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Mabuza, Sandile Innocent

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VALUATION ACCURACY IN SOUTH AFRICA

MSc. PROPERTY DEVELOPMENT AND MARKETING

SANDILE MABUZA

770071

A research report submitted to the Faculty of Engineering and the Built Environment, University of the Witwatersrand, Johannesburg; in partial fulfilment of the requirements for the degree of **Master of Property Development and Marketing**.

SUPERVISOR: ASSOCIATE PROFESSOR SAMUEL AZAZU

JULY 2017

DECLARATION

I, Sandile Innocent Mabuza declare that this research report is my own work. It is being submitted for the degree of Master of Property Development and Marketing in the School of Construction, Economics and Management, faculty of the Built Environment and Engineering, in the University of Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination at this or any other University.

Signature

Full Name: Sandile Innocent Mabuza

7th July, 2017

ABSTRACT

Background

The perception of inconsistent and uncertain valuations has been the subject of debate worldwide. However, it is a phenomenon that has gone largely ignored in South Africa. The effect of unreliable valuations cannot be overstated, as all lending and investment decisions are based on valuation estimates.

Objectives

This study seeks to investigate the level of valuation accuracy in South Africa by comparing mortgage valuation estimates done prior to finance of the properties against their actual realised transaction prices.

Methods and Results

Valuers from four financial institutions as well as from external valuation firms were randomly chosen to participate in a questionnaire and in addition 32,826 properties which were valued and sold between January to December 2016 were also analysed. The valuation estimates and actual transaction prices were collected in an Excel file. While data from the banks and valuers was collected and analysed using Qualtrics. Data was analysed using R software version 3.3.3 to come up with descriptive and inference statistics. The result of the analysis showed that the level of valuation accuracy for the properties in South Africa used in the study is high (2.03%), which shows a very high level of accuracy compared to the adopted benchmark of 10%. The accuracy level across the three provinces in our study namely Gauteng, KwaZulu-Natal and Western Cape is 2.23%, 1.93% and 1.58% respectively, indicating that valuation accuracy is higher in Western Cape than Gauteng and KwaZulu-Natal

Conclusion

The study revealed that valuation estimates were good proxies of the market value (actual realised sale prices). Based on the 10% acceptable margin of error benchmark adopted by this study it shows that valuers in South Africa are indeed accurate in as far as estimating residential

cost values. Based on the 2.03% level of accuracy obtained in this study, we recommend that valuation stakeholders adopt 5% maximum margin of error between valuation estimates and actual realised prices.

DEDICATION

I dedicate this work to my parents who made it possible for me to graduate from high school, more so my mother whose passion for education stopped at nothing to make sure that I went on to university. It was during my undergraduate years when I learnt about your passion for our education and I vowed that one day I will take it a step further just to show my appreciation.

ACKNOWLEDGEMENTS

I believe that without God I would not be here today. Therefore, I would like to thank Him for all the strength and guidance He has given me, from the very first day of school till the successful completion of this journey.

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Abbreviations:

IPD:	Investment Property Databank
IVSC:	International Valuation Standards Council
SACPVP:	South African Council for the Property Valuers Profession

Definition of terms:

Valuer: an individual or group of individuals or a firm who possess the necessary qualifications, ability and experience to execute a valuation in an objective, unbiased and competent manner.

Valuation Accuracy: valuation accuracy is the ability of a valuation to correctly identify the target value. If the valuation basis is market value, this is the ability of the valuer to identify the sale price of the property (or rent on letting if market rental value).

1. CHAPTER 1. INTRODUCTION AND BACKGROUND

1.1 Introduction and background

Valuation Accuracy has been the subject of academic debate over the past three decades. The valuation accuracy issue was first brought up by the works of Hager and Lord, (1985) when they conducted a small sample survey of ten valuers who were invited to value two properties. Before carrying out the study, a benchmark of ± 5% was adopted. In one case, the range of valuations was ± 10.6% and in the other it was ± 18.5% suggesting a low level of accuracy relative to the benchmark of ± 5%. It was after this research work that Drivers Jonas first sponsored the Investment Property Databank (IPD) to carry out detailed research into valuation accuracy in the United Kingdom. The Royal Institute of Chartered Surveyors later took over the role as sponsor of the valuer professional body.

A lot has since been written about valuation accuracy worldwide both qualitatively and quantitatively. Worth noting is that the qualitative and quantitative studies have produced contradicting results, with a significant number of the qualitative commentaries suggesting that inaccuracy exists (Parker, 1999). However, the significant body of quantitative analytical literature (see for example IPD/DJ 1990) suggests high correlations between valuation estimates and sale prices.

Accordingly, this paper will investigate valuation accuracy and the acceptable margin of error by different stakeholders in South Africa, with the view of urging or inducing the South African Council for the Property Valuers Profession (SACPVP) to sponsor more detailed valuation research into valuation accuracy. Presently, valuation accuracy studies have been overlooked over there years in the South African context.

1.2 Problem Statement

The overall reliance of financial institutions on valuation estimates to serve as collateral for their loans and lending decisions for residential properties calls for a thorough investigation and assessment of these valuations. The dearth of literature in this regard has triggered the necessity

of this enquiry. Real estate has grown to bigger heights over the past years and huge sums of millions of Rands are involved every day in real estate dealings in South Africa. South Africa is considered a developing country and investors continue to invest billions of Rands in real estate, while financial institutions are mainly financing these investments based on the valuations provided by valuers. There is a compelling case to understand if valuations are indeed a good estimate for the actual market values of these real estate investments.

Over the past 30 years a lot of Valuation Accuracy studies have been undertaken in the developed real estate markets, similar studies have also been carried out in Nigeria coming up to different conclusions; (Parker, 1999; Crosby, 2000; Mallinson and French, 2000; Bretten and Wyatt, 2001; French and Gabrielli, 2004; Stevenson and Young, 2004; Joslin, 2005; McGreal and Taltavull de La Paz, 2011; Babawale, 2013; Adegoke, 2016; Thomas Jr, 2010; Ong et al., 2006; McGreal and Taltavull de La Paz, 2012; Adair et al., 1996; Addae-Dapaah, 2001; Aluko, 2007; Amidu and Aluko, 2007). However, valuation accuracy has not been investigated or given the much needed attention in the South African context save for a study by Wilkens (2015) who looked at the client influence on valuer behaviour in South Africa.

1.3 Importance of the Problem

Financial institutions are continuously complaining about the lack of accuracy and non-reliability of mortgage valuations supplied to them, which they consider as under-representing the values of foreclosed collateral securities. Therefore, valuation accuracy and consistency is critical to increase consumer confidence in the valuation profession. However, before improving accuracy this study sought to investigate the accuracy of mortgage valuations in South Africa.

1.4 Aims and Objectives

The main goal of this study is to investigate the degree of accuracy in mortgage valuation estimates vis-à-vis realised property prices in South Africa.

The specific objectives are to:

1. Assess the degree of accuracy of mortgage residential valuations in South Africa.

2. Investigate the perception of stakeholders as to the maximum margin of error acceptable in valuation estimates relative to the sale prices in South Africa.
3. Ascertain the prerequisite professional competencies for residential mortgage valuers.

The aim of the study is to address the above issues by focusing mainly on the question of reliability benchmark and the maximum acceptable margin of error.

1.5 Research Questions

1. How accurate are residential mortgage valuations in South Africa?

Research Sub-questions:

1.1. What is the degree of accuracy of mortgage valuations in South Africa?

1.2. What is the maximum acceptable margin of error for financial institutions and professional valuers?

1.3. What is the prerequisite professional competence for valuers doing residential valuations for lending purposes?

1.6 Scope and Assumptions

The study seeks to ascertain the level of valuation accuracy in the South African context.

The study will focus on valuation estimates prior to sale of property and their subsequent purchase prices.

1.7 Structure of the Research Report

This is a quantitative research report focusing on valuation accuracy in South Africa and it is organised as follows:

Chapter 1 – This chapter as already outlined, focuses on describing the current state of valuation accuracy in South Africa. It covers the following: Introduction and background, problem

statement, importance of the problem, aims and objectives, research questions and scope and assumptions.

Chapter 2 – This chapter consists of a literature review and outlines studies related to valuation accuracy in South Africa.

Chapter 3 – This chapter focuses on the overall methodology employed in the study

Chapter 4 – This chapter presents results from the two types of datasets analysed. First the data collected using a questionnaire which will help explain the findings of the study. Secondly, the analysed secondary data of valuation estimates done prior to finance and the subsequent sale prices. The results were then further discussed in relation to current literature.

Chapter 5 – This chapter presents and discusses the summary and conclusion of the study as well as presents several recommendations based upon this research.

2. CHAPTER 2. LITERATURE REVIEW

2.1 Introduction

This chapter is a literature review, with most studies described herein having been performed in the United States of America, the European market and Nigeria. Topics covered among others include; the valuation profession in South Africa, valuation accuracy, the importance of valuation accuracy, measurement of valuation accuracy and research on valuation accuracy.

2.2 Valuation Profession in South Africa

The valuation profession is a well-established and regulated profession in South Africa. It is governed by the South African Council for the Property Valuers Profession (SACPVP). The SACPVP is a statutory body first established on January 1st, 1983 as the South African Council for Property Valuers. It became the South African Council for the Property Valuers Profession when section 2 of the Property Valuers Profession Act came into effect in the year 2000.

SACPVP sees itself in partnership with the State and the valuer's profession to promote a high level of education and training of practitioners in the Property Valuers Profession to facilitate full recognition, professionalism and effectiveness among valuers, both locally and abroad. It enjoys full autonomy - although it is accountable to the State, the profession and the public for the fair and transparent administration of its business in the pursuit of its goals. SACPVP has just adopted the International Valuation Standards for compilation of valuation reports.

2.2 Valuation Accuracy

Crosby et al. (2003) defined valuation accuracy is the ability of a valuation to correctly identify the target. If the valuation basis is market value, this is the ability of the valuer to identify the sale price of the property (or rent on letting if market rental value). In accuracy studies, the target is usually defined as the subsequent sale price transacted in the market place.

Bowles et al. (2001) described valuation inaccuracy as the proximity of the ex-ante valuation(s) to the underlying true market value of which actual price is taken as the best indicator. If they are close, the valuation is accurate, and vice versa**.** Valuation variance is a measure of the ability of two or more valuers to produce the same value for the same property on the same basis at the

same time. Variance is therefore unrelated to market price and is essentially a theoretical measure used to indicate the reliability of valuations or the robustness of valuations. Valuation bias is the systematic (as opposed to random) deviation between valuations and true values/prices.

The need for accurate valuations is necessitated by the fact that mortgage institutions rely heavily on valuations for their lending decisions. The issue of valuation accuracy can be traced back to the work of Hager and Lord (1985), in the United Kingdom when they conducted a small survey of ten valuers who were invited to value two properties. Before carrying out the study a benchmark of ±5% was adopted. In one case, the range of valuations was ±10.6% and in the other was ±18.5% suggesting a low level of accuracy relative to the benchmark of ±5%. After this work the valuation firm Drivers Jonas provided funding so that the Investment Property Databank (IPD) could carry out detailed research into valuation accuracy in the United Kingdom. The Royal Institute of Chartered Surveyors later took over the role of sponsor as the valuer's professional body.

Continued criticism from within and without the appraisal fraternity have led to an outcry for accurate valuations. A lot has since been written about valuation accuracy worldwide both qualitatively and quantitatively in an attempt address the valuation accuracy issues. Worth noting is that the qualitative and quantitative studies have produced contradicting results, with a significant number of the qualitative commentaries suggesting that inaccuracy exists (Millington, 1985). However, the significant body of quantitative analytical literature (see for example IPD/DJ 1988, 1990, 1992 and 1998) suggests high correlations between valuation estimates and sale prices.

The following section of the introduction will survey and review valuation literature studies, mainly studies in accuracy and variance. The review will also seek to understand the gaps and methodologies employed in previous valuation uncertainty studies. The scope of the literature will cover valuation accuracy and variance.

2.3 The Importance of Valuation Accuracy

Aluko (2004) argues that the growing number of distressed banks in Nigeria and the recognition of mortgage valuation as a measure of investment performance of collaterals to mitigate the risks of loan underwriting processes necessitate valuation accuracy studies. Availability of credit has been frequently described as the lifeblood of any real estate development. But, mortgage valuation is fundamental to bank lending decisions (Loveli and French, 1996; Ayedun et al., 2011).

Ayedun et al., (2011) added that in the absence of continuously traded, deep and securitised markets, property valuations perform a vital function in the property market by acting as a surrogate for transaction prices. As with asset prices in the equity market and bond markets, property asset valuations are central to the inter-related processes of performance measurement, acquisition and disposal decisions. However, within both the professional and academic communities there is considerable skepticism about the professional ability of valuers to fulfil this role in a reliable manner.

Valuers do not operate with perfect market knowledge, they must follow client instruction make judgements, analyse information and respond to different pressures when carrying out a valuation and all these factors have a bearing in the final valuation figure. Values can be difficult to assess due to the imperfect nature of the property market, the heterogeneity of property and the number of recorded transactions at the Deeds Registry Office that occurred at prices that do not reflect market values. The ability of valuers to make effective estimations of market values has been subject to intense scrutiny by academia, the media and the courts and the apparent lack of a coherent and consistent result from the valuation process has damaged the reputation of the valuation profession (Bretten and Wyatt, 2001).

The need for accurate valuations is premised on the fact that valuations are a decision-making tool. They provide the basis for property performance measurements and other investment advice (McAllister, 1995). Another need for accurate valuations is necessitated by the fact that

mortgage institutions rely heavily on valuations for their lending decisions. Murdoch, (2001) noted that only in rare cases does a lender seek to claim that the valuer was negligent in failing to predict a future market fall. Instead, the dispute which has been taken to the highest Courts in both the UK and Australia is a totally different one, namely whether once it has been established a mortgage valuer is guilty of negligence in some other respect, should the valuer be held responsible for all the lender's losses, including those which result from the market fall. In seeking to justify such an imposing liability to the valuer the lender is arguing had it not been for the valuer's negligence there would have been no loan and therefore no loss.

Babawale, (2013) argues that considering the role of valuations (as surrogate for actual transaction prices) in the overall workings of the property and financial markets, it is imperative that valuations provide a reliable proxy for prices; otherwise a host of decisions based on valuations would be misleading. Regrettably, there are persuasive conceptual and empirical grounds to suggest that uncertainty is inherent in the valuation process precluding valuations from fulfilling its intended role reliably and creditably. For the residential market there is, by contrast, a lack of evidence and research concerning valuation accuracy, largely due to the absence of any perceived significant impact on portfolio performance. Yet, accuracy in valuations is important in relation to bank lending and the lowering of financial risk.

Parker (1999) defined valuation accuracy as being the proximity of a valuation (or prediction of the most likely selling price, often being an exceptional assessment) to market price (or the recorded consideration paid for a property, being a current time or actual assessment).

Ojo (2004) noted that other instances of valuation inaccuracy came from financial institutions who continuously complained about the accuracy and reliability of mortgage valuation figures supplied them, which they considered as under-representing the values of such foreclosed collateral securities. He went further to note other instances of alleged inaccuracy which were being investigated by the Professional Practice Committee of the Nigerian Institution of Estate Surveyors and Valuers.

2.4 Measurement of Valuation Accuracy

Valuation accuracy usually consists of empirical studies comparing market value vs. actual realised selling price, valuation done by different valuers on the same property and institutional influences which impact valuations and their accuracy.

Babawale (2013) in his valuation accuracy study employed questionnaire survey based on cluster sampling technique for primary data; while secondary data were sourced from existing literature and results of previous empirical studies. The target respondents were heads of valuation units in firms, where one exists, or a senior valuer concerned with valuation jobs in the firm and the sample size was 460 firms.

Still on the issue of valuation accuracy, Parker, (1999) used a small sample case study concerning the simultaneous valuation and sale of a portfolio of seven commercial, retail and industrial properties. The case study constructed for analysis comprised a rare opportunity arising from the offer, by an Australian institutional vendor, of a portfolio of seven commercial, retail and industrial properties, located along the eastern seaboard of Australia, for sale by tender closing in November 1995. Each of the properties was independently valued by one major, national firm of valuers as at the date of close of tenders. Offers to purchase were received for each of the seven properties at close of tenders and the prices nominated by the seven potential purchasers (who were all different) remained unchanged to become the market price at which each property was sold, totaling $105.20 million.

Worzala et al. (2011) in their study comparing valuations across borders employed questionnaires to gather information. The questionnaire included questions not only about facts, but also about the respondents' opinion about the reliability of the information. The (unbalanced) OLS-regression is another available tool for observing deviations on the related wide set of variables as it was employed in assessing the reliability of investment property fair values by (Nellessen and Zuelch, 2011).

Aluko (2004) argue that the growing number of distressed banks in Nigeria and the recognition of mortgage valuation as a measure of investment performance of collaterals to mitigate the risks

of loan underwriting process necessitate valuation accuracy studies. He then went on to examine whether open market valuations of mortgage properties were a good proxy for their sale prices by pooling data, involving 121 open market sales during the period 1994 to 2002, on property transactions in the study area with their corresponding contemporaneous valuations were gathered from the estate surveying and valuation firms, the lending institutions and the Nigerian Deposit Insurance Corporation. The data emanating therefrom were analysed with the aid of multiple regression models.

Stevenson and Young's (2004) attempts to marry the large literature that developed in relation to the accuracy of commercial valuations to transaction prices and the housing literature a number of papers have examined the relative pricing of properties depending on the sale method used in particular the comparison between private treaty and auction. A dataset from the Greater Dublin market was used, to examine the relationship between guide and sale prices and assesses whether differences are observable in the results between auction and private treaty sales.

Kayode Babawale and Omirin (2012) argue that to address the phenomenon of inaccuracy in real estate valuation successfully, it is imperative to ascertain the sources and how valuers are influenced. The purpose of his paper therefore was to identify and assess both the predictive and relative importance of the factors that significantly influence inaccuracy in residential property valuations in Lagos metropolis. In their study, they obtained data from 250 firms of Estate Surveyors and Valuers were analysed by a combination of descriptive and inferential statistics including factor analysis, and correlation/regression analysis.

2.5 Research on Valuation Accuracy

This presents the summary of findings as per the reviewed literature above;
Hager and Lord (1985) conducted a sample survey of ten valuers to value two properties. In one case, the range of valuations was, ±10.6% and in the other it was ±18.5% suggesting a relatively low level of accuracy relatively to the ±5% benchmark adopted. This study cannot be conclusive though because the valuers were not paid any professional fees which might have led to not carrying out a thorough job on their side. The number of properties used also was too small to draw up conclusive representation.

Brown (1986) used regression analysis in his valuation accuracy to compare valuations against transaction prices. His study was much larger and robust he used a sample of 29 properties. Independent firms were instructed to carry out the valuations and they were all given the same instruction and purpose of valuation. However, sample size is still considered too small to draw unbiased decisions.

In 1990, IPD/DJ did larger analysis of 2,400 properties for which there were transaction sales figures and valuation estimates. The study observed high correlations between valuation estimates and sale prices as earlier found in their 1988 study.

Nanthakumaran et al. (1996) conducted a research into variance in property valuation that involved a survey of major local and national firms. The study found a 9.53% overall variation in the mean valuation of each property and found disparities in the variance of valuation of 8.63 and 11.86% respectively for national and local firms due principally to the superior transactional information available for the national firms. The study suggests that a maximum margin of variance error of 8.63% to 11.86% might be acceptable. However, still no certain maximum benchmark was established.

Bretten and Wyatt, (2002) when investigating possible causes of variance and acceptable margin in investment valuation for commercial lending he used ±10% as the acceptable margin of error. 220 questionnaires were distributed to various stakeholders: lenders, finance, brokers, valuers and investors. The survey also revealed that the main cause of variance was individual valuer's behavioral influences. The findings were useful in the effort to ascertain a precise benchmark of valuation error, but the views of the individual clients in the regard were not sought.

2.6 Conclusion

Preceding the reviewed literature above, in previous studies benchmarks of ±5-10% were adopted. The levels of accuracy recorded however came out ranging from ±8.6-18.5% showing a low level of valuation accuracy. To date there's still no agreement as to what is the acceptable margin of error for valuations. With some stakeholders advocating for a benchmark ±5% while

others feel that a ±5% benchmark is too stringent and a benchmark of ±10% should be employed.

The studies by Hager and Lord (1985) and Nanthakumaran et al. (1996) compared valuations to valuations so had no market relativeness. To address this limitation this study will compare valuation estimates with their subsequent sale prices and time lag will also be considered as time lag was also not considered by the (IPD/DJ, 1990) and (BROWN, 1986) studies. To cover for that limitation the study used valuation estimates and sale prices that happened in the same year. (Hager and Lord, 1985) sample size of two properties was considered too small to draw conclusive decisions. To address this larger sample study will be conducted to provide statistically robust results to draw up conclusions.

3. CHAPTER 3. METHODOLOGY

3.1 Introduction

This chapter will focus on the overall methodology employed in the study i.e. it will provide details about the methods chosen, the population used in the study, sample survey procedures, data collection, data management and how the data was analysed.

3.2 Methodological Choice

The aim of the study is to investigate valuation accuracy in South Africa with the aim of contributing to the existing body of knowledge on the subject and provoke other players to carry out further research in the valuation profession in the South African context. This will help improve the quality of valuations, investor confidence and result in a healthier property market.

In the preceding chapter, we reviewed relevant studies on valuation accuracy, this study has tried to emulate and improve upon the best methodological approaches to measure valuation accuracy and used therein. Hager and Lord (1985) carried out a qualitative study that while useful in giving an idea about the range of distribution between value estimates around the market price. The use of ranges alone can give some misleading results because there can be some outliers which can lead to a distortion of the final results of the study.

To date, Brown's (1985) approach of using regression analysis, which was later adopted by the Investments Property Data Bank/Drivers Jonas for their periodic studies on valuation accuracy, is the most suitable and appropriate for this study which involves a more serious and rigorous statistical analysis. However, due to the criticism on the use of the regression methodology, this study will use a combination of the Regression Analysis, ANOVA and ranges for more robust results.

3.3 Study Design

The study adopted a quantitative design methodology by comparing mortgage valuation estimates and their subsequent transaction prices to assess valuation accuracy using data from four different financial institutions in South Africa.

3.4 Study Population

The study population (sampling frame) was chosen completely from financial institutions involved in property finance in South Africa and all registered valuers with the (SACPVP) carrying out valuations for mortgage purposes.

3.5 Sample Survey Procedure

The study sought to estimate mortgage valuation accuracy in South Africa and as such focused on the top four financial institutions in the financing of property in South Africa and their external valuers carrying out valuations prior to financing. This was done to ensure that the study obtains a bigger sample and hence results will represent the status quo. Therefore, the study sample was the top four institutions responsible for financing properties in South Africa. The financial institutions assessed were FNB, Nedbank, Standard Bank and ABSA. Data was used from 3 provinces namely Gauteng, Western Cape and KwaZulu-Natal. These Provinces were selected based on the high number of property transactions that occur in each. The study focused on the 2016 calendar year which approximates to 32826 residential valuation estimates and their eventual transaction prices.

3.6 Data Collection Instruments

Firstly, data on prior valuation figures and their subsequent sale prices in respect of the recently sold properties in the study area were sourced from the mortgage banks. The data represented valuation estimates of all properties financed by the banks between January and December 2016. This helped determine the level of accuracy of valuations prepared by the valuers in the study area. Secondly, questionnaires were distributed online using Qualtrics to the mortgage banks and external valuers carrying out the valuations (See Appendixes 2 and 3).

3.7 Study Outcome and Explanatory Variables

The study outcome variable is valuation accuracy. The explanatory variables analysed are valuation estimates done prior to sale and the subsequent transaction prices.

3.8 Data Management

The data from the banks was received in Microsoft Excel format and was exported to R software version 3.2.2 for analysis. Variables were renamed for ease of reading with the help of the codebook. Data was cleaned to remove outliers, illegal and inconsistent values. Data from the external valuers and in-house quality assurance valuers was collected and analysed by Qualtrics. The reports were then exported to Microsoft word.

3.9 Statistical Analysis Plan

3.9.1 Descriptive and inferential analysis

Data was presented using tables, frequencies, bar charts, means and standard deviations. To assess any difference in average market value and purchase price, we used a student t-test. We further used the analysis of variance (ANOVA) test to assess if there is any difference in the average variance across the provinces. Tests for assumptions of all statistical tests were done before parametric tests were performed and there were no violations observed. The study used a 5% level of significance and p-values <0.05 were deemed to be significant. These techniques were chosen on the basis that they were earlier successfully employed by Brown (1986) and IPD (2004). Two studies which gave consistent results.

3.9.2 Linear Regression Models

The purpose of linear regression models is to use the available data to empirically determine the relationship between a set of predictor variables and the response variable and use the relationship for prediction (Kahane, 2001). The general multiple linear regression model is illustrated in equation 1.

Equation 3.1: Linear regression equation

$$\boldsymbol{y = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \cdots + \beta_k x_k + \varepsilon}$$

Where y is the response variable, β_0 is the intercept, $\beta_1 - \beta_k$ are model parameters, $x_1 - x_k$ are predictor variables and ε is the error. Whenever there is only one predictor variable, it is referred to as simple linear regression. The response variable in this study is the market value of the property while the predictor variable is the purchase price of the property.

Assumptions

We tested for the following regression assumptions:

1. There should be a linear relationship between the response and predictor variable.
2. The error terms should be normally distributed
3. The error terms should not be correlated
4. The error terms should have a constant variance

To develop a regression model, it is important to estimate the coefficients. These coefficients are estimated using the ordinary least squares method which is usually referred to as OLS. This is one of the simplest methods used to estimate the regression coefficients. This method chooses regression coefficients that minimise the residual sum of squares.

3.10 Validity and reliability

"Validity determines whether the research truly measures that which it was intended to measure or how truthful the research results are. In other words, does the research instrument allow you to hit "the bull's eye" of your research object? Researchers generally determine validity by asking a series of questions and will often look for the answers in the research of others" (Golafshani, 2003).

Reliability refers to whether data collection techniques and analytic procedures would produce consistent findings if they were repeated on another occasion, or if they were replicated by a different researcher (Saunders et al., 2012).

To ensure validity and reliability in this study, we used real data from financial institutions using qualified valuers registered with the SACPVP. We developed; pre-tested questionnaires and modifications were made.

Table 3.1: Reliability Statistics

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardised Items	N of Items
.867	.917	29

From the table, the Cronbach's alpha is 0.867, which indicates a high level of internal consistency for the scale used in the study.

3.10 Ethical Considerations

Permission to use data for the study was obtained from the relevant mortgage financial institutions. The study Protocol was presented to the University of the Witwatersrand Humans Research Ethics Committee and ethical clearance was received in June 2016. Data was analysed thereafter and no client identifiers were used during analysis to ensure anonymity.

4. CHAPTER 4. RESULTS and DISCUSSION

4.1 Introduction

This chapter presents results from the two types of datasets analysed. First, the data collected from by questionnaire which will help explain the findings based on current practices. Secondly, the analysed secondary data of valuation estimates done prior to finance and the subsequent sale prices are shown. The results are then further discussed in relation to current literature.

4.2 Preliminary Survey Details

The field data for the study was collected between January and February 2017. The data was sourced from mortgage finance institutions and valuers. The data from the banks was received in Microsoft Excel format and was exported to R software version 3.2.2 for analysis. Variables were renamed for ease of reading with the help of the codebook. Data was cleaned to remove outliers, illegal and inconsistent values. Data for external valuers and in-house quality assurance valuers was collected and analysed by Qualtrics then exported reports to Microsoft word.

4.3 Questionnaire Results

The questionnaire allowed for valuable insights into the general makeup of the mortgage market and its players.

Figure 4.1 indicates that of the 25 valuers who responded to the survey, a total of 17 were males (68%) and only 8 (32%) were female. This indicates a low percentage of Valuers who took part in the survey were female. This is a reflection of the low representative of women in the valuation profession.

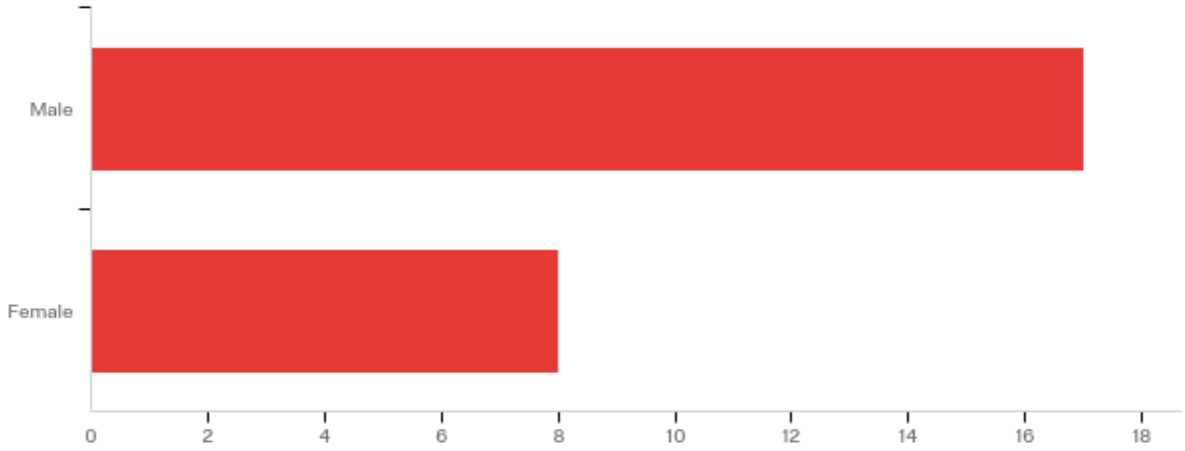


Figure 4.1: A bar graph showing the genders of survey respondents

Figure 4.2 presents the qualification of the valuers who took part in the survey. None of the valuers who took part in the survey have a Btech degree while only 4% of the valuers have a BSc degree. The most common qualification was a national diploma, held by 9 valuers in the survey, representing 36% of the total number.

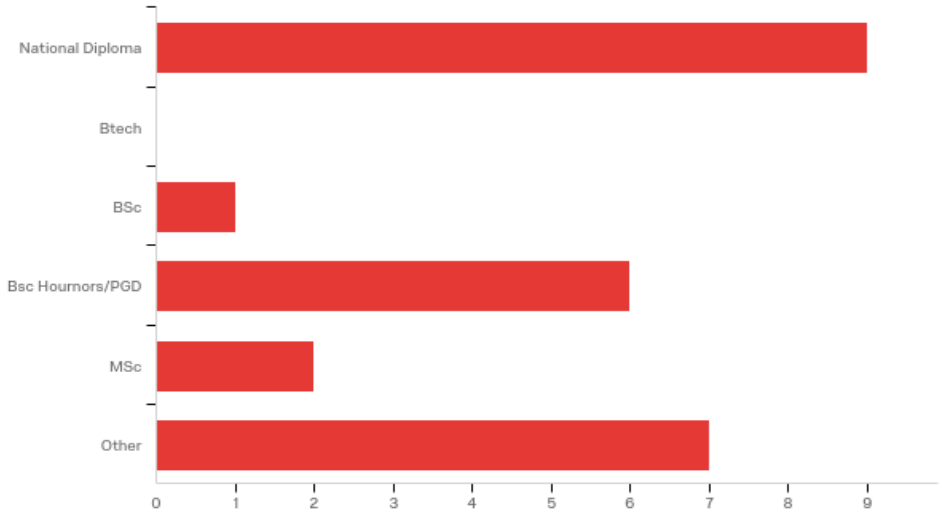


Figure 4.2: A bar graph showing the qualifications of the survey respondents.

Figure 4.3 shows that 14 of the respondents are professional valuers representing, 56% of the total number of respondents. There is one valuer with professional qualification stated as other. Generally, most of the valuers are professional valuers with three, representing 12%, being candidate valuers and seven of them being associate valuers.

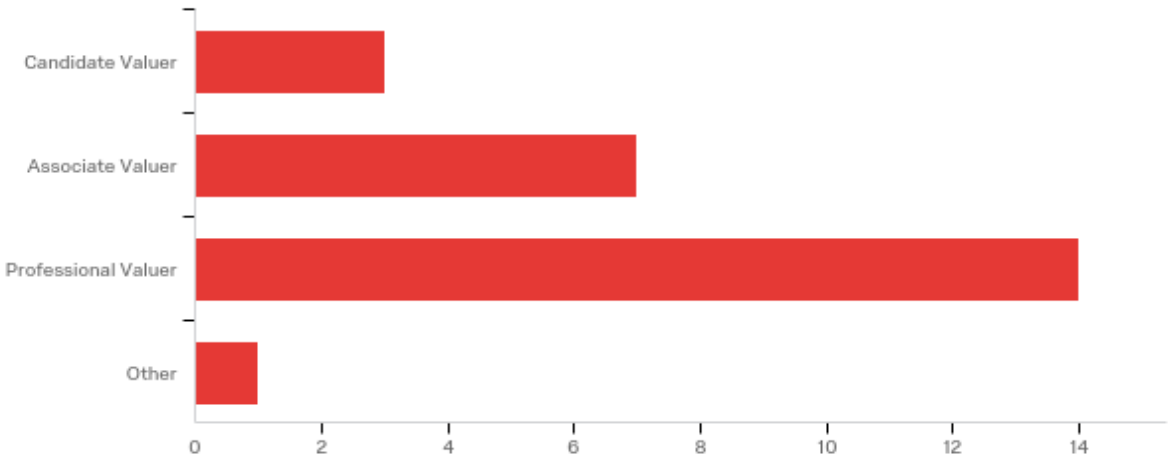


Figure 4.3: Bar graph showing the professional qualification of the survey respondents

Figure 4.4 shows the number of years of professional experience held by each respondent. The majority of the valuers indicated that they have between 1-5 years or 26-30 years of professional experience, with 5 valuers (20%) indicating they are within each experience bracket. The least populated experience bracket is between 6-10 years of experience, with only 8% of the respondents falling within this bracket.

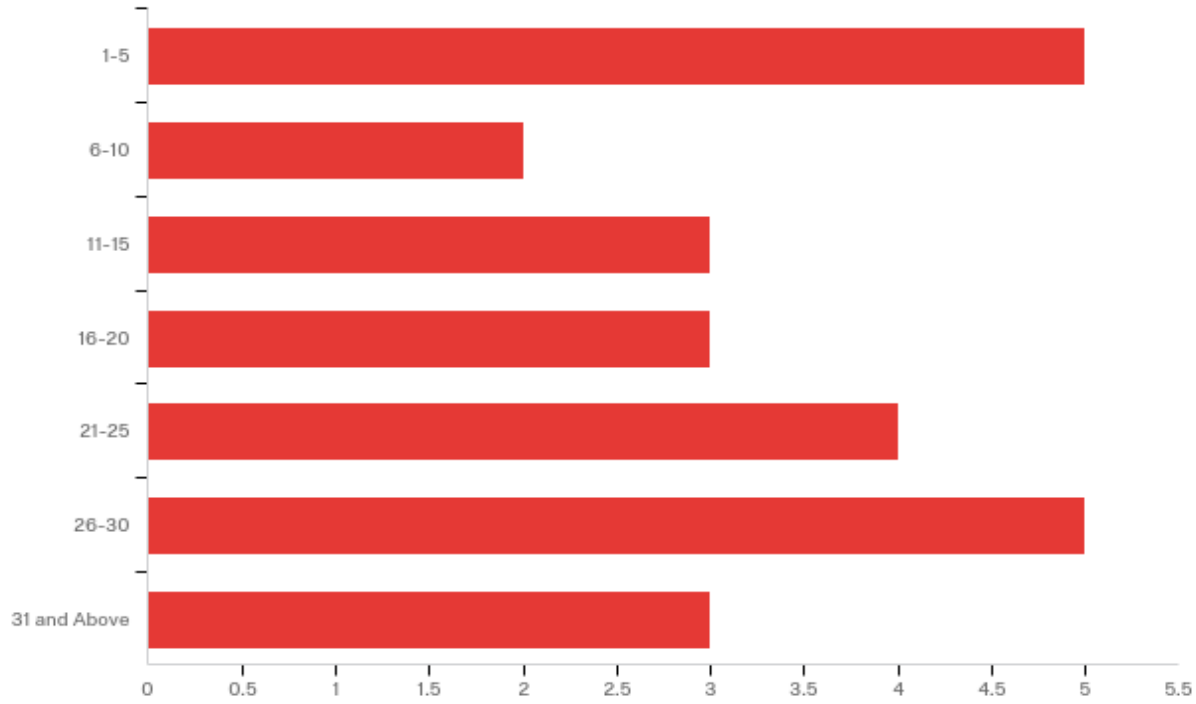


Figure 4.4: Bar graph showing the number of years of professional experience held by the survey respondents

Figure 4.5 indicates the age of the firms for which the survey respondents work. The majority of respondents work for firms which are between 11-15 years old, in fact 37.5% of respondents work for such a firms.

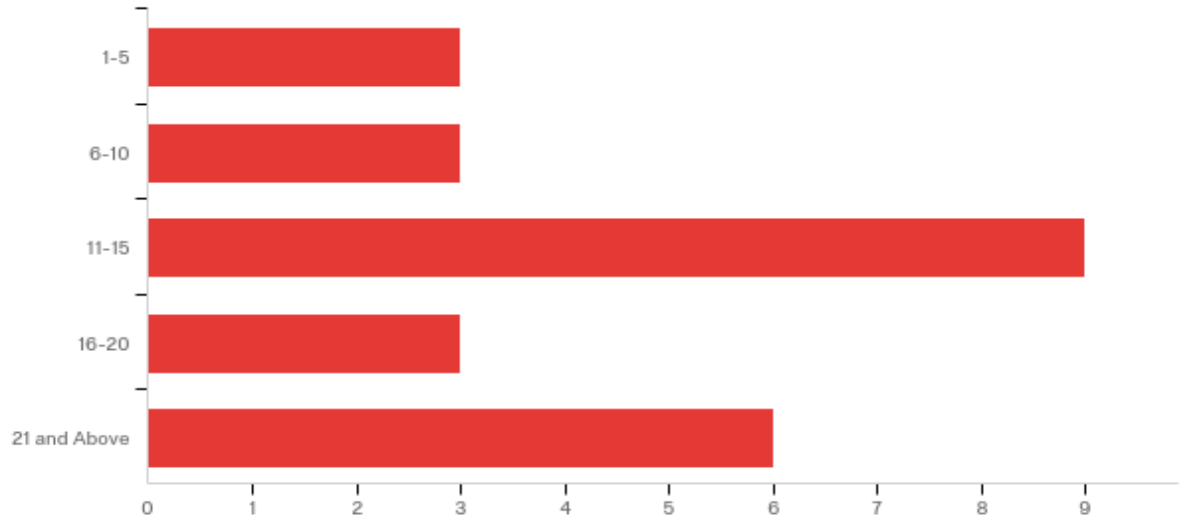


Figure 4.5: A bar graph indicating the age of the firms for which the survey respondents work

From Table 4.1 none of the firms specialise in project management. Only one firm specialises in property development, while 21 which represents 84% of the firms specialise in valuation. Most of the respondents who were involved in this survey work in firms that specialise in valuation.

Table 4.1:Showing each Firm's Area of Specialisation

Firm's area of specialisation	Number	Percentage (%)
Valuation	21	84
Property Managers	3	12
Property Developers	1	4
Project Managers	0	0
Other (please specify)	3	12
Total	25	100

From Table 4.2 it is evident that there is an influence by clients on valuations. one respondent representing said that clients always try to influence him during evaluations. Two of the respondents said there has never been any influence from clients while 18 respondents, representing 75% of the total number, report they have sometimes had clients trying to influence their valuations.

Table 4.2: Showing Clients Influence on Valuations

Clients influence	Number of respondents	Percentage (%)
Never	2	8.33
Sometimes	18	75
Most of the time	3	12.5
Always	1	4.17
Total	24	100

There were 17 respondents working for the four banks of interest to this study. From the total number, 1 responded from ABSA, 2 respondents were from Standard bank while there were 7 respondents each from FNB and Nedbank.

Table 4.3: Table: Number of Respondents from the Banks of Interest to this Study

Bank	Frequency	Percentage (%)
FNB	7	41.18
Nedbank	7	41.18
Standard Bank	2	11.76
ABSA	1	5.88
Total	17	100

Table 4.4 shows the distribution of the years of professional experience of the respondents working in the banks. Experience is a very important characteristic in property valuation. From the table, 3 respondents representing 17.65% have between 11-15 years of experience as professional valuers, 5 respondents have either between 6-10 years of experience or 16 years and above representing 29.41%.

Table 4.4: Years of Experience

Experience (Years)	Frequency	Percentage (%)
1-5	4	23.53
6-10	5	29.41
11-15	3	17.65
16 and above	5	29.41
Total	17	100

Table 4.5 shows the distribution of what the respondents believe is the maximum acceptable margin of error for valuations. From the table, it can be seen that 12 (100%) of the respondents stated that a margin of error of 0-5% was acceptable with none stating otherwise. A total of 13 (92.86%) stated that 6-10% margin of error was acceptable while 1 (7.14%) indicated that it was unacceptable. Generally, the financial institutions accept a 10% maximum margin of errors for their valuations.

Table 4.5: Showing the Maximum Acceptable Margin of Error by Financial Institutions

#	Margin of Error (%)	Acceptable (%)	Frequency	Unacceptable (%)	Frequency	Total
1	0-5	100.00	12	0.00	0	12
2	6-10	92.86	13	7.14	1	14
3	11-15	9.09	1	90.91	10	11
4	16-20	0.00	0	100.00	11	11
5	21-25	0.00	0	100.00	11	11
6	26-30	0.00	0	100.00	11	11
7	31 and Above	0.00	0	100.00	11	11

Table 4.6 shows the distribution of the maximum margin of errors by professional valuers. A total of 16 (94.12%) of the valuers stated that 1-5% was acceptable while 1 (5.88%) disagreed. From the study, 22 (95.65%) of the total number of professional valuers stated that a margin of error of 6-10% was acceptable while 1 (4.35%) believed that it was unacceptable. However, some of the professional valuers believed that a margin of error of 11-15% and 16-20% are acceptable but were in minority.

Table 4.6: Maximum Acceptable Margin of Error by Professional Valuers

#	Margin of Error (%)	Acceptable (%)	Frequency	Unacceptable (%)	Frequency	Total
1	1-5	94.12	16	5.88	1	17
2	6-10	95.65	22	4.35	1	23
3	11-15	41.18	7	58.82	10	17
4	16-20	12.50	2	87.50	14	16
5	21-25	0.00	0	100.00	16	16
6	26-30	0.00	0	100.00	16	16
7	31 and Above	0.00	0	100.00	15	15

Figure 4.6: shows the distribution of the educational qualifications of the respondents. It is evident from the bar graph that majority of the valuers have a national diploma while none of them have a BSc degree. Only one had a Btech representing 5.88%, six of the respondents have a national diploma which represents 35.29% of the total number of respondents. two respondents have other types of qualifications.

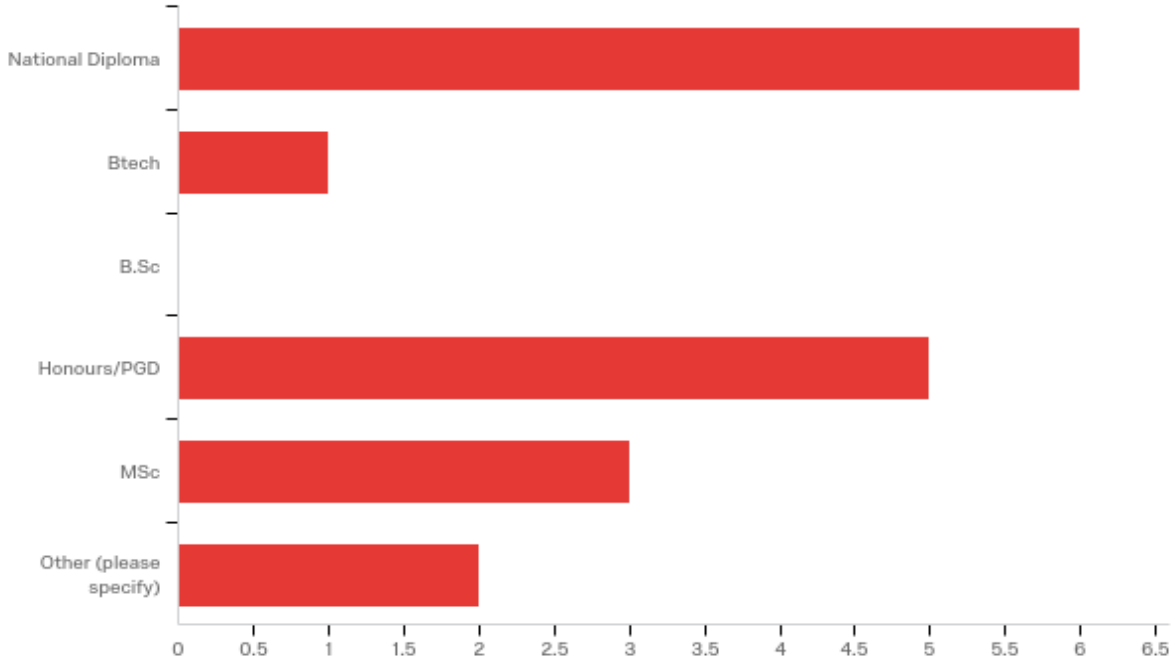


Figure 4.6: Figure: Educational qualification

Majority of the banks have an in-house quality assurance for their valuations before lending decisions are taken. From Table 4.7, 15 representing 88.24% of the respondents have an in-house quality assurance team in their banks for valuations done prior to lending decisions while 2 of the respondents do not have a quality assurance team in their bank.

Table 4.7: In house quality assurance

In-house quality assurance	Frequency	Percentage (%)
Yes	15	88.24
No	2	11.76
Total	17	100

It sometimes happens that organizations try to influence valuers during the valuation process. Table 4.8 shows the distribution of the number of respondents that fell that organizations pressure them to influence valuers during valuations. It is evident from the table that most of the organizations do not attempt to influence the valuers. From the study, 5 out of the 17 respondents stated that their organizations try to influence valuers representing 29.41%.

Table 4.8: Banks influence of valuers

	Frequency	**Percentage (%)**
Yes	5	29.41
No	12	70.59
Total	17	100

Table 4.9: shows the distribution of respondents whose firms seek a second valuation to confirm initial findings. Most of the respondents 13 (81.25%) stated that they seek for a second opinion while 3 (18.75%) did not.

Table 4.9: Frequency of requesting for a second opinion after reviewing initial valuation

	Frequency	**Percentage**
Yes	13	81.25
No	3	18.75
Total	16	100

4.4 Results on the valuation accuracy in South Africa

This study used data from the financial institutions to compare the residential valuation estimates done prior to the sale of property to their actual realised transaction prices.

4.4.1 Distribution of residential properties across province

There was a total of 32826 residential properties analysed in this study (Figure 4.7). From this number, 8349 (25.4%) of the residential properties were from the Western Cape, 3693 (11.3%) of the properties were from KwaZulu Natal and 20784 (63.3%) of the properties used were from Gauteng. This shows that more than half of the properties used in this study were from Gauteng while the fewest were from KwaZulu Natal. The larger percentage of residential properties being from Gauteng is likely because Gauteng is the most populated province and the business hub of the Country.

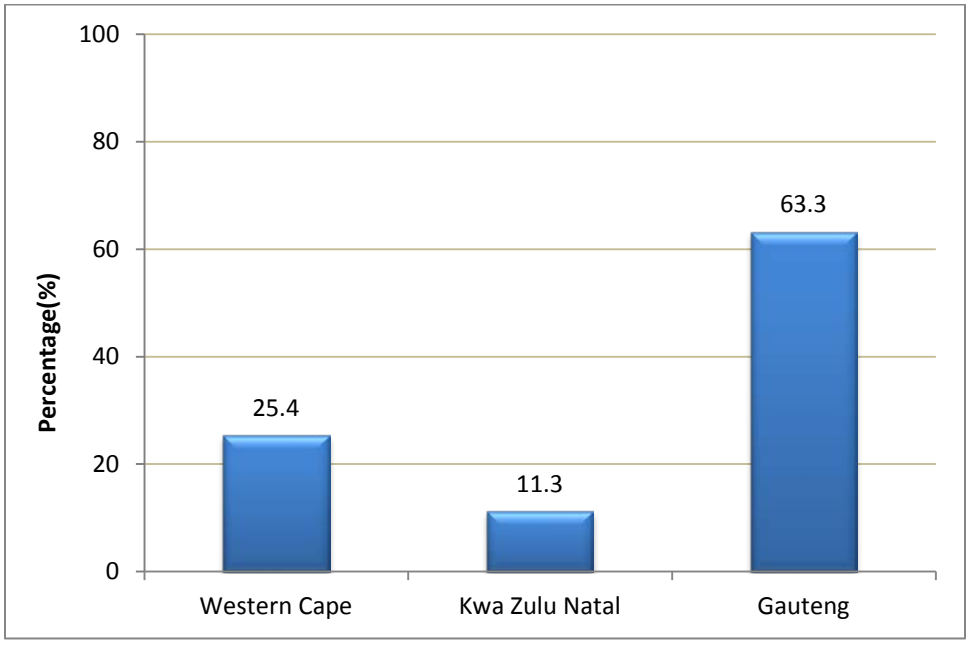


Figure 4.7: Distribution of residential properties across provinces

4.4.2 Property type

From the total number of properties used in this research, only 2 (0.0060927%) were cluster homes which is the least common property type in this study. Most of the properties were residences with a total of 17146 residences, representing 52.2% of the total, being of this type. The second most common property type is sectional titles with a total of 13346 properties, representing 40.7% of the total.

Table 4.10: The distribution of property types

Property type	Number	Percentage (%)
Agricultural Holding	250	0.7615914
Cluster Home	2	0.0060927
Development (Full Title)	24	0.0731128
Development (Sectional)	911	2.7752391
Farm	147	0.4478158
Residence	17146	52.232986
Sectional Title	13346	40.656796
Town House	5	0.0152318
Vacant Land	995	3.0311339
Total	32826	100

4.4.3 Property type by province

From the data available, the least common property types in the Western Cape are cluster homes and town houses, with none being present in the data set. The most common property type in the Western cape is residential, with 5284 out of the total 8349 properties being of this type. The second most common property type within the Western Cape is sectional titles.

There were 3693 properties in the data set which were within the KwaZulu Natal province. From the data available, the most common property type is residential, representing 47.9% of the total properties in the province. Certain property types such as cluster homes, development (Full title) and town houses were entirely absent from the province's data set.

There were 20784 properties from within the Gauteng province data set. From this number, 2 are cluster houses which are the least common property type in the province. The most common property type is again residential which represents 48.6% of the total properties in the Gauteng data set.

Table 4.11: Property type by province

Property type	Western Cape (#)	KwaZulu Natal (#)	Gauteng (#)
Agricultural Holding	12	11	227
Cluster Home	0	0	2
Development (Full Title)	2	0	22
Development (Sectional)	17	60	834
Farm	21	11	115
Residence	5284	1768	10094
Sectional Title	2772	1753	8821
Town House	0	0	5
Vacant Land	241	90	664
Total	8349	3693	20784

4.4.4 Property use

There were three property uses for the residential properties used in this research. From the data available, majority of the properties use was residential purposes. A total of 32667 representing 99.5% of the total properties were used for residential purposes. The least common property use is building loans with a total of 12 which represents 0.04%.

Table 4.12: Property use

Property use	Number	Percentage (%)
Building loans	12	0.0365564
C & I socialised services	147	0.4478158
Residential	32667	99.515628
Total	32826	100

4.4.5 Property use by province

In KwaZulu Natal, the least common property use is building loans with residential use being the most common property use, with a total of 3681 properties, representing 99.7% of the total, being used for this purpose. While in the Western Cape only 4 properties represented building loans while a whopping 8324 were residential use.

Of the 20784 properties in Gauteng only 7 were used for building loans. The most common property use is residential, which represents the use of 99.4% of the total properties use in Gauteng.

Table 4.13: Property use by province

Property use by province	Western Cape	Kwa Zulu Natal	Gauteng
Building loans	4	1	7
C & I socialised services	21	11	115
Residential	8324	3681	20662
Total	8349	3693	20784

4.4.6 Average market value by province

The table below presents the average market value for each of the property types within each province. From the table, the average market value for residences within the Western Cape is R1 436 159, while the average value for vacant land is R876 852. The average market value of residences within KwaZulu natal provinces is R1 146 528, while the average market value for vacant land is R790 622. In Gauteng, the average market value for residence is R1 335 745, while the average market value for vacant land is R726 656. The average market value of most of the property types in the Western Cape is higher than the two other provinces with Gauteng also higher than Kwa Zulu Natal for most of the property types. This is because the Western Cape is a host to the country's upmarket residential holiday homes and retirement estates.

Table 4.14: Average market value by property type and by province

Property Type	Average market value (Rands)		
	Western Cape	**Kwa Zulu Natal**	**Gauteng**
Agricultural Holding	1 956 666.7	1 881 818.2	1 777 115
Cluster Home	*	*	5 650 000
Development (Full Title)	1 551 500	*	972 954.5
Development (Sectional)	1 213 705.9	1 734 366.7	1 152 025
Farm	4 152 381	3 163 636.4	4 403 087
Residence	1 436 159.7	1 146 528.3	1 335 745
Sectional Title	1 066 571.6	1 105 769.8	932 350.9
Town House	*	*	635 000
Vacant Land	876 852.7	790 622.2	726 656.6

*No recorded sales

4.4.7 Average market value for property use by province

The table below presents the average market value for properties based on their use. The average market value for residential use of a property in the Western Cape is R1 296 539, while the average building loans is R2 837 500. In KwaZulu Natal, the average market value is R1 130 376 for residential use of s property while the building loans are R480 000. For the same properties in Gauteng, the average market value for residential use is R1 141 298 while for building loans it is R1 192 571. Except for C & I socialised services, the average market value of the use of properties in Western Cape are more than the rest of the two provinces.

Table 4.15: Average market value by property use and by province

Property Use	Average market value (Rands)		
	Western Cape	Kwa Zulu Natal	Gauteng
Building loans	2 837 500	480 000	1 192 571
C & I socialised services	4 152 381	3 163 636	4 403 087
Residential	1 296 539	1 130 376	1 141 298

4.4.8 Average purchase price per property type, for each province

The table below presents the average purchase price for each of the property types within each province. From the table, the average purchase price for residences within Western Cape is R1 434 922 while the average value for vacant land is R878163. The average purchase price of residences within Kwa Zulu natal provinces is R1 145 860 while the average purchase price for vacant land is R787753. In the Gauteng province, the average purchase price for residence is R1 329 109 while the average purchase price for vacant land is R731 954. The average purchase price of most of the property types in the Western Cape is higher than the two other provinces.

Table 4.16: Average purchase price per property type by province

Property Type	Average purchase price (Rands)		
	Western Cape	**Kwa Zulu Natal**	**Gauteng**
Agricultural Holding	1 934 266	1 899 545.5	1 779 557
Cluster Home	*	*	5 760 125
Development (Full Title)	1 549 000	*	973 361.4
Development (Sectional)	1 211 369.1	1 728 857.1	1 153 170
Farm	4 235 341.1	3 061 409.1	4 432 922
Residence	1 434 922.2	1 145 860.6	1 329 109
Sectional Title	1 070 057.6	1 102 298	929 154.3
Town House	*	*	633 000
Vacant Land	878 163.9	787 753	731 954

*No recorded sales

4.4.9 Average purchase prices per property use by province

The table below presents the average purchase price for properties based on their use. The average purchase price for residential use of properties in the Western Cape is R1 296 918 while the average building loan is R2 831 250. In the Kwa Zulu Natal, the average purchase price is R1 128 295 for residential use of property while the building loans are R480 000. For the same properties in the Gauteng province, the average purchase price for residence is R1 136 935 while the building loans is R1 222 876. Except for C and I socialised services, the average purchase price of the use of properties in Western Cape are more than the rest of the two provinces in this study. The average purchase prices for the properties considered in the Gauteng are also higher than that of Kwa Zulu Natal.

Table 4.17: Average purchase prices per property use by province

Property Type	Average purchase price (Rands)		
	Western Cape	**Kwa Zulu Natal**	**Gauteng**
Building loans	2 831 250	480 000	1 222 876
C & I socialised services	4 235 341	3 061 409	4 432 922
Residential	1 296 918	1 128 295	1 136 935

4.4.10 Average variance between market value and purchase price by province

The table below presents the average variance between market value and purchase price in all the properties from each province. From the table, it can be seen that the most accurate valuations are from the Western Cape. Gauteng has the highest average variance for the properties, indicating it has the least accurate valuations.

Table 4.18: Average variance between market value and purchase price by province

Province	Mean Variance
Western Cape	19 710.81
KwaZulu Natal	20 274.2
Gauteng	25 287.3

4.4.11 Average variance by property type

From the data (Table 4.19), town houses have the least average variance, indicating that the level of accuracy is higher in town houses than other properties. The level of accuracy in farm houses is lower than other properties.

Table 4.19: Average variance by property type

Type of property	Mean variance
Agricultural Holding	44 645.83
Cluster Home	110 125
Development (Full Title)	2 555.75
Development (Sectional)	10 728.47
Farm	267 911.13
Residence	27 534.91
Sectional Title	16 415.79
Town House	2 000
Vacant Land	13 267.44

4.4.12 Average variance by use

The level of accuracy for building loans is much better than residential and socialised services. The level of accuracy in socialised services is generally lower as indicated in the table.

Table 4.20: Average variance by use

Property Use	mean variance
Building loans	21 114
C & I socialised services	267 911.13
Residential	22 205.07

4.4.13 Average variance per property type by province

The level of variance in agricultural holdings is higher in the Western Cape than the two other provinces, though Gauteng also performed better than KwaZulu Natal. Generally, the valuations done in the Western Cape have a much higher level of accuracy compared to KwaZulu Natal and Gauteng for all the property type. Also, the valuations of farm land, residences and vacant lands in KwaZulu Natal were better than the valuations done on the same type of properties in Gauteng. Gauteng valuations have a higher level of accuracy in agricultural holdings, development (sectional) and sectional titles as compared to KwaZulu Natal valuations.

Table 4.21: Average variance per property type by province

Property Type	Mean Variance		
	Western Cape	**Kwa Zulu Natal**	**Gauteng**
Agricultural Holding	22 400.667	91 363.636	43 557.9
Cluster Home	*	*	110 125
Development (Full Title)	2 500	*	2 560.82
Development (Sectional)	2 336.765	22 176.217	10 076
Farm	259 897	238 590.91	272 179
Residence	21 011.693	20 658.409	32 154.1
Sectional Title	16 089.619	18 448.511	16 114.3
Town House	*	*	2 000
Vacant Land	13 145.253	11 647.022	13 531.4

*No recorded sales

4.4.14 Average variance between property use by province

The level of accuracy for the building loans and socialised services in KwaZulu Natal are much higher than the other two provinces. For residential use, the valuations done in the Western Cape have the highest accuracy.

Table 4.22: Average variance between property use by province

Property Use	Mean Variance		
	Western Cape	**Kwa Zulu Natal**	**Gauteng**
Building loans	6 250	*	32 624
C & I socialised services	259 897	238 590.91	272 179.1
Residential	19 111.33	19 627.31	23 910.67

*No recorded sales

4.4.15 Accuracy level by property type and province using a 10% benchmark

Using the benchmark of 10%, the level of valuations of all the properties in the three provinces are all below 10% which is an indication that valuations of different property types in all three provinces are accurate. In the Western Cape, development (full title) are the most accurate valuations followed by development (sectional), with farm properties being the least accurate category even though it falls below the 10% threshold. The property type in KwaZulu Natal with the highest level of accuracy is development (sectional) followed by sectional (title) and vacant land while farm has the worst level of accuracy compared with the other property types. In Gauteng, development (full title) has the best accuracy level followed by town houses even though all the property types are well below the 10% benchmark. The property type in Gauteng with the least level of accuracy is farm with an accuracy level of 6.3%. Comparing the three provinces, the Western Cape has the highest level of accuracy for all the property types found in all three provinces. This is an indication that the valuations done in the Western Cape are more accurate than valuations done in KwaZulu Natal and Gauteng on the same property types. Apart from residence and sectional title, the benchmark for property types in Gauteng province is much lower than the benchmark of properties from Kwa Zulu Natal.

Table 4.23: Accuracy level by property type and province

Property Type	Accuracy Level (%)		
	Western Cape	Kwa-Zulu Natal	Gauteng
Agricultural Holding	0.9	4.4	2.4
Cluster Home	*	*	2.1
Development (Full Title)	0.1	*	0.4
Development (Sectional)	0.3	1.6	0.8
Farm	6	8.4	6.3
Residence	1.6	2.1	2.6
Sectional Title	1.5	1.7	1.9
Town House	*	*	0.6
Vacant Land	1.4	1.7	1.6

*No recorded sales

4.4.16 Accuracy level by property use and province

The level of valuation accuracy by property use across the three provinces is within the benchmark of 10% adopted for this study. In KwaZulu Natal the valuers recorded the highest level of accuracy for building loans at 100% followed by the Western Cape with Gauteng recording the lowest. C & I socialised services recorded the lowest level of valuation accuracy ranging from 6% to 8.4% across the three provinces, however; this is still within the adopted 10% bench mark. The residential valuation accuracy ranged from 1.6% to 2.2% across provinces indicating a very high level of accuracy.

The building loans in the Western Cape have the highest levels of accuracy followed by residential and then socialised services. Building loans in Gauteng province have the highest level of accuracy at 0.8%, while socialised services have the lowest level of accuracy at 6.3%.

Table 4.24: Accuracy level by property use and province

Property Use	Western Cape	Kwa Zulu Natal	Gauteng
Building loans	0.1	0	0.8
C & I socialised services	6	8.4	6.3
Residential	1.6	1.9	2.2

*No recorded sales

4.4.17 Valuation variability by province

The p-value (5.54e-11) for the ANOVA test shows that there is statistically significant difference among the three provinces regarding the variations in valuations.

Table 4.25: ANOVA test for variations in valuations between the three provinces.

	Df	SS	MS	F-value	p-value
Province	2	2.234e+11	1.117e+11	23.63	5.54e-11
Residuals	32823	1.552e+14	4.727e+09		

The results of a Tukey test revealed that there were significant differences in the variations of valuations between Gauteng and Western Cape [$p<0.001$, 95% CI (-7664.427,-3488.540)] and Gauteng and KwaZulu Natal [$p<0.001$, 95% CI (-7890.715,-2135.484)]. The results also indicate that there were no statistically significant differences in the valuation variations between KwaZulu-Natal and Western Cape [$p=0.910$, 95% CI (-3747.951, 2621.183)]. These statistically significant differences in the variations of valuation between Gauteng and Western Cape as well as Gauteng and KwaZulu-Natal are demonstrated in Figure 4.8.

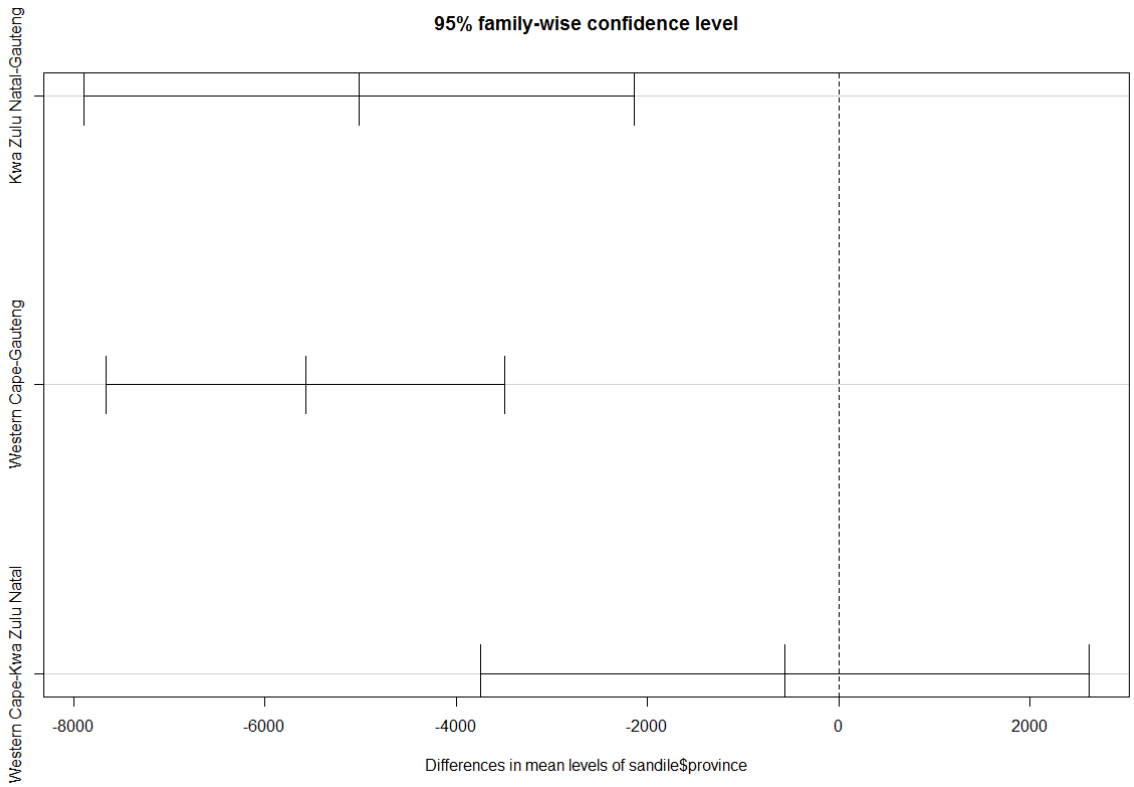


Figure 4.8: Post hoc test for ANOVA

The p-value (0.7028) for the t-test shows that there is no statistically significant difference between the market value estimates and purchase prices for all the properties used in this study. That is, the average market value (R1 193 668) of a property is not statistically different from its average purchase price (R1 190 913).

The p-value (0.9695) for the t-test shows that there is no statistically significant difference between the market value estimates and purchase prices for all the properties in Western Cape used in this study. That is, the average market value (R1 304 461) of a property is not statistically different from its average purchase price (R1 305 044).

The p-value (0.9028) for the t-test shows that there is no statistically significant difference between the market value estimates and actual realised sale prices for all the properties in KwaZulu Natal used in this study. That is, the average market value (R1 136 256) of a property is not statistically different from its average purchase price (R1 133 877).

The p-value (0.6415) for the t-test shows that there is no statistically significant difference between the market value estimates and purchase prices for all the properties in Gauteng used in

this study. That is, the average market value (R1 159 363) of a property is not statistically different from its average purchase price (R1 155 201).

4.4.18 Description of model parameters

The minimum market value for the properties was R35 000, and the maximum value was R10 000 000. On average, the market value for the properties was R1 194 000. The minimum purchase price for the residential properties was R35 000, the maximum price was R12 200 000 and the average purchase price was R1 191 000.

Table 4.26: Description of model parameters

Variable	Minimum	Maximum	Mean	Standard deviation
Market value	35000	10 000 000	1 194 000	924094.4
Purchase price	35 000	12 200 000	1 191 000	925754.4

4.4.19 Final model

Table 4.27: The final model

	Coefficient	P-value
Intercept	8549	2e-16
Purchase price	0.9951	2e-16

Equation 4.1: The prediction model for market value:

Market value=8549 + 0.9951 purchase price

The F statistic is 5307000 with a p-value of 2e-16. This indicates that the model is robust. A non-significant p-value (p=0.224) suggests a lack of auto-correlation which implies independence of errors. The adjusted R square value is 99.39% which is an indication that the purchase price explains 99.39% of the variability in market value.

4.4.20 Valuation Accuracy in South Africa

The result of the analysis showed that the level of valuation accuracy for the properties in South Africa used in the study is high (2.030557 %) which shows a very high level of accuracy compared with the adopted benchmark of 10%. The accuracy level across the three provinces in our study namely Gauteng, KwaZulu Natal and the Western Cape is 2.23%, 1.93% and 1.58% respectively indicating that valuation accuracy is higher in the Western Cape than either Gauteng or KwaZulu Natal.

4.4.21 Discussion of Results

From the results presented above it is clear that 100% valuation accuracy cannot be expected. Financial institutions are advocating for a ±5-10% maximum acceptable margin of error while professionals are advocating for a margin of error of up to ± 15%. This is in line with a study conducted by Bretten and Wyatt (2002) in the United Kingdom amongst the valuation stakeholders on the acceptable margin of error for mortgage loan security. The results showed that 36% of the respondents favoured a ±5% margin of error as permissible, 40% considered a ±10% variance while 24% of the valuers considered a ±15% variance as an acceptable margin of error. Surprisingly both stakeholders in South Africa are advocating for a low level of accuracy compared to the 2.03% that the valuers are already operating within.

A lot has been written about valuation accuracy worldwide both qualitatively and quantitatively. Worth noting is that the qualitative and quantitative studies have produced contradicting results, with a significant number of the qualitative commentaries suggesting that inaccuracy exist (Parker, 1999). However, the significant body of quantitative analytical literature (see for example IPD/DJ 1990) suggests high correlations between valuation estimates and sale prices. Similarly, this paper supports the other quantitative studies and found a very high level of accuracy 2.03% compared to the adopted 10% benchmark.

Hager and Lord (1985) conducted a small survey in the United Kingdom, asking ten valuers to value two properties. Before carrying out the study a benchmark of ±5% was adopted. In one case, the range of valuations was ±10.6% and in the other was ±18.5% suggesting a low level of accuracy relative to the benchmark of ±5%.

Nanthakumaran et al. (1996) in his research into variance in property valuations surveyed several major local and national firms. The study found a 9.53% overall variation in the mean valuation of each property and found disparities in the variance of valuation of 8.63% and 11.86% for national and local firms respectively due principally to the superior transactional information available for the national firms. The study suggested that a maximum margin of variance error of 8.63% to 11.86% might be acceptable which is close to the 10% advocated by our study.

Brown (1995) tested the relationship between valuation and price for a sample of 29 properties over the 1975 to 1980 time period and found a close relationship (R^2=0.99) between price and valuation. This conclusion as our study's findings concur is that valuations are a good performance measurement of price.

5. CHAPTER 5. SUMMARY AND CONCLUSION

5.1 Introduction

This chapter presents and discusses both the summary and conclusion of this study, as well as recommendations based on this research.

5.2 Summary of findings

The findings on the maximum acceptable margin of error collected and analysed by Qualtrics from the financial institutions and valuers showed that they advocate for a range of ±5-10% and ±5-15% respectively. The financial institutions, clients and valuers however cannot afford to have different rates, there must be an agreement on a uniform rate beyond which a valuer can be held responsible for professional negligence.

If a uniform rate were to be adopted the valuers will be very careful with their work and it will also help the courts to have a point of reference should there be a case of professional negligence. While the overall findings of the study indicated that valuation accuracy in South Africa is 2.03% it should be noted that the accuracy level varies by property type, property use and province. The lowest level of accuracy noted was on socialised services in KwaZulu Natal at 8.4% which is still within the 10% benchmark of the study. This indicates that the current valuation estimates are good proxies of the market values. However; this may not hold for all different types of valuations as many organisations do not have quality assurance measures within their organisations to scrutinise valuations before they are approved. In addition to the above reasons a uniform rate of a maximum 5% benchmark should be adopted so that valuers can easily be held liable for professional negligence.

The study showed that there is some element of client influence on the valuer's opinion of value; 4.17% of valuers said that clients always try to influence them during valuations, 8.33% of the respondents said there has never been any influence from clients while 75% of the total number said clients sometimes try to influence their valuations. This raises doubts on the valuations produced by the valuers as they sometimes must work under pressure from their clients. Strict measures to penalise valuers who give in to such client pressures should be put in place to punish valuers who value properties beyond the maximum acceptable margin.

The result of the analysis showed that the level of valuation accuracy in South Africa is 2.03% suggesting a relatively high level of accuracy considering the adopted benchmark of 10%. This is good news to the SACPVP, financial institutions, valuer's clients and professional valuers. This proves that valuers can produce better valuations under the current market conditions and that a lower benchmark of 5% should be adopted, beyond which a valuer should be held liable for professional negligence. The implication of adopting a more relaxed benchmark of 10-15% will have negative effects on the work of the valuers.

The high level of accuracy means that the overall reliance of financial institutions on valuation estimates to serve as collateral for their loans and lending decisions for residential properties is not in danger as the valuations provided by the external valuers are highly accurate. This will also boost the confidence of the valuers and users of valuations.

5.3 Conclusions

The following conclusions can be drawn

1. The minimum educational qualification of the professional valuers is a National Diploma.
2. The minimum prerequisite for professional competence for residential valuers is registering with the SACPVP as a Professional Associated valuer or Professional Valuer.
3. All the mortgage valuations are done by professional and associates valuers or under the supervision of such where the valuation was carried out by a candidate valuer.
4. To mitigate valuation accuracy issues the banks employ in-house professional valuers to do quality assurance on all the valuations carried out by their external valuers.
5. Financial institutions are advocating for a ±5-10% maximum acceptable margin of error while professionals are advocating for a margin of error of up to ±15%.
6. Clients use several ways to try influence the valuers opinions of value.
7. The result of the analysis showed that the level of valuation accuracy for the properties in South Africa used in the study is 2.03% suggesting a relatively high level of accuracy considering the adopted benchmark of 10%.
8. The level of valuation accuracy differs by province, property type and property use.

5.4 Recommendations

Based on the outcome of the study the following is recommended;

1. It is recommended that a maximum margin of error of 5% between valuation estimates and actual realised prices be adopted by the financial institutions, SACPVP, valuers and clients. This is based on the 2.03% high level of accuracy that valuers are already achieving. Opening it up to a wider margin of 10% will make the valuers complacent with their work and lower the standards of valuation accuracy.
2. It is recommended that other valuation users like government parastatals, insurance companies, property funds etc. employ in house valuers for quality assurance to achieve the same high level of valuation accuracy as the financial institutions.
3. It is recommended that the SACPVP adopts and publish a benchmark of 5% either side of the actual realised price so that valuers can be held liable for professional negligence should they be found to have exceeded the published benchmark.
4. It is recommended that valuers have a platform to report any form of clients influence without having to be victimised by same. Valuers and clients found to have colluded to value a property to favour their interest should be penalised and have their membership cancelled.

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7. CHAPTER 7. APPENDICES

Appendix 1: Consent Form



ENGINEERING & BUILT ENVIRONMENT

SCHOOL OF CONSTRUCTION STUDIES

(VALUATION ACCURACY IN SOUTH AFRICA)

Dear Sir/Madam,

CONSENT FORM

I am a postgraduate student at the School of Construction Studies, Wits University, and I am currently pursuing my MSc. Research. My research topic is: Valuation Accuracy, Variance and the Accepted margin of Error by Mortgage Banks in South Africa. The purpose of this study is to ascertain the level of valuation accuracy in South Africa which is a phenomenon that has been overlooked over the years.

Upon successful completion it is envisaged that the findings will positively contribute in improving valuation accuracy in South Africa. Therefore you are invited to take part in the research. There are no risks and discomforts associated with the survey. Taking part in this study is voluntary and it is purely for academic purposes as the report submitted to the school and your organization. Your responses will be kept strictly confidential and any digital data will be kept in a secured computer. If you have questions or want a copy or summary of this study's results you can contact the researcher on the following contact details:

Cell: 0717174305

Email; 770061@students.wits.ac.za .

Please indicate by ticking in the appropriate bracket if you are interested in taking party in the study:

YES { } NO { }.

Appendix 2: Commercial Banks Questionnaire

ENGINEERING & BUILT ENVIRONMENT

SCHOOL OF CONSTRUCTION STUDIES

(COMMERCIAL BANKS QUESTIONNAIRE)

Dear Sir/Madam,

LETTER OF INTRODUCTION

I am a postgraduate student at the School of Construction Studies, Wits University, and I am currently pursuing my MSc. Research Report on the topic: Valuation Accuracy, Variance and the Accepted margin of Error by Mortgage Banks in South Africa.

The attached questionnaire is meant to collect data that will help in the completion of the project, which is meant for purely academic purposes.

I hereby solicit and plead for your assistance in filing the questionnaire or ticking the appropriate space as the case may be. Your response to the questions shall be treated with utmost confidentiality.

Thank you for in advance for your cooperation.

Yours sincerely,

S.I. Mabuza

April, 2016

QUSTIONNAIRE

(Commercial Banks)

Q1 Name of Financial Institution.

- FNB
- Nedbank
- Standard Bank
- ABSA

Q2 Location of Offices

Q4 Years of work experience as a Professional Valuer

- 1-5 Years
- 6-10 Years
- 11-15 Years
- 16 and Above

Q5 Highest academic qualification

- National Diploma
- Btech
- B.Sc
- Honours/PGD
- MSc
- Other (please specify) _____

Q6 Current Position

Q7 Does your institution have an in house quality assurance team for the valuations done prior to lending decisions?

- ❍ Yes
- ❍ No

Q8 What is the Maximum acceptable margin of error for mortgage valuations and actual sale prices?

	Acceptable	Unacceptable
0-5%	❍	❍
6-10%	❍	❍
11-15%	❍	❍
16-20%	❍	❍
21-25%	❍	❍
26-30%	❍	❍
31 and Above	❍	❍

Q9 Should the Bank be forced to sell the property in the near future due to the failure of the mortgagor to meet his repayment obligation, what is the maximum acceptable margin of error between the valuation estimate done prior to sale of the property and its subsequent sale price beyond which the Valuation Firm should be charged for professional negligence?

	Acceptable	Unacceptable
0-5%	❍	❍
6-10%	❍	❍
11-15%	❍	❍
16-20%	❍	❍
21-25%	❍	❍
26-30%	❍	❍
31 and Above	❍	❍

Q10 How many valuation firms do you have in your panel?

Q11 It is a general norm that clients sometimes try to influence valuers. Has your organization ever tried to influence the valuer for any reason?

- ❍ Yes
- ❍ No

Q12 Have you heard of clients seeking finance trying to influence valuers to overvalue the subject properties to secure higher loans or to avoid paying deposits?

- ❍ Yes
- ❍ No

Q13 If you have heard of instances where by clients try to collude with valuers to inflate valuation estimate what does your organization do to mitigate such risk?

Q14 Out of a 100 valuations carried out by your external valuers, approximately how often has your organization had cause to question the valuation?

	0	1-10	11-15	16-20	21 and above
Residential Valuations	❍	❍	❍	❍	❍
Commercial Valuations	❍	❍	❍	❍	❍
Industrial Valuations	❍	❍	❍	❍	❍
Agricultural Valuations	❍	❍	❍	❍	❍

Q15 In your opinion, what type of valuations do clients try to influence the most?

	Always	Most of the time	Sometimes	Never
Sale/purchase	❍	❍	❍	❍
Expropriation	❍	❍	❍	❍
Mortgage	❍	❍	❍	❍
Insurance	❍	❍	❍	❍
Balance Sheet	❍	❍	❍	❍
Estate/transfer duty	❍	❍	❍	❍
Rating	❍	❍	❍	❍

Q16 What approach are you aware of, that clients often use in influencing the valuers to give them a value that is suit the purpose of the valuation?

	Always	Most of the time	Sometimes	Never
Removal approved panel of valuers	❍	❍	❍	❍
Decrease in number of future valuation assignments	❍	❍	❍	❍
Engaging other firms to do the valuation	❍	❍	❍	❍
Refusal to pay professional fees	❍	❍	❍	❍
Supply the valuer with additional information	❍	❍	❍	❍
Withdraw supplied information like income statements and expenditure	❍	❍	❍	❍
Manipulate supplied information	❍	❍	❍	❍
Emphasize positive attributes of the property	❍	❍	❍	❍
Threat of blackmail	❍	❍	❍	❍
Blackmail	❍	❍	❍	❍

Q17 Have you in any case request another valuation for a second opinion to verify a suspect valuation carried out by another valuer or firm.

- ❍ Yes
- ❍ No

Thank you so much for sparing your valuable time in attending to the numerous questions.

Appendix 3: Valuers Questionnaire

Q1 Name of Valuation Firm

Q2 Location of Firm

Q3 What is your position in the Firm?

Q4 Gender

- ❍ Male
- ❍ Female

Q5 Highest Academic Qualification

- ❍ National Diploma
- ❍ Btech
- ❍ BSc
- ❍ Bsc Hournors/PGD
- ❍ MSc
- ❍ Other _____

Q6 Professional Qualification

- ❍ Candidate Valuer
- ❍ Associate Valuer
- ❍ Professional Valuer
- ❍ Other

Q7 Years of Professional Experience

- ❍ 1-5
- ❍ 6-10
- ❍ 11-15
- ❍ 16-20
- ❍ 21-25
- ❍ 26-30
- ❍ 31 and Above

Q8 Age of the firm (Years)

- ❍ 1-5
- ❍ 6-10
- ❍ 11-15
- ❍ 16-20
- ❍ 21 and Above

Q9 Firm's Area of Specialization

- ❑ Valuation
- ❑ Property Managers
- ❑ Property Developers
- ❑ Project Managers
- ❑ Other (please specify) _____

Q10 What is the acceptable margin of error between the valuation estimate and the actual realized sale price?

	Acceptable	Unacceptable
1-5%	❍	❍
6-10%	❍	❍
11-15%	❍	❍
16-20%	❍	❍
21-25%	❍	❍
26-30%	❍	❍
31% and Above	❍	❍

Q11 Click to write the question text

	Acceptable	Unacceptable
0-5%	❍	❍
6-10%	❍	❍
11-15%	❍	❍
16-20%	❍	❍
21-25%	❍	❍
26-30%	❍	❍
31% and Above	❍	❍

Q12 Clients generally try to influence valuers opinion worldwide to produce valuations suitable for their needs. To what extent does your firm experience such pressure from clients?

- ❍ Never
- ❍ Sometimes
- ❍ Most of the time
- ❍ Always

Q13 Approximately, how many times in percentage terms have your clients asked for the modification of valuation estimates in the past 10 years?

- ❍ 0%
- ❍ 1-10%
- ❍ 11-20%
- ❍ 21-30%
- ❍ 31% and Above

Q14 From your experience, how often do clients influence the following types of valuation?

	Always	Most of the time	About half the time	Sometimes	Never
Mortgage	❑	❑	❑	❑	❑
Sale/purchase	❑	❑	❑	❑	❑
Insurance	❑	❑	❑	❑	❑
Balance Sheet	❑	❑	❑	❑	❑
Expropriation	❑	❑	❑	❑	❑
Rating	❑	❑	❑	❑	❑
Estate/Transfer Duty	❑	❑	❑	❑	❑

Q15 From your personal experience, which types of clients are more prominent in the habit of Influencing valuation estimate?

	Always	Most of the time	About half the time	Sometimes	Never
Financial Institutions	❑	❑	❑	❑	❑
Individuals	❑	❑	❑	❑	❑
Balance Sheet	❑	❑	❑	❑	❑
Insurance Companies	❑	❑	❑	❑	❑
Corporate Organizations	❑	❑	❑	❑	❑
Municipalities	❑	❑	❑	❑	❑
Government Agencies/Parastatals	❑	❑	❑	❑	❑

Q16 How often is any of the under listed approaches adopted by clients to influence the valuers estimate? (Tick as many as applicable).

	Always	Most of the time	About half the time	Sometimes	Never
Threat of a possible removal of firm from approved valuers'list.	❑	❑	❑	❑	❑
Threat of a reduction in the number of future valuation assignments	❑	❑	❑	❑	❑
Threats of engaging another firm to do the job	❑	❑	❑	❑	❑
Threat of refusal to pay the professional fees	❑	❑	❑	❑	❑
Threat of total loss of future patronage by a client.	❑	❑	❑	❑	❑
Withholding vital information	❑	❑	❑	❑	❑
Manipulate supplied information	❑	❑	❑	❑	❑

Emphasize only positive attributes of the property	❑	❑	❑	❑	❑
Threat of Blackmail	❑	❑	❑	❑	❑

Thank you so much for sparing your valuable time in attending to the numerous questions.