair value adjustment, in terms of IAS 40. Such profitability ratios include the operating profit margin, the net profit margin, the ROI ratio and RONA ratio. The ROE ratio was affected to a lesser degree. It is, therefore, advised that investors calculate profitability ratios net of fair value adjustments when sampled company analysis is conducted.

4.6   CLOSING SUMMARY

Chapter 4 was undertaken to indicate how the research objectives to the study were fulfilled. This research identified a research question, a primary objective and

secondary objectives in Chapter 1. The secondary objectives were further divided into theoretical and empirical objectives. In this chapter, the theoretical and empirical objectives were sequenced into main headings, in order to indicate how objectives were achieved.

The chapter commenced with par. 4.2, which indicated the fulfilment of the primary objective to the study. Table 4.1 was constructed as frequency proof that the primary objective was achieved and that profitability ratios of sampled entities were affect by fair value recognition.

Par. 4.3 indicated the achievement of the secondary theoretical objectives. This paragraph was further divided into par. 4.3.1 to par. 4.3.5. Each of the paragraphs addressed one of the theoretical objectives as identified in Chapter 1, par. 1.6.2. Par. 4.4 was dedicated to the secondary empirical objectives. The statistical findings were mainly displayed in paragraphs 4.4.1 to 4.4.3, where each of the paragraphs displayed findings for the empirical objectives as stated in Chapter 1, par. 1.6.3. Tables 4.2 and 4.3 were constructed for this purpose. Evidently, the research question was answered, and it was indicated that profitability is affected by fair value adjustments. Although the investor may value profitability ratios a great deal, they are cautioned to eliminate fair value adjustments before calculating the profitability ratios. Other options include the analysis of cash flow, to ensure that dividends can be paid. Ultimately, there are no ratios that guarantee investment decision success. As management, it is important to study these measures continuously and also pay attention to qualitative factors that can be impactful.

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Economic and Management Sciences Research
Ethics Committee (EMS-REC)

30 October 2020

Prof A Smit
Per e-mail
Dear Prof Smit

EMS-REC FEEDBACK: 30102020
Student: Van der Niet, BM (20948697)(NWU-00894-20-A4)
Applicant: Prof A Smit - MBA

Your ethics application on, *Evaluating the effect of fair value adjustments to investment property on profitability ratios,* which served on the EMS-REC meeting of 30 October 2020, refers.

Outcome:

Approved as a minimal risk study. A number **NWU-00894-20-A4** is given for one year of ethics clearance.

Due to the Covid-19 lock down ethics clearance for applications that involve data collection or any form of contact with participants are subject to the restrictions imposed by the South African government.

Kind regards,

Mark Rathbone

Digitally signed by Mark Rathbone
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West University, ou=Business
management,
email=mark.rathbone@nwu.ac.za,
c=ZA
Date: 2020.11.05 14:41:29 +0200

Prof Mark Rathbone
Chairperson: Economic and Management Sciences Research Ethics Committee (EMS-REC)