

HEURISTICS IN PROPERTY INVESTMENT VALUATION IN NIGERIA

BY

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**A THESIS SUBMITTED TO THE DEPARTMENT OF ESTATE MANAGEMENT,
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DEDICATION

This work is dedicated to my MOST HIGH GOD, THE HIGH AND LOFTY ONE THAT INHABITS ETERNITY; For HIS utmost inspiration, guidance, focus and provision in seeing to the successful completion of my PhD programme. Notwithstanding the battles I passed through THE LORD saw me through them all by making me the first PhD holder in my family, a fulfillment of prophesy. TO HIM ALONE BE ALL THE GLORY.

CERTIFICATION

This thesis titled “Heuristics in the Investment Method of Property Valuation in Nigeria” carried out by Iroham, Chukwuemeka Osmond under my supervision meets the regulations governing the award of the Degree of Doctor of Philosophy (PhD) in Estate Management of the Covenant University, Ota Ogun State, Nigeria. I certify that it has not been submitted for the degree of PhD or any other degree in this or any other University, and is approved for its contribution to knowledge and literary presentation.

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ABSTRACT

The study addressed the gap in research on heuristics in valuation which has hitherto been confined to only anchoring and adjustment heuristics at the neglect of the other three major types of heuristics, namely availability, representative and positivity heuristics. The aim of this work was accordingly to investigate the nature and conduct of all four types of heuristics amongst Nigerian valuers with a view to ascertaining possible effects on valuation accuracy. The specific objectives of this research were to: examine whether valuers are influenced by availability, positivity and representative heuristics in property valuation practice in the study areas; investigate the relative level of occurrence of the four heuristics in property valuation; identify and examine factors influencing the usage of the various types of heuristics in property valuation; investigate the effect of these heuristics on valuation accuracy/consistency. To accomplish these objectives, the study undertook a cross-sectional questionnaire survey of 159 of the 270 Estate Surveying and Valuation firms in Lagos Metropolis, while 29 and 30 questionnaire were distributed to the entire Estate Surveying and Valuation Firms in Abuja and Port-Harcourt respectively. For ease of coverage, Lagos Metropolis was stratified into six zones thereafter respondents were selected randomly. Statistical tools, ranging from descriptive to inferential, were employed. These included frequency distribution tables, weighted arithmetic means, relative importance indices, regression analysis, the Student T-Test and Analysis of Variance (ANOVA). The results revealed that apart from anchoring and adjustment, valuers also make recourse to availability, representative and positivity heuristics while carrying out valuation. The relative usage of these heuristics was in this order of usage: availability (26.77%), anchoring and adjustment (18.62%), representative (15.63%), and positivity heuristics (10.41%). The factors that were found to affect the usage of these heuristics by usage of regression Analysis) included amongst others low familiarity with the areas where valuation were carried out (p values = 0.251, 0.192, 0.059, 0.192); complexity of the investment valuation model adopted (p values = 0.077, 0.119, 0.87, 0.889); and the level of assumptions made by the valuer; (p values = 0.842, 0.525, 0.044, 0.792). It was also discovered by use of Student T Test of Significance that the usage of the heuristics results in valuation inaccuracy (in the following reducing order of magnitude): representative (p value =0.009); availability (p value =0.016); anchoring and adjustment (p value = 0.055) and positivity heuristics (p values = 0.179). The

study therefore recommended institutional discouragement of the usage of heuristic techniques which could be achieved through appropriate re-education of practitioners and other methods.

The study has found that all four major heuristics are evident and they have negative impact on valuation accuracy therefore urgent implementation of recommendations proffered would make estate surveyors and valuers' better and more accurate in their major area of specialization.

CHAPTER ONE

INTRODUCTION

1.1 Background to the Research Problem

Issues of accuracy and variance in valuation, (also regarded as errors in valuation), have become topical in valuation research. The reason for this is the increasing interest in precision of capital value estimates for portfolio management/performance measurement, mortgage valuation, asset valuation and a host of other purposes, where increasingly sophisticated clients depend on the output of the valuation industry for vital decisions (Ogunba, 2002; Olaleye, 2005). Chartered surveyors, valuers, estate surveyors and valuers and real estate appraisers (different appellations for professionals conferred with the statutory prerogative of estimating the monetary worth of real estate interests in the UK, New Zealand, Nigeria and the US respectively), have therefore been faced with the exigent task in making sure that their professionally determined value estimations are fair representations of the likely exchange price in the open market (Peto et al., 1996). Failure in professionally determined value estimations has resulted in several property market crashes (such as the UK property market crashes of the 1970s and 1990s) where properties were sold much lower than was predicted in a-priori valuation reports leading to serious loss of confidence from increasingly sophisticated clients.

Research on valuation accuracy has resulted in divergent results. To some researchers, valuations have been seen to be accurate (Brown, 1985; Newell and Kishore, 1998; Parker, 1998; Driver Jonas/IPD, 1988, 2003; Aluko, 2000). Other researchers found that valuations have not been able to accurately predict the outcome in the property market (Hager and Lord, 1985; Matysiak and Wang, 1995; Hutchison et al. 1996; Ogunba, 1997; Brown, Matysiak and Shepherd, 1998; Ogunba and Ajayi, 1998; Abrams, 2004). Further research hinged the accuracy of valuations on a variety of factors, such as the state of the property market at the time of carrying out the research (Webb, 1994; Fisher, Miles, and Webb, 1999; Crosby et al. 2003); the yardsticks placed by stake holders in the property market (Matysiak and Wang, 1995); sophistication in the manner

of operation by valuers (Rossini, 1999); and the locality where operation is carried by valuers (Mokrane, 2002). Some researchers had also proffered ways of enhancing accuracy in the valuation task (Ogunba, 2004; Ogunba and Ajayi, 2007; Ogunba and Ojo, 2007).

More recently, research on valuation accuracy has been progressing from merely ascertaining whether or not accuracy exists to investigating the nature and causes of inaccuracy in the valuation process itself. Valuation inaccuracy has been stated as a product of four factors: valuer assumptions, accuracy/availability of data, valuation models and valuer judgement (Aluko, 2000). The most topical of the recent focus has been on valuer's judgement in the conduct of valuations. This has brought about a new behavioural dimension to accuracy/variance research in valuation. Behavioural research has identified factors causing inaccuracy through an examination of the conduct/behaviour of stakeholders (client influence, valuer misjudgement, etc).

The adoption of behavioural research has expanded the traditional boundaries of real estate research. The real estate discipline has therefore become more collaborative and more interlinked into some other fields of knowledge, notably psychology. Hitherto, the boundaries of real estate thought were limited to traditional cognate boundaries confined to finance, (particularly in the United States), the built environment (particularly in the United Kingdom) and other related disciplines such as economics, marketing, management, law, engineering/construction, planning and architecture (Black et al., 2003). The frontiers of these traditional boundaries have now been extended (in behavioural research) to cognitive psychology. Cognitive psychology has greatly assisted in valuation accuracy investigations with a focus on four indicators: departures from normative models, comparable sale selection, valuation biases and feedback. Behavioural research is increasingly topical because of the perception that valuation, like every other professional judgment, is subject to decision-making processes and human behavioural traits. Decision-making is based on human information processing which is believed to be less than rational/optimal. Early works by Newell and Simon (1972) and Simon (1978) describe the basis for such sub optimality: human problem solving involves interaction among the human information processing system, the task environment (the problem to be solved), and the problem space (the manner in which the problem solver perceives the task environment). A problem solver must accordingly understand the limitations these interactions place on problems to be

solved as well as on methods for solution. Behavioral limitations in the processing of information form a useful premise in cognitive psychology which can assist in understanding problems in real estate valuation accuracy research.

The earliest application of the cognitive psychology approach of human information processing to real estate research was in the work of Diaz (1987). He examined the valuation process of a sample of residential valuers in the United States and concluded that their valuation problem solving approach departed from valuation methods taught in schools due to restrictions brought about by limited information and shortcuts. In this regard, Brown (1992) observed that information is key to valuation; the better the information available, the better the resultant values. In essence, what was being said was that a limited storage capacity of the short-term memory function (which is the focus of problem solving in humans) and slow and tedious indexing system of the long-term memory, lead humans to unconsciously develop simplifying shortcuts or rules of thumb in solving complex problems. Such simplifying shortcuts are known as heuristics.

Heuristics are accordingly important for addressing problem complexity in cognitive information processing (Simon, 1978). As complexity increases, people use heuristics to eliminate alternatives, often with just a limited amount of information search and evaluation. In this regard, Simon (1978) showed that as the number of decision alternatives increase, the number of items investigated actually decreases. Similarly, Hardin (1997) noted that when properly applied, information processing heuristics reduce the search time and thus the time required in completing tasks. Hogarth (1981) emphasized that heuristics are generally functional and that feedback and training are important in its generation. Hogarth (op. cit.) acknowledges the potential biasing effect of heuristics, but concludes that experience and feedback should mitigate much bias.

Heuristics are of various types, Tversky and Kahnemann (1974) identified three: the representative heuristic the availability heuristic and the anchoring and adjustment heuristic. Evans (1989) later added a fourth: the positivity heuristic (other heuristics have subsequently been identified, but these are generally considered to be lesser heuristics). There are accordingly four principal types of heuristics, and these are explained by Havard (2000) as follows:

- i. The availability heuristic is a shortcut formed based on the experience which the decision maker has had in the past with the type of problem or situation at hand. An apparently successful strategy or solution of the problem means that tasks will tend to be perceived in a certain way once essential components have been recognized. Once this behaviour has been learned, it is very hard to alter. Data collection tends to be based on ease of retrieval, meaning that the decision maker will choose the most recent information or the information most easily recalled or obtained. As Finucane et al. (2000) emphasized, availability heuristics is a cognitive judgment strategy, in that it works by increasing deliberation about reasons that bias probability judgment.
- ii. The representative heuristic on the other hand is similar to stereotyping. A decision-maker classifies an event or object with others of a type that they are familiar with. Lessons are learned from experience and assumptions are made that the subject in a task is the same as that seen elsewhere.
- iii. The third heuristic, the anchoring and adjustment heuristic, came out of the observation that decision-makers tend to solve problems by forming a-priori estimates of what the answer might be. Mussweiler (2002) described anchoring as the assimilation of a numeric estimate towards a previously considered standard. This initial estimate is adjusted as more information is obtained until a final solution is reached. In other words, anchoring occurs when a person picks an initial starting point (such as value) as a reference point which may be given, estimated, or implied and then proceeds to use this information as the basis of evaluating a given option or course of action. Adjustment occurs when the person takes this initial reference point and proceeds with the tweaking of such value based on an estimate of probabilities of potential results. Adjustments to the initial starting point are generally insufficient and lead to bias (Kahneman and Tversky, 1974; Kahneman, 1992). This bias induced by the adjustment process may cause people to underestimate the chance of failure and overestimate the odds of success.
- iv. The fourth heuristic, the positivity heuristic, was identified when Evans (1989) noted that humans have a fundamental tendency to seek information consistent with their current beliefs and avoid the collection of potentially falsifying evidence. They adopt strategies

that are designed to confirm rather than refute beliefs. In this regard he suggested that humans look for ways of confirming their individual perceptions of the world.

Although studies on heuristics and biases in judgments under uncertainty can be traced to the works of cognitive psychologists (such as Slovic and Lichtenstein, 1971; Tversky and Kahneman's 1974; and Kahneman and Tversky, 1981, 2000), such studies are increasingly relevant in property valuation research because valuers have been found to employ some heuristic behaviour; in an attempt to improve the speed and even the efficiency of their valuation task. Such use of heuristics in valuation decision making is the focus of discussion in the next section.

1.2 The Problem Statement

The preceding discussion suggests that the use of heuristics can lead to biased and inefficient decisions due to conclusions being drawn without due consideration and effective analysis of underlying parameters. In application to valuation, such cognitive shortcuts have been shown to result in biased and inefficient decisions which in turn have resulted in hasty valuation judgements and ultimately inaccurate valuations. Unfortunately, prior research and personal experiences suggest that it is typical of valuation experts to adopt these cognitive shortcuts when asked to make valuation judgements based upon sparse, ill structured information drawn from a heterogenous market. Based on the fact that Government Ministries and Parastatals do not release data in most cases, it can be inferred that valuers are conditioned from early in their career to expect poor data, yet are asked to make reliable judgements. These circumstances perhaps make valuers very reliant on their own judgement and experience, thereby reducing the importance of a proper analysis of market evidence in valuations.

Based on these observations, research on heuristics in valuation has become topical in the last fifteen years. The first behavioural anchoring study on real estate focused on real estate brokers, though further research invariably centered on valuation. The initial behavioural anchoring study was Northcraft and Neale (1987) who experimentally investigated the anchoring behaviour of real estate brokers on property pricing decisions. The authors found persistent anchoring to asking price in their estimates. Black and Diaz (1996), Black (1997) and Diaz, Zhao, and Black (1999) further pursued this point and showed significant anchoring to actual asking price. Some

other researchers have also shown asking price to be a powerful anchor (Rabianski, 1992; White et al, 1994; Blount et al. 1996), though Diekmann et al (1996) showed that initial purchase price was another powerful anchor. Further research that invariably centered on valuation such as Gallimore (1994, 1996), Gallimore and Wolverton (1997), Gallimore, Hansz, and Gray (2000), and Gallimore and Gray (2002) revealed that valuers anchor on factors such as commentators' views, most recent information, pending sales price, previous transaction price, etc.

However, a major gap observable in the range of research presented above is that all are invariably focused on anchoring and adjustment heuristics. As earlier described, anchoring and adjustment heuristics refer to situations where a valuer forms a preconceived opinion on the worth of the property being valued by anchoring on an earlier valuation of a similar property (rather than from market analysis), and then makes adjustment to the earlier valuation to arrive at a valuation opinion for the current assignment. The wide range of studies carried out to identify the existence of and nature of anchoring and adjustment heuristics in the valuation process include (Cho and Megbolugbe, 1996; Diaz, 1997; Diaz and Hansz, 1997, 2001; Hamilton and Clayton, 1999; Harvard, 1999, 2001; Clayton, Geltner, and Hamilton 2001; Hansz and Diaz 2001; Gallimore and Gray 2002; Cypher and Hansz, 2003; Hansz, 2004a; 2004b; Adegoke, 2006; Wong, 2006; Adegoke and Aluko, 2007; Ogunba & Ojo 2007 etc). These studies confirmed the existence of anchoring and adjustment heuristics (with the exception of Diaz, 1997). The significant gap is that the existence of (and nature of) the three other types of heuristics identified in the field of cognitive psychology have been somewhat ignored in valuation research: Such missing heuristics include representative heuristics (where the valuer classifies a property to be valued with others of a familiar type); availability heuristics (where the valuation is subject to the valuer's past available experience); and positivity heuristics (where the valuer adopts data and logic to confirm high values, ignoring anything contrary). Investigation into valuers' use of these three heuristics and the impact on valuation accuracy has been oddly absent in valuation literature. Possibly, the neglect of these three types of heuristics by valuation researchers could be hinged on the relative inconvenience and difficulty in carrying out such research. In this regard, Hardin (1999) suggested that most of the literature on the decision making process concerns the anchoring and adjustment heuristic because it is the most easily operationalized. However, the implication of such selective restrictions in valuation heuristics

research is that the breadth of analysis into the behavioural causes of valuation inaccuracy is far from holistic. The implications are serious. For one thing, without the study of other forms of heuristics, the relative contribution of various heuristics to valuation inaccuracy problem cannot be ascertained. It may well be that anchoring and adjustment is merely a secondary heuristic to other heuristic manifestations. It may also be possible that anchoring and adjustment is triggered by any or all of the other types of heuristics as mentioned above. Another implication of non holistic study of heuristics is that it is difficult for broad based corrective action to be taken by a profession in a situation where all the underlying causes of the problems facing the profession are not holistically identified and examined. Unquestionably, the exclusive focus on anchoring and adjustment heuristics creates a decisively skewed research focus and leaves an unacceptable gap in valuation accuracy literature and policy formulation. This study intends to fill this gap.

To address this gap, a number of questions which agitate the mind of the researcher were reflected on: do valuers employ only anchoring and adjustment heuristics? If not, to what extent do availability, positivity and representative heuristics occur in the study area? What is the manner of such occurrence? Does such occurrence vary according to the valuation method employed or according to the socio economic characteristics of valuers? What is the relative level of occurrence of alternative heuristics? How do such heuristics influence valuation accuracy?

1.3 Aim and Objectives of Study

The aim of this work is to investigate the nature and conduct of heuristics among Nigerian valuers with a view to ascertaining possible effects on valuation accuracy. Based on this aim, the specific objectives are to:

1. Examine whether valuers are influenced by availability, positivity and representative heuristics in property valuation practice in the study areas
2. Investigate the relative level of occurrence of the four heuristics in property valuation
3. Identify and examine factors influencing the usage of the various types of heuristics in property valuation.
4. Investigate the effect of these heuristics on valuation accuracy/consistency

1.4 Justification of the Study

The need for this study is based on two reasons: First, the need to direct the focus of real estate research in Nigeria to behavioural issues and secondly, to fill a gap in literature. However, apart from the academic values stated above, it will also aid in refining valuation practices in Nigeria.

There has been considerable statistical research on valuation accuracy carried out in Nigeria: (Ogunba, 1997; Ogunba and Ajayi, 1998; Aluko, 2000; Ajayi, 2003; Ogunba, 2004; Ojo, 2004; Ogunba & Ojo, 2007). However, valuation accuracy investigations in the US and Europe are now refocusing on behavioural investigations (Baum et al., 2000). This study is justified on the grounds of the need to refocus Nigerian valuation accuracy research into a topical and more globally contemporary direction.

Although an earlier work (Iroham, 2007) focused on valuation accuracy in a behavioural dimension, it was centered on issues of clients influence and causal relationship between real estate selling prices and open market values. The second justification follows from the above reasoning: a research gap that exists in literature in this area of behavioural valuation based on the context of heuristics will be filled. Not much research has been done in this area apart from the focus on anchoring and adjustment heuristics in the UK, US and Nigeria (Diaz, 1997; Diaz and Hansz, 1997, 2001; Diaz and Wolverton, 1998; Harvard, 1999, 2001; Hansz and Diaz, 2001; Cypher and Hansz, 2003; Hansz, 2004a; 2004b; Adegoke, 2006; Adegoke and Aluko, 2007), thereby neglecting the other major types of heuristics as expounded above. This work is justified on the grounds of filling this research gap.

1.5 The Scope of the Study

The scope of this study would be restricted to three major cities: Lagos metropolis, Abuja and Port Harcourt. A study of all towns and cities in Nigeria would be superfluous, considering the fact that not all towns in the nation have a vibrant property market or even the presence of estate surveyors and valuers. The decision was accordingly to examine practice in cities where valuation practice is most highly concentrated.

In this regard, Lagos is chosen not just because of its being the commercial hub of the country (implying the highest number of valuation assignments), but also because it has the single largest

concentration (47.37%) of Estate Surveying and Valuation firms in the country as revealed by the most recent NIESV Directory (2009). These characteristics of Lagos make it ideal for this study which requires frequent valuations and sales data. Abuja and Port Harcourt were chosen for the same reasons: they have the most vibrant real estate markets after Lagos, in the country and contain the largest concentrations of property valuation practices in the country after Lagos, having a total of about 5% and 6.8% respectively of the entire real Estate Surveying and Valuation firms in the country as evident from the 2009 NIESV Directory. The focus on these three cities is therefore a focus on about sixty per cent of valuation practice in the country.

The scope of respondents of this research is restricted to Valuers in private practice as they carry out most valuation jobs over a wider range of valuation purposes unlike their counterparts in the public sector and other establishments. Only professionally qualified Estate Surveyors and Valuers under the provisions of Decree 24 of 1975 are considered considering the fact that these are the only professionals legally permitted to carry out valuation assignments.

The method of valuation considered in the study is restricted to the Investment method of valuation. This is because an earlier work (Iroham, 2007) revealed that Estate Surveyors and Valuers predominantly use the Investment method of valuation while carrying out their prerogative assignment. A concentration on one method allows for adequate depth of analysis.

1.6 Definition of Terms

Certain definitions germane to this work are expounded in this section in order to drive home their contextual meanings:

1. Behaviourial real estate study is a term that should require an early clarification. This branch of study - which is a fast growing area in real estate research in contemporary times - has been defined as the research that links the interaction between human beings and organizations with the built environment (Black et al., 2003). The study of behaviour in the real estate market is based on the fact that negotiations in real estate are carried out on an individual basis rather than through a unified market structure. Behaviourial real estate research is gradually doing away with the normative approach to real estate research - particularly valuation research – and introducing models descriptive of human behaviour. This is not surprising considering the

significant body of research that has purportedly shown that valuers follow inductive reasoning patterns as against the deductive reasoning patterns earlier assumed.

2. Heuristics. The human mind could be considered as a serial information processor that must seek efficiency while solving problems because of its limited capacity. Such efficiency in valuation is not always achieved because of the adoption of a cognitive short cut known as heuristics. Heuristics can be defined as rules or patterns of thought which help to reduce the complexity of decision-making (Wooford, 1985). Human behaviour patterns, which can reflect extremes of optimism and pessimism, gullibility or suspicion exerts a powerful influence on how real estate market performs (Downs, 1993). It has been discovered that humans facing complex situations generally resort to heuristics or rules of thumb while on the verge of decision -making (Ashton and Ashton, 1988, Tubbs et al., 1990). However, though this cognitive short cut does ease the burden of information processing (Tversky and Kahnemann, 1974; Evans, 1989), it has frequently resulted in errors and biases in decision -making (Diaz, 2002). The four types of heuristics under review will be elucidated as follows:

a. Availability heuristic is a practice based on the retrieval of data and is likely when valuers are prone to the utilization of parameters that are recent or easily recalled or obtained. Issues that center on yield for capitalization, cost per meter square etc., if utilized based on ubiquitous usage in the area of operation, will invariably suggest the presence of availability heuristics.

b. Representative heuristics is a practice of placing similar properties in the same category notwithstanding differences in texture, year of construction, finishes, nature of dilapidation and so on. The placing of same value in stereotype properties, just as the ones in various housing estates notwithstanding the vagaries of property features, reveals the existence of the representative heuristics.

c. Anchoring and adjustment heuristics form a benchmark based on an earlier preconceived value of a property in the past. Such benchmarking could result from personal experience or from what other colleagues place on a property. From benchmarking, value adjustments are made to reflect the peculiar features of the subject property being valued. Such adjustments could either be an addition or a subtraction on

the preconceived valued depending on the valuers intrinsic judgment between both properties in consideration.

d. Positivity heuristics, results from a bias by the valuer on a particular value or set of values believed to be in consonance with either a particular area or property being considered. In essence, valuers tend to work towards attaining such values by either seeking information consistent with their current beliefs or avoiding the collection of potentially falsifying evidence that could thwart such predetermine values or set of values.

3. Inconsistency in valuation, is defined by French and Gabrielli (2004) as the probability of the range of outcomes that would be produced by an individual valuer due to differences experienced in the benchmarks utilized in the valuation model. There are two aspects of inconsistency in valuation: valuation accuracy and valuation variance.

4. Variance is essentially a theoretical measure used to indicate the reliability of valuations, expressed as the distribution of valuations around the mean or median valuation that would result if a number of valuers valued the same property simultaneously (Harvard, 2001). Variance is an indication of the robustness and potential accuracy of valuation.

5. Accuracy is a measure of the difference between a value determination or group of value determinations, in relation to a subsequently realized sales price (Boyd and Irons, 2002). Essentially, the accuracy of valuation is defined as how close valuations are to the realized prices in the market place. Hence, the accuracy of valuation is the measure of the relationship between valuation and subsequent sale prices of individual properties (Crosby et al 2003; Hordijk, 2005 etc). However, there is not so much agreement on the mathematical definition of accuracy. The first definition of the maximum acceptable range of such errors in valuation can be traced to the case of *Singer & Friedlander Ltd v John D Wood & Co* (1977) 2 EGLR 84: An English court in a professional negligence action brought against a property valuer, held a permissible error of $\pm 10\%$ on either side of a figure, which is extended to $\pm 15\%$ in exceptional cases. Later Hager & Lord (1985) adopted a range of $\pm 5\%$ which was also adopted in early Nigerian studies by Ogunba (1997) and Ogunba & Ajayi (1998). However, subsequent papers (for example Ogunba & Ajayi, 2007) consider a range of $\pm 5\%$ as too strict and a range of $\pm 15\%$ too lenient. Other

contributions in this line are studies carried out by Iroham & Ogunba (2008) and Ayedun (2009) where it was posited that the maximum acceptable margin should be between $\pm 13.6\%$ and $\pm 10.2\%$.

1.7 Study Area

As earlier stated, the study area comprises of three cities: Lagos metropolis, Abuja and Port Harcourt. This section provides a brief overview of their historical, geographical and economic characteristics.

(a) Lagos metropolis

The history of Lagos is traceable to the year 1472 when the Portuguese first visited the old Yoruba settlement (which was then and still known as Eko), and named it a port for ferrying both human and material cargo to Europe. By 1861, it was annexed by the British (who at this time opposed slavery sternly), and who governed it as a Crown colony. In 1914 Lagos became the capital of both the Colony and Protectorate of Nigeria. By 1960 the city became the capital of independent Nigeria. As Nigeria's oil industry boomed in the early 1970s, Lagos began developing rapidly.

Lagos is located between latitudes $6^{\circ} 21' N$ and $6^{\circ} 34' N$ and longitudes $3^{\circ} 01' E$ and $3^{\circ} 27' E$. It is situated in the Southwestern region of Nigeria and is bounded in the north and east by Ogun State, south by the Atlantic ocean, west by Cotonou in Benin Republic. It consists of a total landed area of 3,345 sq km (1,292 sq mi) on four principal islands and on adjacent parts of the Nigerian mainland. The islands are connected to each other and to the mainland by bridges and landfills. Major sections of the old city include Ebute-Metta, Yaba, Surulere, and Shomolu. Others are Ikoyi Island, situated just east of Lagos Island and joined to it by a landfill; Apapa, the chief port district, located on the mainland; residential Victoria Island; and Industrialized Iddo Island. Some mainland suburbs which were formerly part of the old western region were incorporated as part of the city in 1967. These areas included Agege, Ikeja, Alakoko etc.

The results of the last population census exercise in 2006 indicate that Lagos State is the most populous state in Nigeria after Kano State with a population of over 9 Million people (even though this result was disputed by the then Lagos State Government who

conducted a separate census exercise for the state which produced a population figure of about 14 million people).

(b) Abuja

Abuja is the capital city of Nigeria. It is located about the centre of Nigeria in the Federal Capital Territory (FCT). Abuja is a planned city, built mainly in the 1980s. It officially became Nigeria's capital on December 12, 1991, replacing the previous capital Lagos. As at the time of the 2006 census, the Federal Capital Territory had a population of 778,567.

Abuja's geography is defined by Aso Rock, a 400-metre monolith left by water erosion. The Presidential Complex, National Assembly, Supreme Court and much of the town extend to the south of the rock. "Aso" means "victorious" in the language of the (now displaced) Asokoro ("the people of victory").

Abuja is known for being the best purpose-built city in Africa as well as being one of the wealthiest and most expensive. However, the population on the semi-developed edges of the city lives in shanty towns such as Karu. Karu and other towns which were originally planned to house the capital's civil servants and lower income families, still have unstable electricity supply. This typical town has a total land mass of 713km² (275.3sqm) located on the Cartesian coordinates of between 9° 4' 0''N and 7° 29' 0''E.

The master plan for Abuja and the Federal Capital Territory (FCT) was developed by International Planning Associates (IPA), a consortium made up of three American firms: Planning Research Corporation; Wallace, McHarg, Roberts and Todd; and Archisystems, a division of the Hughes Organization. Constructed with a similar logic used in the construction of Brasilia, the ground breaking was dedicated in the late 1970s, but due to economic and political instability, the initial stages of the city were not complete until the late 1980s.

The Phase 1 area of Abuja is divided into five (5) districts. They are the Central, the Garki, Wuse, Maitama, and Asokoro. There are also five districts in Phase 2. They are Kado, Durumi, Gudu, Utako and Jabi. The Phase 3 districts are Mabuchi, Katampe, Wuye and Gwarimpa. There are also five suburban districts, which are Nyanya, Karu, Gwagwalada, Kubwa, and Jukwoyi. Along the Airport Road are clusters of satellite

settlements, namely Lugbe, Chika, Kuchigworo and Pyakassa. Other satellite settlements are Idu (the main industrial zone), Mpape, Karimu, Gwagwa, Dei-Dei (housing the International Livestock market and also the International Building materials market). (Wikipedia, 2010)

(c) Port Harcourt

Port Harcourt is the capital city of Rivers State, Nigeria. It lies along the Bonny River and is located within the Niger Delta. Popularly known as the Garden City, the town was founded in 1912 by the British in an area traditionally inhabited by the Ikwerre's, an Igbo subgroup. The town has an estimated population of 1,620,214 based on the last National Census exercise conducted in 2006. It lies between 4.750 N and 70E.

During the founding of the town as a new port in 1912, it was named after Lewis, Viscount Harcourt, Secretary of State for the Colonies. The initial purpose of the port was to export the coal which geologist Albert Ernest Kitson had discovered in Enugu. In August 1913, the Governor-General of Nigeria, Sir Frederick Lugard wrote to Harcourt, then Secretary of State for the Colonies, "in the absence of any convenient local name, I would respectfully ask your permission to call this Port Harcourt." To this the Secretary of State replied "It gives me pleasure to accede to your suggestion that my name should be associated with the new port.

Port Harcourt town is the main city of the Port Harcourt City Local Government Area, and consists of the former European quarters now called old Government Reservation Area (GRA) and new layout areas. The Port Harcourt urban area (Port Harcourt metropolis) is made up of the city itself and parts of Obio/Akpor Local Government Area. Port Harcourt City, which has a land mass of 170km² (65.6 sq mi) as against the total land mass of 186km² (71.8 sq mi) encompassing water bodies, is highly congested as it is the only major city of the state. A law has recently been passed by the state house and Governor Amaechi's administration to spread and develop to the surrounding communities as part of the effort to decongest Port Harcourt. The greater Port Harcourt City, as it is officially known, spans eight local government areas that include Port

Harcourt, Okrika, Obio/Akpor, Ikwerre, Oyigbo and Ogu/Bolo, other ethnicities includes Tai, and Eleme. (Wikipedia, 2010)

1.8 Limitations of Study:

During the course of this research the following constraints were encountered.

- (a) The research entailed a wide coverage of three regions in the country and as such, the researcher could not personally administer all the questionnaires. Essentially, one had to depend in many cases on trained research assistants. It is noteworthy nevertheless that these assistants were all estate surveyors and valuers, and it is believed that their efforts did not fall below that of the principal researcher.
- (b) The questions put across to respondents were quite technical. This might suggest that some respondents might not have fully understood some questions. Nevertheless, effort was made to preempt and prevent such misunderstanding through pretests and through adequate training of research assistants. The researcher would like to believe that a reasonable level of success was achieved in this regard: that questions were adequately understood and that research assistants were adequately equipped to educate respondents to correctly decipher the intent of all questions.
- (c) Getting actual sales prices/recent valuation for the last objective was not easy considering the fact that sale dealings in the real estate business particularly in this part of the world are shrouded in secrecy. Moreover, it is not always clear whether the recent sales figures procured are the actual figures or are doctored for tax avoidance purposes. We would like to believe that the figures employed were true figures and that there would consequently be no negative impact on the results of this study.

These constraints however did not significantly affect the results of the study:

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This Chapter is focused on reviewing relevant literature dealing with the applications of behavioural studies to real estate particularly valuation. The attempt is to gain a clear grasp of the trend of thought in relevant studies and at the same time facilitate an appreciation of the focus and direction of previous research methods, findings, limitations and recommendations. The ultimate goal is to identify gaps in knowledge and provide necessary links between previous studies and the present.

The central theme of the literature review is behavioral research in real estate particularly papers on heuristics in valuation. However, as behavioral research is a development from valuation accuracy research (a development from papers in valuation errors and the margin of error principle), the review of literature starts from a consideration of accuracy and variance literature. Sequel to this, the chapter considers papers on the causes of inaccuracy and variance. These causes are generally grouped into four categories, and the chapter narrows down to a consideration of one of these categories (that focusing on the behavioral causes) as this is most relevant to the study objectives. Papers on valuation behaviorism are in turn grouped into four lines of inquiry, and the review ultimately focuses on the most relevant of the four to the study objectives, that is heuristic influences on valuation accuracy.

Due to the fact that studies in these above-mentioned areas are relatively sparse in Nigeria, a substantial portion of the review is based on the UK, US and Australian literature where substantial works have been carried out on the subject of study.

2.2 Papers on Accuracy and Variance in Valuation (Valuation Errors)

Valuation accuracy research was triggered by a paper submitted by Hager & Lord (1985) to the Institute and Faculty of Actuaries in reaction to Investment Property Databank's (IPD) use of

valuations as a performance measure for investment properties in the UK. The authors requested ten valuers to value two properties: a Thames Valley refurbished office and a reversionary shop property. The resulting valuations were then compared with 'control' values determined by an expert valuer. The valuations ranged from \$630,000 to \$780,000 for office and \$450,000 to \$465,000 for the shop. The highest valuations were 24% and 45% higher than the lowest valuations for the office and the shops respectively. A control valuation by the property manager, which was used as the measure of 'true value', put the value of the office and the shop at \$725,000 and \$605,000 respectively. About 40% and 90% of the office valuations were within $\pm 5\%$ and $\pm 10\%$ of the 'true value' respectively. None of the office valuations was more than 20% of the "true value" and only 50% of office valuations were within $\pm 5\%$. Eighty percent (80%) of shop valuations were within $\pm 10\%$ of the "true value", while only one valuation i.e. 10% was more than 20% of the "true value". The authors' conclusion was that valuations were not reliable for the purpose of performance measurement in Britain. The findings generated an extensive debate about the nature of valuation, and, in particular, the role of valuation as proxy for price. However, the study was subject to a variety of shortcomings. First, the study negated the import of market value or transaction prices which are considered better benchmark for comparison with values in a study like this. Rather a control valuation was used which might not necessarily represent the "true value" due to subjective factors and which, as such, refuted true market evidence. Also, the sample size used for the research was quite small; the results from a sample size of just ten valuers amongst the entire practicing surveyors in the UK could not result to a representative conclusion. Moreover, the study did not look at behavioural factors as it affects accuracy of valuation.

Brown (1991) carried out a larger and more vigorous accuracy study in the UK. His study tested the relationship between valuations and actual transaction prices. The study was based on a random sample of 29 quality commercial properties in the UK sold between 1975 and 1980 for which there was a recent, prior, independent valuation. Brown regressed the values placed on the 29 properties on the actual sale prices realized and found that $V = -0.20 + 1.20P$ (V = valuation and P = price). The equation had a coefficient of determination $R^2 = 0.99$, which implied that price explained about 99% of their equivalent valuation suggesting a high level of valuation accuracy. This result suggested that valuers are interpreting market information accurately.

However, although Brown (1991) compared valuations to actual transaction prices, the two events were non-contemporaneous. His study failed to adjust for the effects of the non-contemporaneous nature of the variables: the possible changes in the data of the valuations and that of the transaction prices in the intervening period. The study also incorporated no behavioural dimension to the study of valuation accuracy.

The Investment Property Databank (IPD) in collaboration with Drivers Jonas also carried out a set of notable studies in the UK. The research was an attempt to reflect “the profile and performance of something over 75% of the UK institutional market in commercial properties” (Cullen, 1994). IPD/Drivers Jonas’s first (1988) study involved a sample of 1,442 properties. Each of the properties was sold in the UK between January, 1982 and March, 1988 and had at least two open market valuations in the two consecutive years prior to the sales. Various statistical tests were employed but the principal one concerned an examination of prices versus valuations using a regression model. A simple least square model, price was regressed on value (the inverse of Brown’s model), producing an equation $P = 3.56 + 1.061V$ ($R^2 = 0.834$) which suggested a high (83.4%) explanatory correlation between valuations and subsequent transaction prices. This study provided further support for the basic hypothesis that there is a one-to-one relationship between valuations and prices in the UK practice supporting Brown’s (1991 and 1991b) work. This work provoked extensive debate concerning the statistical validity of the analyses employed leading to a suggestion of behavioural research into the valuation accuracy debate (Lizieri & Venmore-Roland, 1991). The IPD/Drivers Jonas was subject to the following criticisms: First, the transformation of data into per square foot was said to be insufficient to make the data homoscedastic, thus rendering the data values unreliable (Lizieri and Venmore – Rowland, 1991). Secondly, the β values were not tested for significance neither did the study provide information on the standard error of estimate to indicate valuation error.

The 1988 study was followed up upon in a later study (IPD/Drivers Jonas, 1990) with increased sample size and more detailed analysis. The 1990 study involved 2400 transactions and provided the analysis of the relationship between valuations and transaction prices on an annual basis for the seven years studied. However, the study was subject to the same problems of homoscedasticity as the earlier study. Moreover, in the study period, the level of bias exceeded 10% in four years, greater than 25% only in one year, while it was less than 5 % only in two

years (McAllister, 1994). This figure suggests a high level of bias measured by beta values in the regression equation though the authors' conclusion was that valuers are achieving a high level of accuracy. Pratten (1993) analysis of the IPD database of transaction also suggested a low level of reliability with as little as 20% of the transaction prices within 5% of the prior valuations and nearly 30% more than 25% in error (McAllister, 1994). For the purposes of the present study, we note also that the various IPD studies did not incorporate a behavioural dimension.

IPD/Drivers Jonas have continued to update and improve their analysis on yearly basis over the past twenty years with increasing sample sizes, analysis periods, and ranges of statistical tools and have consistently maintained the same basic finding of high levels of valuation accuracy (RICS – IPD, 2005).

Matysiak and Wang (1995) is another notable study carried out in the UK. The authors analyzed a sample of 137 commercial properties from the JLW Property Performance Analysis System that were sold in the period 1973-1991 for which prior valuations were carried out 3-6 months before sale. The mean difference and the mean absolute difference were found to be -6.9%, 16.7% respectively, with 30% of the valuation lying within a range of $\pm 10\%$ of the sale price, 55% within $\pm 15\%$, and 70% within $\pm 20\%$. That is, the authors found the probability of achieving a selling price within $\pm 10\%$ of the valuation was only 30%, rising to 55% within $\pm 15\%$, and to 70% within $\pm 20\%$ of the valuation. The study accordingly suggested a low level of valuation accuracy relative to transaction as against the findings of Brown and the IPD/Drivers Jonas. However, although the Matysiak and Wang (1995) study was an improvement on the Brown (1991) study in the sense that both variables “price and values” could be regarded as contemporaneous s- having a lag period of only 3-6 months, the study is still faulted based on the fact that the authors did not state the maximum acceptable range of valuation accuracy, making their results rather open-ended. The authors did not likewise state the factors prompting the various variations in accuracy. There was also no behavioural dimension in this accuracy study.

McAllister (1995) carried out an empirical investigation in the UK on valuation inaccuracy based on a database consisting 57 transactions from the property disposal program of the former Milton Keynes Development Corporation (MKDC) between 1987 and 1992. The properties were mainly industrial involving title transfer to the sitting tenants. The properties were sold by either private

treaty or informal tender. The study employed a number of error metric and econometric techniques to establish the relationships between valuations and transaction prices. The result showed that in slightly above half of the transactions (56%) valuers were accurate to within 10% of the selling price while the overall mean absolute percentage error was 15% and the average percentage error (where positive and negative cancel out) suggests error in the region of 10%. On the whole the result of the analysis generally did not suggest that there is inaccuracy in the valuation process with very high R^2 and β values close to unity. It is only in one of nine regression exercises that a β which was significantly different from unity was observed. This work is faulted on the grounds of the small sample size particularly when compared to that carried out by Matysiak and Wang (1995). This work did not also delve into the behavioural indicators behind this accuracy in valuation.

Hutchison et al. (1996) conducted a research into variance in property valuation that involved a survey of five national valuers and five local valuers for each of 14 centers in the UK. The participants were asked to value a range of hypothetical retail office and industrial buildings with particular characteristics in actual locations and with standard leases created using standard Hillier Parker descriptors. They discovered a 9.53% overall variation in the mean valuation of each property. They also found differences in the variance of valuation between national and local valuation firms (8.63% and 11.86% respectively for national and local firms). The reason adduced for this was principally the organizational support, especially in terms of availability of transactional information available for the national firms. However, the study did not consider the accuracy of valuations relative to sale prices. Moreover, the reasons adduced for the variance (national versus local support) gotten from the use of hypothetical property for the purpose of the analysis might not be a fully exhaustive explanation of the reasons for variance. Other causes of variance such as wrong application of method or other behavioural causes were not fully explored.

Harvard (1996) was perhaps the first attempt at examining the variance of valuations from the viewpoint of cognitive psychology using multi-strand analysis of the valuation process. His work involved a rigorous search for causes of valuation variance using analytical tools from cognitive psychology such as verbal protocol, and semantic differential. The study's methodology employed the Keirsay-Bates temperament sorter, a tool used in education research. From his

survey of 19 surveyors in the UK that responded initially, Harvard discovered that personality traits, learning styles, salient characteristics of subject property, selection and analysis of comparable evidence, mechanical construction of valuation and the methods used at arriving at valuation were principally responsible for variance in valuation. However, the study is subject to a variety of criticisms: Although, the work could be regarded as more comprehensive in the study of valuation variance as compared to that by Hutchison et. al., (1996), nevertheless, his use of simulated valuation processes rather than real life valuations for his tests could be a serious limitation of his study especially as the valuers involved were conducting professional tasks without been paid fees for it. The sample size of 19 Surveyors was also relatively small for a research of this kind. Even though an attempt was made on the behavioural dimension of valuation errors, however, the study did not state categorically the resultant variation between and amongst values.

Blundell and Ward (1997) was another notable accuracy study in the UK. The study employed the same database utilized by Matysiak and Wang (1995) but a larger sample of 775 transactions which took place between 1973 and 1990 and for which valuations had been obtained 3 - 6 months prior to sale. The findings indicated approximately 80% of the valuations lay within plus or minus 20% of the sale prices, and only 35% were within $\pm 10\%$ of the sale price. The authors used multiple regression analysis to ascertain the presence of systematic bias in the valuation process and to investigate whether actual standard deviation of the errors was higher than the a-priori calculations which was suggested to lie between 12.6% and 8.3% for valuation and sales prices respectively. The multiple regression analysis suggested that there was little bias in the valuation process leading the authors to suggest that generally, valuers are unbiased once market movements are taken into account. The authors used the standard deviation of the sales price to valuation ratios as a measure of the error in the valuation as a proxy for the sale price. Arriving at a standard deviation of 21.8% which was higher than the a-priori expectations of between 8.3% and 12.6%, the paper concluded that valuations are less accurate than might be expected. Although, this study is more exhaustive as compared to Matysiak & Wang (1995), it however lacks a behavioural dimension to causes of this inaccuracy in valuation.

Crosby et. al., (1997) disagreed with the use of selling price as a benchmark for the determination of errors in prior valuations. This was predicated on three main observations: a

valuation is only relevant on the day in which it is being carried out hence it has no shelf life; valuations seem to lag behind current market prices by the period between sale being agreed and completion; and finally valuations carried out on the day of sale could be influenced. They advocated the use of 'expert' valuers in the establishment of 'true' values (base values) and margins of errors in valuation, as it is done in most courts in the UK. In this model, the figure of the base valuer, called the true value, is used as a benchmark in determining errors of others. Using this basis (expert base values), they conducted an empirical research of 120 properties in 8 portfolios involving five firms using firm A's valuation as the base and discovered an average margin of valuation error of 8.7% on either side of valuation figures. However, this model ignored the likelihood of bias of the base valuers themselves, which would completely affect the investigation of accuracy.

French and Mallinson (2000) added a risk analysis dimension to the discussion on accuracy suggesting that being explicit about uncertainty under normal valuation situations is potentially useful to clients and valuers. The authors listed six items of information that must be conveyed when reporting uncertainty: the valuation figure; the range of most likely observation; the probability of most likely observation; the range of higher probability; the total probability; and any skewness of probabilities. Nevertheless, the authors did not consider aspects other than volatility that could affect the accuracy (certainty) of point estimate valuations. They also did not consider aspects of behavioural valuation that Havard (op.cit) had discovered as also impacting on the predictive accuracy of valuations.

Bretten and Wyatt (2002) investigated the possible causes of variance as well as the acceptable margin of error in investment valuations for commercial lending in the UK. 220 questionnaires were distributed to a range of stakeholders: lenders, finance brokers, valuers and investors. The survey revealed that the main cause of variance was individual valuer's 'behavioural influences'. The behavioural influences included: external pressure from clients', adoption of complex methodology, inability to influence the provisions of accurate and relevant evidence and lastly the experience of the valuer. It was also discovered that parties to a valuation instruction widely accept the 'margin of error' principle - the legal manifestation of valuation variance - as a test of negligence, with the majority (40%), advocating for $\pm 10\%$ as the most appropriate margin of error. Although, the study examined causes of variance especially behavioural causes, it did not

actually establish whether or not valuation variance actually existed. Moreover, the sample size (220) for four different stakeholders is rather too small especially considering the low response rate of 44%.

Mokrane (2002) addressed issues of valuation accuracy and consistency in five countries, UK inclusive. He covered a period of 1990-2000 and arrived at the conclusion that there exists only a short distance between transaction sales and adjusted valuations. Mokrane (2002) also addressed issues of valuation accuracy and consistency in four other countries - France, Germany, the Netherlands and Sweden. The accuracy tests made provision for the adjustment of previous valuation for market movements and capital expenditures and receipts that may have taken place between the valuation date and the transaction date. On France, Mokrane's study covered the period between 1999-2000 and about 2000 properties. In his consideration of consistency, he concluded that the change in valuer's effect was statistically significant. On accuracy, he covered the period 1997-2000 and arrived at the conclusion that the level of accuracy was satisfactory. He pointed out that the skewness arrived at was positive indicating that valuations slightly lag the market. In analyzing valuation accuracy in Sweden, Mokrane, covered the period 1997-2000 and studied an average number of 1800 properties. In considering consistency he found that the change-in-valuer effect was slightly significant. On accuracy, he found out that there was a positive skewness; which was indicative of the fact that valuations slightly lag the market. With regard to the Netherlands, Mokrane covered the period 1999-2000. In addressing consistency he considered an average number of 5700 properties. He found that change-in -valuer effect was statistically significant. On accuracy he arrived at the conclusion that valuations slightly lag the market. His analysis in this regard covered a period of 1999-2000 with four hundred and fifty-six sales considered. The period 1997-2000 was the focus in the consistency study in Germany. An average of 1400 was studied in this regard. In his analysis, Mokrane replaced the change-in-valuer effect with open-end versus non-open end valuation. This he attributed to the existence of many submarkets and a very large number of valuation companies (including individuals). He found that there were statistically significant results in the consistency study. On accuracy, he again covered a period of 1997-2000 considering one hundred and ninety-five sales and found out from his analysis that there was a slight lag between adjusted valuations and sale price. Mokrane however pointed out that there was an indication of bias in the way portfolio managers

selected the properties they decided to sell. He further stated that since they were informed of the previous properties in their portfolio, their choice was oriented towards those properties they expected to sell “above market”. Although, an extensive work was carried out by the author, the study did not delve into behavioral indicators behind accuracy or inaccuracy.

A follow-up to issue on accuracy/variance in valuation resulted in the constitution by the Royal Institution of Chartered Surveyors (RICS) in 2001 of the “Real Estate Industry Committee” chaired by Sir Bryan Carsberg, former director of the office of fair-trading in the UK. The committee was set up in response to a report by the University of Reading and Nottingham Trent (Baum et. al., 2000). The report of the committee popularly known as the Carsberg report, (2002) made an 18-point separate recommendation of which the first two points are agenda pertaining to valuation accuracy/variance; particularly the periodic scrutiny of sales and previous valuations in the Investment Property Data bank. The relevant recommendations were:

“The RICS should enter discussions with Investment Property Databank with a view to agreeing a means by which their data could be used to produce ongoing annual reports on the correlations between valuation and achieved prices as observed by IPD, and consider with the wider academic community how the data can be additionally analyzed to provide better information on the currency of valuations. The RICS should also encourage research into the valuation process and behavioural issues and ensure that the knowledge gained is fully integrated into the educational system”.

“The RICS should approach IPD to identify what further information about the composition and performance of valuers contributing to its indices could be published”.

The RICS Carsberg Review Committee was set up to implement these recommendations and reported late in November (2002). In relation to the two recommendations above concerning valuation accuracy/variation, it reported:

“RICS has agreed a process with IPD, which will give effect to Carsberg recommendations one and two. This will take effect from IPD’s annual report in 2003 (RICS, 2002)”.

The first RICS/IPD report on valuation accuracy followed the recommended IPD/DJ series of valuation accuracy reports and the first came in 2003. However, in consultation with a steering group comprising of academics from the University of Reading and City University, the

approach to the study of accuracy was changed, principally with regard to the timing of the valuation and sales data.

Crosby et al., (2003) examined the issue of accuracy of valuation in the context of sales timing and prior knowledge of sales price. The authors examined valuation and sale price data based on the 2002 IPD monthly index, and reached the conclusion that a valuation undertaken about a month preceding the sale date increases the risk of prior knowledge of sales transactions/prices. On the other hand, an increase in time differential (beyond two months) between valuation and sale date increases errors due to valuations becoming outdated. A valuation undertaken within one and two months of the sale price was recommended to avoid these two errors. They also concluded that the sale date is more appropriately identified as the actual date the sale price is agreed as against the sale completion date. However, Crosby et al.'s conclusions raise questions on how to predict actual sales dates should a valuer wish to make accurate predictions. The authors also compared the difference between valuations and sale prices for various market periods, revealing that valuation accuracy decreases in a rising market and increases in a falling market assuming average valuations are lower than average sale prices. However, such conclusions, based as they were on secondary data, could have ignored important influences on sale price such as concessions to sales that could perhaps have been identified in primary participant observation study. Moreover, the study period of just one year might not be sufficiently comprehensive and might not take cognizance of variations in economic climate over the years.

Abrams (2004) observed that there is likelihood of errors in every valuation, notwithstanding the expertise of the professional undertaking the task. On this basis, Abrams argued against point estimate valuations stating that values are better expressed as a range of values with probability estimates attached to each point on the range. However this study also did not delve into behavioral indicators behind accuracy or inaccuracy.

Issues of valuation accuracy have also been studied in Australia. Newell and Kishore (1998) undertook an empirical test of the accuracy of commercial property valuations as an effective proxy for sales using the commercial property monitor (CPM) database, MSW value-Generals records and the Independent Property Trust Review Transaction Details. Two hundred and eighteen commercial property sales (comprising 101 offices and 117 retail properties worth

\$15.5 Billion from Sydney over 1987-96 were examined). The regression-based procedure of Matysiak and Wang (1995) was used in their statistical analysis after proper adjustment was made to accommodate time lags between timing of valuations and respective sales using the PCA property indices. After accommodating lags between valuations and sales and different market conditions by introducing dummy variables, the resulting regression equation demonstrated that valuations on average are an effective proxy for sales particularly after adjustments are made for valuation timing and the state of the property market. However, recourse to the use of primary sources of data could give a more convincing conclusion compared to the secondary source adopted by the researchers.

Parker (1998) examined the correlation between eventual market prices and valuations prepared by one Australian national valuation firm in respect of seven investment properties sold by tender. The subject properties were independently valued by one national valuation company as at the date on which the tender closed, in 1995. Each valuer was furnished with identical instructions, together with a data set containing full information on the properties, and a normal valuation fee was charged. The result indicated that only one of the valuations matched the market price exactly, confirming that valuation accuracy is a rarity. Overall, the average level of valuation accuracy appeared very high with valuations exceeded in market price by a dollar-weighted average of 2.5%. Considered by sectors, retail property showed high accuracy with valuation exceeding market price by only 0.5%; commercial property by 1.1%; and industrial property by 8.3%. At the individual level, valuations exceeding market price ranged from 8.8% to market price exceeding valuation by 14.3%. Additionally, 15% of the subject valuations lie within a range of 5% on either side of the sale price, 85% within a range of 10%, and all valuations fell within $\pm 15\%$ of sale price. The correlation between valuations and market prices was 99.15% suggesting a higher level of accuracy of the adopted plus or minus ten percent ($\pm 10\%$) test of inaccuracy. However, the above conclusions derived from a study of just seven properties need to be handled with utmost caution.

In South Australia Rossini (1999) studied the concept of the accuracy/variance of valuation with respect to the practicability of using an Automated and Artificial Intelligent System. Results from the survey of valuers indicated that there are greater expectations of valuation accuracy using Automated and Artificial Intelligent system than manual valuation. The reliance on valuers

(about 90% out of the 18 respondents that complied) who lack knowledge of the operation of Automated and Artificial Intelligent System would not have been a good base to substantiate this research work. The use of market prices over the years with a collaborative survey of the valuation of valuers and inputs from automated system experts would be more credible.

2.2.1. Nigerian Papers on Accuracy and Variance in Valuation (Valuation Errors)

In Nigeria, research into the errors in valuation is relatively recent. The earliest attempt at a study of accuracy in valuation in the country was a research conducted by Igboko (1992) for the Nigerian Institution of Estate Surveyors and Valuers (NIESV) on the usage of yields. In a survey of valuers in some selected cities, for this purpose, Igboko observed a weak grasp of investment valuation among some practitioners whom he described as conducting “misvaluations” and “guesstimations”. However, Igboko’s conclusions in this regard were merely his observations, and were not based on a deliberate quantitative analysis of valuation transaction accuracy.

Ogunba (1997) and Ogunba and Ajayi (1998) conducted a study to determine the accuracy of valuation in residential properties in Lagos Metropolis. The study entailed the use of questionnaires (administered as interviews) distributed to 30 respondent firms based on a purposive sampling framework. The data was analysed by means of a variety of tests: the range, interquartile range, mean deviation, regression analysis, and the coefficients of correlation and determination. The approach was to identify two recently sold properties and then request valuers to value such properties without knowing the sale price. The findings using all the tests above, were that valuations are not a good proxy for market prices. For example, the mean deviation from market price showed figures in excess from the maximum acceptable margin of error adopted ($\pm 5\%$). Moreover, the intercept in the regression equation was considerably different from zero and the slope considerably different from one, suggesting very inaccurate valuations. However, the study employed very small sample sizes and a smaller coverage area and might therefore not be generalizable.

Aluko (2000) attempted to overcome these criticisms by examining mortgage valuations (for which valuers inspected the properties and were paid) and subsequent sale prices. He examined the mortgage valuations of 59 firms in Lagos Metropolis which were succeeded with actual sale by Banks of foreclosed properties. Using regression/ANOVA-based tests, he concluded that

valuations are actually a good proxy for prices. However, as the valuations were conducted for foreclosed properties, the sale prices achieved are open to the charge of being forced sale values rather than open market values. Moreover, as is usually the case in sale of foreclosed properties, there was the possibility that bidders worked to the answer, having prior knowledge of Bank reserve prices (the observation of Crosby et, al., op cit is relevant here). Moreover, the valuations and sale prices were not contemporaneous (within 3 months of each other), leaving the results open to the influence of lagging.

Ogunba, (2004) extended his earlier research (in Ogunba, 1997 and Ogunba & Ajayi, 1998), which were focused on Lagos metropolis) to a wider consideration of the six states in the southwest of Nigeria. The methodological approach adopted was the same as that adopted in his earlier papers: valuers were requested to re-value recently sold properties without prior knowledge of sale prices. The questionnaire distribution was based on stratified sampling with a sample size of 171 (75% of the sample frame) valuation firms listed in the Directory of the Nigerian Institution of Estate surveyors and Valuers. The use of statistical tools such as the range, mean deviation, regression analysis, and analysis of variance again indicated inaccuracy in Nigerian valuations relative to sale prices and valuations of other firms. The study also extended to an examination of the causes of valuation inaccuracy under topics such as the conduct of valuations, and the educational and practice structure of the valuation industry. However, though this study improved on earlier studies in sample size, study area and breath of coverage, it is still open to the criticism of the dearth of behavioural indicators behind these causes.

Ogunba and Ajayi, (2007) examined the response of Nigerian valuers to increasing sophistication in investors' requirements of accuracy, rationality and risk analysis. The authors compared the movement of valuation sophistication in the parent valuation profession (the UK) with that in Nigeria, and suggested that while valuation accuracy, rationality and risk analysis in the UK has gone through a 7-stage sequence, the Nigerian experience is in comparison only in the second stage of evolution. The authors were of the view that improved accuracy in valuation could be obtained by the uniform adoption of the investment method of valuation in valuing income-producing properties, the accurate choice of investment valuation variables through a regularly updated property data bank, and the adoption of a valuation standards manual similar to

the Red Book of RICS. The paper makes substantial suggestions but could have gained more weight if it had an empirical foundation.

On their part Ogunba and Ojo (2007) examined continuing problems of non-reliability, inconsistency and irrationality in Nigerian valuation practice drawing out solutions from theory and practice for implementation by three stakeholders: the academia, practitioners and the regulatory institutions. The paper suggested that for open market valuations, all surveyors should use the same method (the investment method rather than cost methods), since accuracy tends to result from using the same method and (as they argued), the investment method made more economic sense. Moreover, the paper advocated standardization in the manner of determining values of valuation inputs, the upgrading of the outdated Guidance Notes on Property Valuation (NIESV, 1985), and a shift over of valuers from conventional to discounted cash flow methods to ensure more valuation rationality. However, as with the paper by Ogunba & Ajayi (op cit), the paper lacks somewhat due to its non-empirical base, even though, they examined various influences on valuation accuracy including heuristics.

Iroham (2007) empirically investigated valuation accuracy issues in Lagos metropolis as a follow up of Baum et al (2000) work conducted in the UK and discovered a casual relationship between market price and property value as against a contrary belief that valuations don't influence prices. The study involved the distribution of 95, 54 and 25 questionnaires backed up with interviews to valuation firms, property development/property investment portfolios managers and the then surviving mega banks in Nigeria respectively. Data gotten was analysed with the Kruskal-Wallis test on non-parametric data and it was discovered that valuations in Nigeria are likely to be accurate (tally with sale prices) because valuers advice both sellers and buyers in the property market using the same methods. However, though the author examined client influences on valuation accuracy, he did not examine other behavioral indicators behind inaccuracies such as heuristics.

The studies of Babawale (2008) and Ayedun (2009) continued the empirical examination of valuation accuracy and variance in Nigeria. They improved on prior accuracy studies by examining valuations for which the valuers were actually paid and actually inspected the subject properties. In both studies, substantial levels of inaccuracy were discovered. The studies also delved into causes of inaccuracy. According to Babawale (2008), non-availability of comparable

data, inadequate valuer's years of experience, inadequate level of exposure and client's influence were the most significant contributors to the existing level of inaccuracy. However, both studies did not comprehensively address behavioral indicators behind valuation inaccuracies and were limited in geographical scope to Lagos Metropolis at the expense of the other prominent property markets in the country.

As an extract from Babawale (2008), Table 2.1 below gives a summary of the highlights, findings, the analytical tools employed, and the shortcomings, among others of various researches on valuation errors:

All the above discussions on valuation accuracy, particularly those based on empirical comparisons of value and subsequent sale prices, were lacking in the area of consideration of behavioural causes of inaccuracy, particularly heuristic indicators. The only discussion on causes of valuation inaccuracy - where such discussion existed - largely focused on data accuracy/availability, valuation models and valuation assumptions. The neglect of behavioural dimension in these papers has certainly not helped to address whether players in the market make cognitive valuation decisions accurately.

2.2.2. Valuation and the Margin of Error Concept

A relevant recent academic debate in accuracy literature has to do with the so called “*Margin of Error Principle*”. The debate (which has raged in courts and academic papers), has to do with the maximum permissible percentage of error between valuations and realized prices. The premise behind the debate is that a degree of variation/inconsistency/inaccuracy between/among contemporaneous valuations of a property is to be expected. This is because valuation is after all a subjective art, which implies that no two valuation opinions might ever exactly equal each other, even where such valuations are contemporaneous. On the other hand, a situation where very disparate value estimates are placed by different valuation firms on the same property in the same time frame could make the profession look uncoordinated and clumsy. This premise has resulted to suggestions in courts and academic papers on the appropriate range of the margin of error. There is no consensus yet on what the degree of acceptable margin should be. The discussion that follows addresses the opinions expressed in courts and subsequently opinions expressed in academic papers on appropriate margins of valuation error.

2.2.2.1 Courts on the Margin of Error

In the UK and Australian courts, the margin of error concept has been employed in considering whether a valuer exercised reasonable care and skill in carrying out a valuation. The concept is used to determine the extent to which a valuation departs from the “true value” of the property. In negligence cases, a court is usually required to decide on two issues: the “true value” of the subject property on the date of the defendant’s valuation; and the “bracket” around that value within which any competent valuation could be expected to fall. The most important of these two

questions in a “margin of error” case is the size of “bracket” which is appropriate in the particular case.

In the instance of such cases: *Singer & Friedlander Ltd v John D Wood & Co* [1977] 2 EGLR 84 (cited in Parker, 1998), a UK court used the concept of “margin of error” for the first time in a professional negligence action brought against a property valuer. In summarizing the evidence put forward by the expert valuation witnesses in that case, the trial Judge, Watkins J said:

“The permissible margin of error is said by Mr. Dean [the defendants’ expert witness], and agreed by Mr. Ross [the employee of the defendants whose valuation provoked the legal action] to be generally 10 per cent either side of a figure which can be said to be the right figure, i.e. so I am informed, not a figure which later, with hindsight, proves to be right but which at the time of valuation is the figure which a competent, careful and experienced valuer arrives at after making all the necessary inquiries and paying proper regard to the then state of the market. In exceptional circumstances the permissible margin, they say, could be extended to about 15 per cent, or a little more, either way.”(Parker, 1988)

In *Trade Credits Limited V Baillien Knight Frank (NSW) Ltd* (1985) the judge held that a “permissible margin of error of 10% either side of the “correct figure” extending up to 15% in “exceptional circumstance” is acceptable. In another case (*Private Bank and Trust Co. Ltd vs. S (UK) Ltd*, 1983), the trial judge accepted a permissible margin of error of “15% either side of a bracket of value

An additional case is *Banque Bruxelles Lambert SAV. Eagle Star Insurance Co. Lt and others* (1994) where the valuation of three office properties differed from market prices by between 39% and 74%. The trial judge declared that these differences were unacceptable. In *Corisand v Druce & Co* [1978] 2 EGLR 86, the plaintiff agreed that 15 per cent margin of error was appropriate for the valuation of a hotel. A related Australia case is *Interchase Corporation Ltd v CAN 010087573 Pty Ltd and Others* (2000) QSC 013 (usually referred to as the Myer Centre case), where it was agreed that a margin of error as low as 7% was appropriate, being the mid-point of various ranges of valuation obtained.

As for cases involving development valuations (residual method valuations), there has been a readiness by courts to apply higher margins - margins of more than 10 per cent - for the reason that the courts have observed the high sensitivity of residual method valuations to relatively minor changes in the underlying assumptions. The Court of Appeal in *Nykredit Mortgage Bank*

plc v Edward Erdman Group Ltd [1996] 1 EGLR 119 noted, when two valuations before the court were compared, that they showed that a difference in gross development value of 17 per cent, which, with almost identical costs and profits, led to a difference in residual land value of 11.4 per cent. The judge considered this as absurd. On the other hand, the trial judge in *Nykredit Mortgage Bank plc v Edward Erdman Group Ltd* (1993, unreported) refused to allow a margin of more than 15 per cent on what was clearly a very difficult residual valuation, describing the plea of the defendants' expert witness for a bracket of some 18.7 per cent as too generous. Other residual valuation cases are *Mount Banking Corporation Ltd v Cooper & Co* [1992] 2 EGLR 142, where the plaintiff accepted 17.5 per cent on a residual valuation and *Private Bank & Trust Co Ltd v S (UK) Ltd* [1993] 1 EGLR 144, where the parties agreed that the valuer was entitled to a bracket of 15 per cent around a residual valuation, carried out in a falling market, which was itself expressed as a range (between £1.35 and £1.45 million). The odd case is that of *Nyckeln Finance Co Ltd v Stumpbrook Continuation Ltd* [1994] 2 EGLR 143 where the expert witnesses agreed that the appropriate bracket was a mere 10 per cent.

In cases involving residential property, both judges and expert witnesses suggest margins of error of less than 10 per cent. For example, Staughton LJ in *Beaumont v Humberts* [1990] 2 EGLR 166 opined that 10 per cent seems a high standard to impose. In *BNP Mortgages Ltd v Barton Cook & Sams* [1996] 1 EGLR 239, the expert witnesses agreed that on a standard estate house the acceptable margin might be no more than 5 per cent. A bracket of roughly this size was applied by the judge in *Axa Equity & Law Home Loans Ltd v Goldsack & Freeman* [1994] 1 EGLR 175 despite his acknowledgement that this was a case where the valuer would not have had access to any true comparables. In general, it appears that a 10 per cent margin of error would be acceptable, rising towards 15 per cent if the type of property or the state of the market is such as to present the valuer with a particularly difficult challenge. In a recent case of *Legal & General Mortgage Services Ltd v HPC Professional Services* (20 February 1997, unreported), where the defendant had valued an unusual house at £400,000, the plaintiff's expert witness was prepared to accept a bracket from £200,000 to £300,000 (equivalent to 20 per cent). The judge, however, was convinced by the defendant's expert that the true value of the property was £350,000 and that the defendant's valuation therefore fell within the slightly more modest bracket which he proposed (from £300,000 to £400,000, equating to 14.3 per cent).

Table 2.2: Summary of UK and Australian Court Cases Stating Margins of Valuation Errors

Commercial valuations	Margin of Error	Development valuations	Margin of Error	Residential valuations	Margin of Error
<i>Friedlander Ltd v John D Wood & Co</i> [1977] 2 EGLR 84	10% extending up to 15%	<i>Nykredit Mortgage Bank plc v Edward Erdman Group Ltd</i> [1996] 1 EGLR 119	114% unacceptable for residual valuations	Staughton LJ in <i>Beaumont v Humberts</i> [1990] 2 EGLR 166	Less than 10%
<i>Trade Credits Limited V Baillien Knight Frank (NSW) Ltd</i> (1985)	“up to 15%”,	<i>Mount Banking Corporation Ltd v Cooper & Co</i> [1992] 2 EGLR 142	17.5 %	<i>BNP Mortgages Ltd v Barton Cook & Sams</i> [1996] 1 EGLR 239	5 %
Private Bank & Trust Co. Ltd Vs (UK) Ltd (1983)	15%			<i>Axa Equity & Law Home Loans Ltd v Goldsack & Freeman</i> [1994]1 EGLR 175	5%
<i>Banque Bruxelles Lambert SAV. Eagle Star Insurance Co. Lt and others</i> (1994)	39% and 74% are unacceptable				
<i>Corisand v Druce & Co</i> [1978] 2 EGLR 86	“15%				
<i>Interchase Corporation Ltd v CAN 010087573 Pty Ltd and Others</i> (2000) QSC 013	7%				

Source: Author’s Data from Literature

A gap that stands out in the foregoing discussion is that there is no consensus in courts as to the acceptable margin of error. Moreover, as Crosby et al. (1998) argues, the use of expert witnesses to determine maximum margins of error is questionable as it is lacking in any empirical basis. This paper would assist in clarifying the margin of error issue (for stable market conditions) in

one country from an empirical viewpoint by means of a perceptual case study of its valuation community.

2.2.2.2 Academic Papers on the Margin of Error

As is the case with court pronouncements, there is as yet no country specific or worldwide consensus in margin of error discussions in academic papers. In the UK, the first margin of error of valuation accuracy paper was Hager and Lord (1985) whose work provoked much of the later works on the valuation accuracy/variance. These authors conducted a small sample survey where ten surveyors were invited to value two properties. In one case the deviation of sale prices to valuations was $\pm 10.6\%$, and in another $\pm 18.5\%$ suggesting a relatively low level of valuation accuracy relative to the accuracy standard (maximum margin of error) of $\pm 5\%$ considered by these authors. However, the choice of $\pm 5\%$ by these authors was not based on any empirical mode of determination.

In Nigeria, a survey of 30 valuation firms by Ogunba (1997) and Ogunba and Ajayi (1998) adopted the 5% margin set by Hager and Lord in the UK and found that valuers were not able to value properties within this margin of error. The adoption of $\pm 5\%$ is subject to the same criticism as the Hager & Lord survey as it is lacking in any empirical basis. Moreover, 5% was considered unnecessarily stringent by later researchers. In a later Nigerian survey (Ogunba, 2004) this margin was increased to $\pm 10\%$ margin following the comments in Baum & Crosby (1995) which suggested margins between 10 – 15%. However, this higher maximum margin of 10% is still subject to the criticism of not being empirically determined.

In the UK, surveys sequel to that of Hager and Lord also suggest higher margins of error than 5% (usually between $\pm 8\%$ and $\pm 20\%$). For example, Matysiak and Wang (1995) analyzed 317 properties over the period 1978 to 1991 using the Lasalle Property Performance Analysis database. Accuracy was measured with mean/standard deviations from market price. They discovered that 30% of valuations were within $\pm 10\%$ of the selling price, 55% of valuations were within a $\pm 15\%$ margin while 70% of valuations were within $\pm 20\%$ of the selling price. This general result is useful in showing the ranges of accuracy, but the results are difficult to interpret in the absence of a definite maximum margin of accuracy.

Hutchison et. al., (1996) conducted a research into variance in property valuation that involved a survey of major national and local firms. They discovered a 9.53% overall variation in the mean valuation of each property and found differences 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. Hutchison et. al.'s study suggests that a maximum margin of variance error of 8.63% - 11.86% might be acceptable, but still a definite maximum benchmark was not established.

Bretten and Wyatt (2002) investigated the possible causes of variance as well as the acceptable margin of error in investment valuations for commercial lending. 220 questionnaires were distributed to a range of stakeholders: lenders, finance brokers, valuers and investors. The survey revealed that the main cause of variance was individual valuer's 'behavioural influences' and that $\pm 10\%$ was the most acceptable margin of error. This result is useful in the effort to ascertain a definite benchmark of valuation error, but the views of clients in this regard were not sought.

Crosby et al. (1998) examined the margin of error principle currently used by the English courts as a test of negligence in valuations. In particular, they considered whether the "bracket" of 10-15% which is routinely accepted by UK judges for commercial valuations is justified by reference to existing empirical studies of valuation accuracy and variation. The paper concludes that the margin of error principle, as it is presently applied by the English courts, is lacking in any empirical basis and indeed runs counter to the available evidence. The paper rightly calls to question the use of expert witnesses in establishing margins of error for negligence cases in preference to empirically determined margins.

In the US, a survey of appraisal values vis-à-vis sale values by Clayton, et. al., (2001) found an appraisal error (sale price – appraisal value) between 6% and 13% but this study did not establish a maximum acceptable margin of error. Another (sale price – appraisal value) survey was conducted by Hordijk (2005) covering the US, UK and Netherlands the Netherlands. Using data from the NCREIF index (US), ROZ/IPD index (Netherlands) and IPD index (UK), he found that the average deviations of valuations from sale prices were – 0.1% (SD = 5.1%), 7.9% (SD = 4.9%), and 5.7% (SD = 5.9%) for the US, Netherlands and UK respectively. These results were

useful from a comparative basis, but do not provide a benchmark margin of error to interpret or measure the accuracy of the results.

In Australia, a survey carried out by Parker (1988) among major valuation consumers in his country established an acceptable valuation error bracket of $\pm 5\%$ to $\pm 10\%$ with a mode of 5% and arithmetic mean of 6.04%. However, the results of this study are subject to the same criticism as the Clayton and Hordijk papers; they do not provide definite benchmarks. For example, it is not clear whether one should adopt the mode or mean. Moreover, the views of valuers themselves on appropriate margins were not sought.

The foregoing suggests that a lack of worldwide consensus obtains within the academic community as to maximum margins of error. Margins of error suggested in the above papers by valuers or their clients range from $\pm 5\%$ to as much as $\pm 20\%$. In the absence of a definite worldwide consensus focusing on both valuers and their clients, the Nigerian surveys in sections 4 and 5 of this work are offered as an example of how the valuation community in one country responds to perceptual questions on maximum margins of error for commercial valuations.

2.2.3 Causes of Valuation Inaccuracy in Nigeria

The literature on causes of valuation inaccuracy in Nigeria has been grouped by Ayedun (2008) into three models: the Ogunba structure-conduct performance model, Aluko's (1998, 2000) model and the Ojo (2004)/Ogunba and Ojo (2007) Model

(a) The Ogunba structure-conduct performance model

Ogunba (1997, 2003) postulated a structure conduct performance model in discussing valuation accuracy and its causes. This model had its source in Bain's (1968) macroeconomic model of industrial performance. Bain advocated that the way an industry is structured impacts the conduct of its participants which in turn ultimately impacts the performance of the industry as a whole. Ogunba transposed this model to the valuation industry and envisaged that where the output of the valuation "industry" (valuations) is faulty (that is, inaccuracy/consistency), then the causes are traceable to the manner valuations are conducted which in turn is traceable to the way the valuation profession is structured (educationally and professionally).

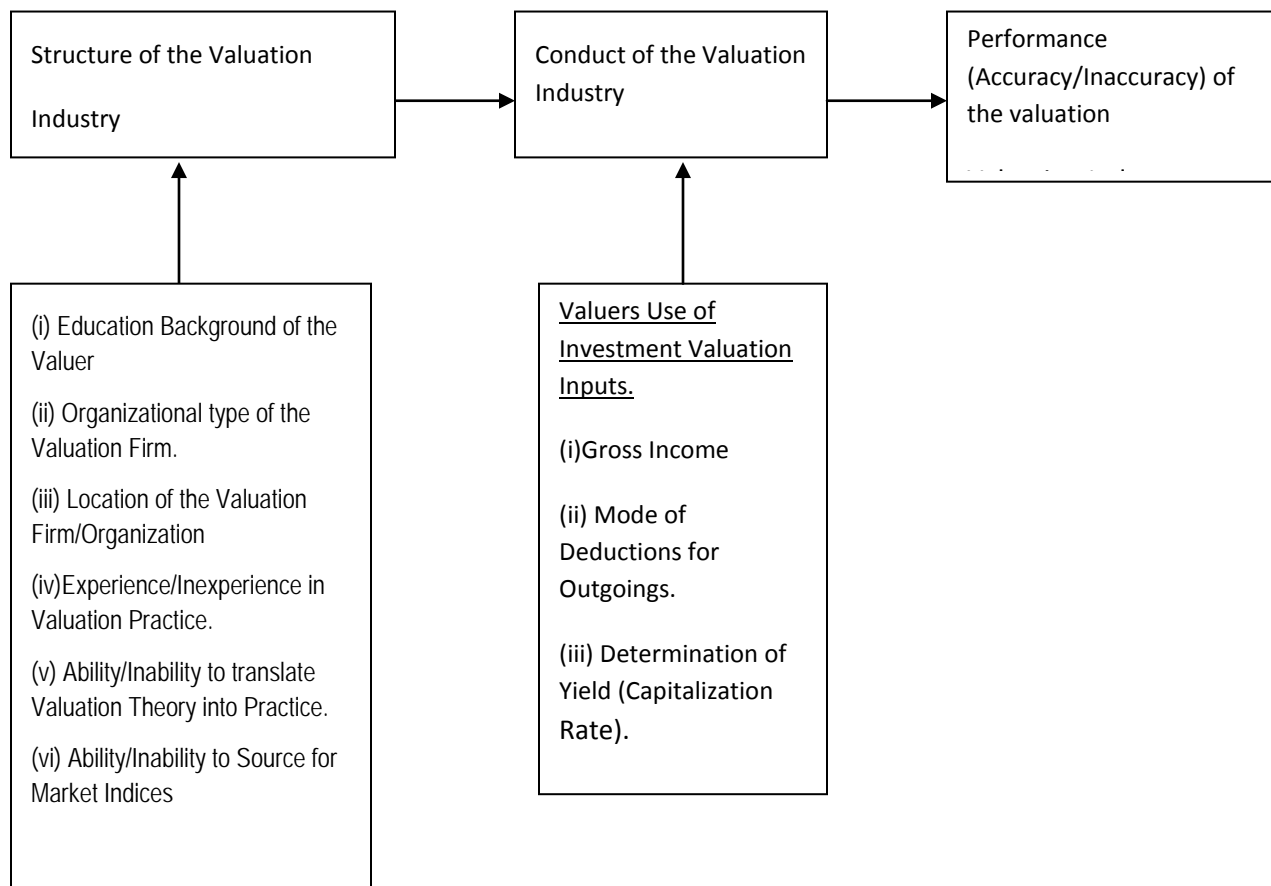


Fig 2.1 Ogunba's (1997, 2003) Structure-Conduct-Performance

Factors noted in the 'structure' of the valuation industry include the education background of the valuer, organizational type of the valuation firms, location of the valuation firms/organizations, relative experience/inexperience of valuers in valuation practice, ability/inability to translate valuation theory into practice and ability/inability to source for market indices. Following the model, these structural factors impact on factors in the 'conduct of the valuation industry' (that is the way valuers conduct their valuations in the valuation process). Factors examined in the conduct of valuations included the manner of determining gross income, mode of deductions for

outgoings, and the mode of determination of yield (capitalization rate). In this regard, the model considered a variety of 'conduct' issues such as the adoption of outdated rules of thumb yields and variant modes of determining each valuation variable (gross income, outgoings, yield), which were found to differ widely from firm to firm. Conduct issues also included the use by some practitioners of the cost approach to value for valuing investment properties. In this regard, the study noted that 63.3% of respondent valuers opted for using the cost method of valuation in valuing investment properties, while 53.7% of respondents indicated that the cost method provides value estimates which are closer to selling price than investment method estimates.

Generally, the study depicted a situation of deficiency in the educational and practice structure of the valuation industry which had impact in creating an inefficient and non-uniform valuation conduct (general lack of uniformity in choice of method and mode of determining valuation variables amongst the practicing valuers), which in turn was a cause of differential and inaccurate capital values (sub-optimal; performance).

(b) Aluko's (1998, 2000) model

Aluko (1998, 2000) addressed causal factors from a more direct perspective of modeling. He envisaged four groups of causal factors impacting on valuers' ability to correctly and consistently interpret the market. These were behavioural factors (skill, experience and judgment and client influence), problems of inadequate/relevant data; unrealistic valuation assumptions; and unreliability of valuation techniques in unstable markets (see figure 2.2)

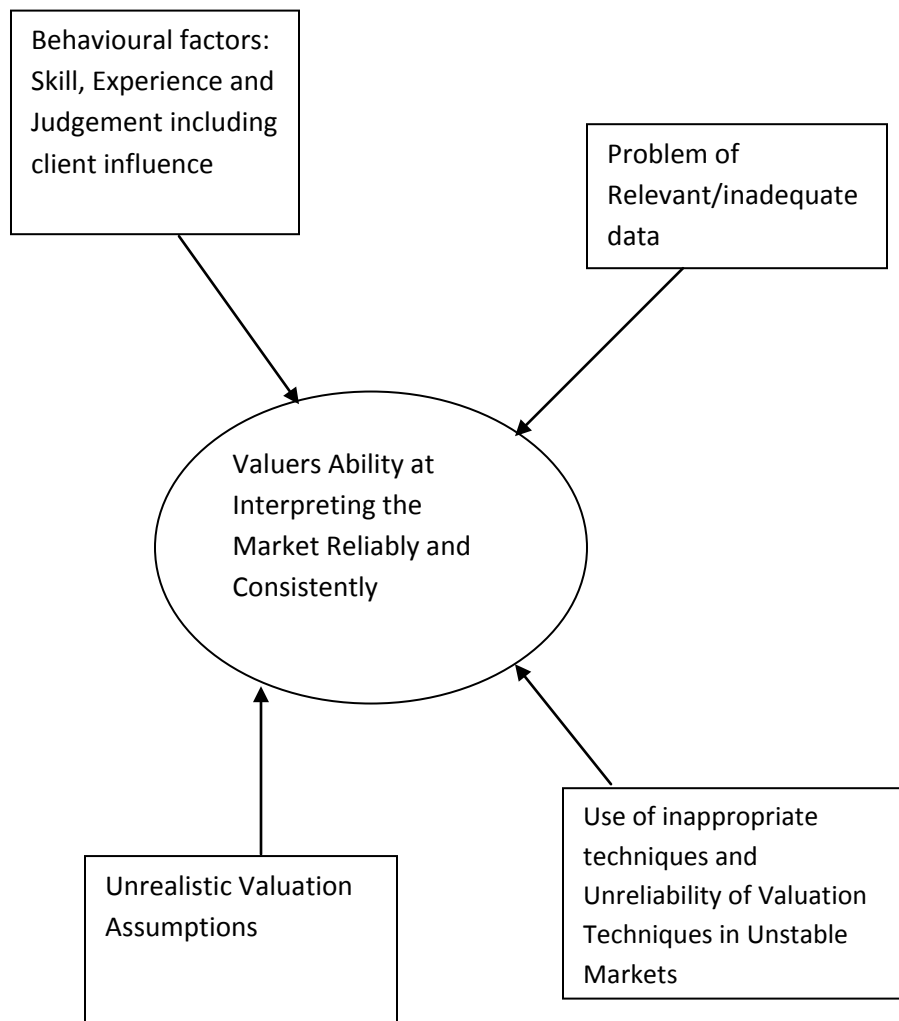


Figure 2.2: Aluko’s (1998 and 2000) Model of Factors Responsible for Inaccurate Valuations.

Aluko’s (1998 and 2000) publications observe that:

“it is often discovered that in practice, problems do arise where differences of opinion of two valuers on the same property are so wide that the values could not be relied upon. As the society is demanding high standard for the services it receives and for which it pays, it is important that our profession ensures that high standards are maintained by all members”.

This problem was seen to arise from a series of three causal factors: The first of these factors was that of skill, experience and judgment of the valuers. In current research, this group of factors would be described as behavioural factors. Behavioural factors limit valuers’ ability in the interpretation of property value; a degree of individual valuer’s experience and judgment is

required to arrive at optimal opinions of market price behavior. The growing influence of clients is a factor under behavioural factors influencing the accuracy of valuations.

Related to this group of factors was that of unrealistic valuation assumptions among valuers. In addition, the model observed that data is the driving force that fuels valuation analysis, but a problem faced is the collection of representative data, which is compounded by a lack of adequate and reliable databanks.

(c) The Ojo (2004)/Ogunba and Ojo (2007) Model

The recent papers of Ojo (2004) and that of Ogunba & Ojo (2007) envisage a model of seven factors affecting valuation accuracy. These are the reverse yield gap, use of different valuation methods for investment property, use of different valuation inputs, the absence of a valuation standards manual, valuation heuristics and client influence and valuation irrationality.

Some of the factors in the model are previously unconsidered by any other model builder. For example the model draws attention to some peculiar affecting valuation accuracy in the country. One of these is the reverse yield gap: inflation in Nigeria. The authors see that there has been a reverse yield gap situation since the beginning of the recession of the 1980s, which has been responsible for the invalidation of rules of thumb, previously held in stable market conditions. This has resulted in confusion among valuers as to the ability of the investment method of valuation to produce accurate results. The continued use of rule of thumb yields (say 5% for residential properties in Victoria Island) in inflationary circumstances is undoubtedly a cause of lower than market price valuations.

The other major factor in valuation inaccuracy in this model is that of valuation irrationality. The authors postulate that there have been changes since 1960 in investors' expectations without a corresponding change by valuers of their investment valuation procedure, and the logic underlying conventional investment valuation techniques became questionable. In essence the authors suggest that inaccuracy occurs because the conventional valuation over values the term and under values the reversion.

The use of different methods was described as another cause of inaccuracy. This has to do with the use of different methods of valuation for the same property even where the basis of valuation is open market value. A majority of Nigerian practitioners presently favour the use of the cost

method of valuation, which they reason would serve as a better proxy for market prices. The use of different valuation inputs into the valuation equation was seen as an additional factor in valuation inaccuracy. For the investment method, the major inputs in the determination of freehold capital value are: gross income, outgoings and yield. Unfortunately, the mode of determining the values of these variables in the investment valuation formulae differs widely from firm to firm. In this regard, the non-availability of a good databank has contributed to the problem of accessibility to market information which would have aided the uniformity in the valuation inputs by the valuers reducing or totally eliminating the rate of disparity in valuation estimates prepared by valuers.

The absence of a valuation standards manual or handbook to ensure standardization and uniformity of approach in the determination of valuation inputs and preparation of valuation reports by practitioners was seen as another factor affecting accuracy. Valuation heuristics and client influence were other causes of the valuation accuracy problem in the country as envisaged by the authors. Heuristics refers to a situation where a valuer forms a preconceived opinion on the worth of the property being valued and then works to the preconceived answer (as it were).

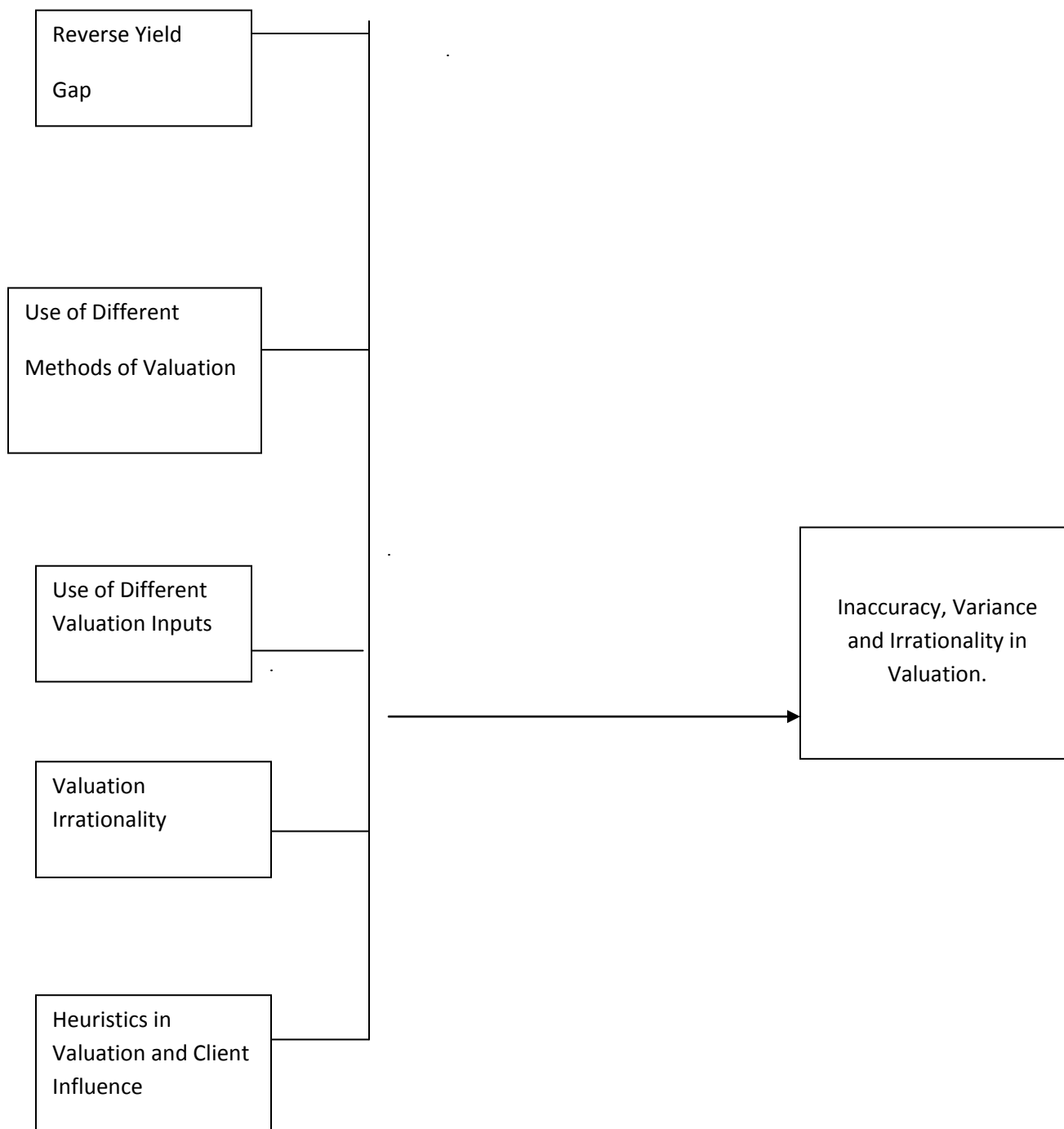


Figure 2.3: Ojo (2004) Ogunba and Ojo (2007) Model of Factors Affecting Valuation Accuracy.

It must be stated that for the most part, all three models address similar causes of valuation inaccuracy (including heuristics) albeit from different perspectives. Under the Ogunba and Ogunba & Ajayi model, heuristics s contained in the factors of the conduct of valuations. The Ojo and Ogunba & Ojo model has heuristics directly addressed as one of seven factors

influencing accuracy. This Aluko model provides an alternative way of capturing heuristics in a way that is useful for this review (he addresses four groups of factors responsible for valuation inaccuracy, namely: data available for the valuation, valuation assumptions, valuation methods and valuer behavior). If one employs this model, then it is possible to classify the present study in heuristics under the valuation behavior group. The subsequent sections of the literature review are narrowed down to this (a consideration of papers on valuation behavior).

2.3 Behaviourial Paradigm Shift in Valuation Research

The bulk of accuracy literature has focused on ascertaining if there is a close correspondence between valuations and prices or between valuations and valuations of other firms. A few pieces of literature (discussed in the previous section), have also discussed the causes of accuracy in general terms. Recently however, there have been new understandings and calls within the real estate literature for an extension of the frontiers of property research (and particularly behavioral property research) to include a collaborative effort with psychology.

Handgraaf and Van Raaij (2005) for example have posited that the experimental approaches in psychology and economics are converging with a common language, mutual understanding and more collaboration between economists and psychologists are developing. Moreover, Diaz (1993) suggested that real estate research should not be restricted to finance and other closely related boundaries alone. He argued that such a paradigm restriction placed on real estate is baseless as it limits the frontiers of its research focus. Black et al. (2003) argues that the uniting factor of all real estate disciplines (finance inclusive) is that they ultimately derive their existence from human behaviour. He suggested that the typical finance related research in real estate would be richer if researchers go beyond cash flows to see how and why such cash flows are created through the real property medium. Behavioural property or real estate research is focused on examining the way that judgements and decisions are made in the property and real estate markets from the perspective of human behaviour. The incorporation of behavioural research in valuation accuracy research would permit an expansion of the research focus to incorporate understanding human judgement, bias and seemingly irrational behaviour, and help to improve our interpretation of the way that players in the market make decisions and reach conclusions (Gallimore, 2004).

Similarly, Newell and Simon (1972) argues on the importance of recognizing the function of human behavior in decision making tasks, of which property valuation forms part, as a connected process of information processing, task environment comprehension and problem space definition. From their argument it can be deduced that actual valuation behavior must be understood before valuation improvement can be engineered. It is evident that much of the property behavioural research to date has been targeted towards identifying 'biases' within the cognitive valuation process. Bias within the valuation process is defined as the deviation from the standard procedures in information processing. It is this difference in information processing, which is suggested as one of the potential reasons for valuation inaccuracies (Brown, 1992). Moreover, Diaz and Hansz (2007) provide explanations for why the bulk of behavioral research in real estate is in valuation rather than in lending activities and negotiation. First, valuation processes substantially influence value formation in property markets which are characterized by a critical lack of transaction information. Second, valuers are a relatively easy target for research purposes since they are a well defined and accessible group with widely accepted normative models. Third, many early behaviourists are themselves valuers giving them important advantages, from designing experiments to interpreting results, in conducting behavioural research of valuers.

Diaz (1990a) introduced behavioural research in the property valuation field by investigating whether the U.S. residential valuers followed the normative valuation process in their routine valuation tasks. The findings suggest that the U.S. residential valuers, who participated in the study, deviated largely from following the standard deductive valuation process, in which the investigation begins with a wide focus of the general market. The valuers were found to adhere more to an inductive process, in which the investigation begins with the analysis of the subject property. Another similar study was conducted in Belfast Northern Island by Adair, Berry and McGreal (1996). The work was geared to investigating whether the residential valuers in Belfast followed the normative process. Their findings also indicated that valuers do not adhere to a standard practice, but rather viewed critical information differently.

Diaz (1990b) studied comparable sale selection process by valuers. The findings showed that the valuers did not follow any systematic and efficient process in selecting the comparable sales. In like studies, Wolverton (1996) and Gallimore and Wolverton (1997) examined the bias in

comparable sales selection by valuers in the U.S and the U.K. These studies produced strong evidence that the knowledge of the sales price of the subject property biased comparable sale selections, as well the assessment of the final value. The authors identified this bias as a 'confirmation bias' whereby the valuers were found to be biased towards selecting only those sales which confirmed the known price of the subject property.

Researchers have also examined information processing heuristic biases in valuations. By way of questionnaire survey, Gallimore (1994) attempted to find whether anchoring, recency and dilution biases existed in the valuation information processing. The results showed that valuers anchor on prior valuation information; however, the two presentational effects of anchoring, that is, recency and dilution, were not confirmed due to problems related with the method of the analyses.

Black and Diaz (1996) provided preliminary confirmation of the asking sale price as a potential for an anchoring bias. Black (1997) showed that when sales were concluded, sale price anchoring bias was evident. However, the asking sales price bias was found to be ineffective when they were set at high levels. Diaz and Wolverton (1998) findings suggest that valuers might even anchor on their own previous estimates of values. Diaz (1997) investigated if value estimates were influenced by the previous value estimates of other experts. The results were unable to confirm the presence of anchoring bias towards value judgments of the other experts. In another dimension of bias which is not based on cognitive behavioural traits is a seemingly 'survival bias' which has been confirmed by various researchers amongst which is Levy and Schuck (1999). This is evident from clients influence on property values that has to some extent render unethical valuer's behaviour.

Other behavioural studies in real estate have attempted to analyze investors' behaviour in property investment decision-making amongst others. The works of Barkham and Ward (1999) and Gallimore and Gray (2002) are two of such examples. Barkham and Ward (1999) examined the reasons for the discount trading (market capitalization less than net asset value) of the U.K. property companies. Their findings indicated that overestimation of the changes in the fundamental values of the assets by the irrational noise traders was one the significant reasons for the discount trading of the U.K. property companies. Gallimore and Gary (2002) examined the role of investor sentiment in property investment decision- making. The authors utilized

questionnaire survey to explore the perceptions of the sentiment (whether rational or irrational), importance of sentiment and its relationship to the information used in the decision-making. Their results suggest that over half of the respondents rated sentiment as essential to their decision-making. Based on this finding, Gallimore and Gary concluded that investor sentiment is seen as an important factor in making property investment decisions.

Over the years the behavioural research into valuation has developed along four lines of inquiry:

- i. Departures from normative models (Diaz, 1990a; Adair, Berry and McGreal, 1996; Diaz, Gallimore and Levy, 2004),
- ii. Comparable sales selection (Diaz, 1990b; Wolverton, 1996; Gallimore and Wolverton, 1997),
- iii. Valuation biases (Gallimore, 1994; Gallimore, 1996; Diaz and Hansz, 1997; Diaz and Wolverton, 1998; Havard, 1999; Diaz, 1997; Diaz and Hansz, 2001; Cypher and Hansz, 2003; Hansz, 2004a), and
- iv. Agency- related impacts or feedback (Kinnard, Lenk and Worzala, 1997; Wolverton and Gallimore, 1999; Levy and Schuck, 1999; Gallimore and Wolverton, 2000), etc.

The Tables below (drawn from Diaz and Hansz, 2007), summarize the findings of behaviour oriented valuation research papers. These are categorized into the above four groups:

Table 2.3: Papers Demonstrating the Departure from Normative Valuation Models

Study	Findings
Diaz (1990a)	In this paper, residential valuation experts were found to depart from inductive normative models and employ deductive processes
Adair, Berry, McGreal (1996)	Residential valuers were found to view critical property characteristics differently than did market participants
Diaz, Gallimore, Levy (2002)	This paper involved a cross-culture comparison between US appraisers, UK valuers and NZ valuers. Non-normative behavior was found across cultures and descriptive models were developed
Diaz, Gallimore, Levy (2004)	In this paper, appraisers (US) and valuers (UK and NZ) found the US normative model cognitively demanding; departure was common regardless of culture

Source: Diaz and Hansz, 2007

Table 2.4: Papers on Comparable Sales Selection

Study	Findings
Diaz (1990b)	In this paper, expert residential appraisers were found to use screening strategies that were not employed by novices. However, they considered less data.
Wolverton (1996)	This paper found that knowledge of subject transaction prices biased comparable sales selection among US appraisers
Gallimore and Wolverton (1997)	The findings in this paper were that knowledge of subject transaction prices influenced comparable sales selection among UK valuers, though to a different degree than it did US appraisers
Diaz, Gallimore, Levy (2004)	This paper found that appraisers (US) and valuers (NZ) operating in their cultures which required disclosure, examined more sales than UK valuers in whose culture disclosure was uncommon

Source: Diaz and Hansz, 2007

Table 2.5: Papers on Bias in Valuation Judgment

Study	Findings
Gallimore (1994)	This paper found that valuers gave inappropriate weight to the most recently considered data (the 'recency effect')
Gallimore (1996)	In this paper, it was found that valuers tended to make premature judgments and then to seek evidence to support their early opinions (precipitance)
Diaz and Hansz (1997)	This paper found that valuation experts in unfamiliar markets were influenced by anonymous expert opinions due to market ambiguity
Diaz, (1997)	The finding here was that valuation experts in familiar markets were not influenced by the opinions of anonymous experts
Diaz and Wolverton, (1998)	This paper found that expert appraisers anchored on their previous valuations and made insufficient updating adjustments in light of available market evidence (appraisal smoothing)
Havard (1999)	In this paper, it was found that student valuers were more likely to adjust a low valuation upward than a high valuation downward
Diaz and Hansz (2001)	The finding here was that valuation experts were overly influenced by unclosed contract prices on subject and on comparable properties
Cypher and Hansz (2003)	This paper found that non-appraisers (novices) gave significant weight to a property's assessed value, an anchor with questionable content validity, when forming valuation judgments. In contrast, expert appraisers did not give credence to an assessed value anchor
Hansz (2004a)	In this paper, it was found that expert appraisers anchored on prior transaction price knowledge. Potential implications for appraisal smoothing were discussed

Source: Diaz and Hansz, 2007

Table 2.6: Papers on Client-Agency Related Impacts (Pressure and Feedback)

Study	Findings
Kinnard, Lenk and Worzala (1997)	In this paper, it was found that US appraisers may be willing to change valuation conclusions in response to client pressure
Wolverton and Gallimore (1999)	The paper found that the perceived valuation goal of US appraisers is strongly related to degree and nature of client feedback
Levy and Schuck (1999)	The finding here was that valuers in NZ seem to adjust value opinions and/or reported value estimates in response to client feedback. The magnitude and direction of client-induced bias were influenced by valuer and client characteristics.
Gallimore and Wolverton (2000)	The paper found that in terms of the perceived valuation goal, UK valuers did not show the same response to client feedback as did US appraisers
Hansz and Diaz (2001)	In this paper, it was found that when presented evidence that previous value judgments were too low, experts adjusted unrelated judgments upward but did not make downward adjustments in face of evidence that previous judgments were too high.
Hansz (2004)	The paper found that appraiser valuation judgment did appear to be influenced by a pending mortgage reference point. Accordingly, these anchoring findings, though found in an artificial environment, may be a routinised responses to agent-client concerns.

Source: Diaz and Hansz, 2007

Apart from the above behavioural research into valuation, other real estate behavioural research has been done in the area of banking and negotiation (see for example Black and Diaz, 1996; Hardin, 1997; Black, 1997; Diaz, Zhao and Black, 1999; Aycock, 1999). These are however not directly relevant to this research and are merely given mention here.

2.3.1. Heuristics in Valuation Tasks

The review of literature is here narrowed down to one of the four/five categories of real estate behavioural research highlighted above, namely, heuristic bias in valuation judgment, since this is the central focus of the study's objectives. The initial discussion here (that is, subsections 2.3.1 a and 2.3.1 b) centers on the historical development of heuristic decision making in Psychology, after which a paper by paper review of heuristics as applied to property valuation is adopted in section 2.3.1 c.

2.3.2 Historical Development of Heuristic Decision Making

Heuristics has been described as one (the third) of three approaches to decision making in the human mind. The three approaches documented in intellectual history include logic, probability and heuristics (Gigerenzer, 2008). The first of these approaches, logic, is according to the famous philosopher Aristotle, the ideal means of human reasoning and inference. However, logic faces research prediction limitations due to the fundamental uncertainty of human conduct. Therefore, in the 17th century, human logic was replaced in problem solving research by the second approach, the more rationally modest theory of probability (Daston, 1988). According to Gigerenzer (2008), (in Laplace's 1814, p. 196) "Probability theory is in famous phrase, common sense reduced to a calculus". Probability theory has over the years been successfully applied in the sciences, psychology, statistics, and mathematics among other disciplines.

Only in the twentieth century did cognitive heuristics begin to be identified and studied. For example, biologists such as Tinbergen (1951) described animals' choice of mates, food and habitation as a rule of thumb (a form of heuristics). Gestalt psychologist such as Duncker (1945) described the rule of thumb for restructuring and insights. Essentially, heuristics is the adoption of cognitive short-cuts which influence human judgment. Such shortcuts in decision making have been well applied in various fields of learning, the valuation of properties inclusive (Gallimore, 1994, 1996; Diaz, 1997). In application to valuation, heuristics refers to the tendency of valuers to form biased value judgments, supported in their mind by means other than actual market evidence. Thus, heuristics are frugal - that is, they ignore part of information. Unlike statistical optimization procedures, heuristics do not try to optimize solutions to problems (that is, find the best solution), but rather to satisfy the problem (that is, find a good-enough solution).

For example, calculating the maximum of available options in a function is a form of optimizing. On the other hand, choosing the first option that exceeds an aspiration level is a form of satisfying (Gigerenzer, 2008).

Early research into heuristic problem solving and potential bias are traceable to investigations in the field of psychology (Tversky and Kahneman, 1974). These psychologists identified three major types of heuristics: representative heuristics; availability heuristics; and anchoring and adjustment heuristics. Evans (1989) added to this list of heuristics by identifying human beliefs as another influence on decision making (he termed this as positivity heuristics).

Recent property market research has attempted to link these investigations in psychology to valuer behaviour. In particular, anchoring and adjustment heuristics has been examined and has been revealed to be widely prevalent in valuation decision-making (Gallimore, 1994; 1996; Black and Diaz, 1996; Diaz and Hansz, 1997; Wolverton, 1998). Hence, it would be useful to examine literature on prior research in heuristics.

2.3.2.1 The Development of Anchoring and Adjustment Heuristic Research

The pioneering research into anchoring and adjustment can be credited to Kahneman and Tversky (1974) who operated in the field of psychology. They showed that anchoring occurs when a person picks an initial starting point (such as property value), as a reference point (the anchor) and then proceeds to add or subtract from it based on an estimate of probabilities of potential results (the adjustment). The anchoring reference point could be given, estimated, or implied upon which the person employing the heuristics then proceeds to use this information as the basis of evaluating a given option or course of action.

Abundant research attests that judgments in a variety of domains are reliably influenced by judgmental anchors. Such influenced judgments include general knowledge (Chapman and Johnson, 1999; Jacowitz and Kahneman, 1995; Mussweiler and Strack, 1999a, 2000a, 2000b; Strack and Mussweiler, 1997; Tversky & Kahneman, 1974; Wilson, Houston, Etling, & Brekke, 1996), probability estimates (Plous, 1989; Switzer and Sniezek, 1991; Tversky and Kahneman, 1974), legal judgments (Chapman and Bornstein, 1996; Englich and Mussweiler, 2001), pricing decisions (Northcraft and Neale, 1987; Mussweiler, Strack, and Pfeiffer, 2000), negotiation (Galinsky and Mussweiler, 2001; Neale and Bazerman, 1991; Ritov, 1996), art auction (Beggs

and Grady, 2007), future task duration (Thomas and Handley 2008) amongst other human endeavors. It has even been shown that anchoring does exist even when there is an increase in situational familiarity (Wright and Anderson, 1989) while participants who have been highly motivated to remain uninfluenced have also exhibited the anchoring effect in their decision making (Wilson et al. 1996).

The other part of anchoring and adjustment heuristics research is focused on the adjustment. Adjustment occurs when the person takes this initial reference point and proceeds to add or subtract from it based on an estimate of probabilities of potential results. This adjustment according to “Venture Theory” propounded by Hogarth and Einhorn (1990) is a function of both individual and situational variables, and in particular, the sign and size of payoffs.

2.3.2.2 Papers on Anchoring and Adjustment Heuristics in a Real Estate Setting

Certain pieces of literature have addressed the anchoring and adjustment research in real estate.

Northcraft and Neale (1987) provided one of the first studies of heuristics and bias in a real estate setting. The anchoring and adjustment heuristic was studied in a home valuation context. Forty-eight undergraduate students participated in the study as novices and twenty-one real estate agents participated as experts in residential valuation. All participants provided estimates of market value, listing price, a price they would actually pay, and a minimum selling price for a specific house after reviewing information on the house and after being exposed to one of four levels of listing price. In all instances, both experts and novices anchored on the listing price. Even when the anchor price was less credible, anchoring was evident. Although, this pioneering work in real estate is commendable, the use of sales agents as experts unfortunately reduced the strength of the results as sales agents are familiar with pricing techniques, but not necessarily residential valuation techniques. Also, the interpretation of a result from student respondents (novices) rather real valuers should be held with caution. In addition, the research failed to address other types of heuristics apart from the anchoring and adjustment heuristics.

Gallimore (1994, 1996) conducted some experimental work into valuation processes, among valuers in the UK. His study conducted a series of experiments to examine the effect of anchoring and confirmation bias on valuations and he concluded that there is sufficient evidence

of such bias especially in unfamiliar locations. However, this study was also not holistic as it failed to consider other types of heuristic behavior apart from the anchor and adjustment variety.

Black and Diaz (1996) examined the use of asking price in the real property negotiation process and whether it can potentially bias results in the US. Theoretical work on the limited processing capacity of the human mind suggested the research hypothesis that negotiators would devalue difficultly processed critical information in favor of cognitive shortcuts (that is, heuristics) in this case the asking price in property negotiation. The analysis of data gathered through a series of experiments revealed that the manipulation of asking price led to the manipulation of both buyer opening offer and eventual settlement prices, thus indicating the use of asking price as a shortcut and its strong potential as an agent for bias.

Harvard (1999) conducted similar experiments on valuers in the UK and also found that an anchoring and adjustments heuristic strategy is adopted by valuers in unfamiliar locations. He suggested that such a strategy creates greater risk of valuation variance or inaccuracy due to the greater risk of adopting an inappropriate initial anchor as well as insufficient subsequent adjustments. He also investigated the effect of ordering information on the outcome of the valuation. He found strong evidence of anchoring and data presentation order effect on valuation (a concept he called recency). This finding is similar to more recent findings in Hong Kong by Wong (2006). However, these papers also failed to consider other types of heuristics apart from anchoring and adjustment heuristics.

In Nigeria, Adegoke and Aluko (2007) studied the occurrence of anchoring and adjustment in the valuation of commercial properties. Their study surveyed one hundred and twenty-two (122) Estate Surveying and Valuation firms in Lagos metropolis. The findings revealed that Estate Surveyors and Valuers used anchoring and adjustment heuristic behavior in forming initial judgements about valuation tasks. Although, the study of Adegoke and Aluko (2007) delved into behavioural indicators of valuation studies, it was only confined to anchoring and adjustment heuristics at the neglect of the other three. More so the coverage area of the study was limited only to Lagos Metropolis.

A latter work in Nigeria by Adegoke (2008) sought to examine whether the use of anchoring and adjustment heuristics varied according to valuer familiarity with the location of valuation

assignments. He employed a similar methodology as the earlier Adegoke and Aluko (2007) study and found that that this type of heuristic was predominant in unfamiliar location of operation. This study is however also subject to the criticism of exclusive emphasis on the anchoring and adjustment heuristic.

In negotiations between buyers and sellers, a synonymous term to anchor point has been described in literature as reference point. While the former affects the counteroffer a negotiator makes (Northcraft and Neale, 1987), the latter determines how an offer is perceived particularly either as a gain or loss (Bazerman et al., 1985; Neale and Bazerman, 1985; Neale et al., 1987). In real estate negotiation, a prominent research in that direction is that carried out by Aycock (2000a; 2000b). Aycock (2000a) aimed at determining if buyer knowledge of the seller's initial purchase price had any bearing on the final settlement price negotiated in the UK. This study was a field experiment designed to test how negotiators process information using cognitive heuristics and reference points during a negotiating exercise. The experiment involved purchasing a home, where the "buyer" and the "seller" were given different information – reference points -- on what the owner had initially paid for the home and where the asking price was manipulated at different levels. The study found that when asking price and initial purchase price were relatively close, buyers tend to ignore the initial price and focus on asking price. However, as the gap widened between asking price and initial purchase price, buyers tend to focus more on what the owner had initially paid for the home. This raised issues of fairness and how reference points are employed in a negotiation.

As a follow up to the above study Aycock (2000b) extended the earlier research and tested how negotiators process information using cognitive heuristics and reference points during a negotiating exercise. Both experiments involved purchasing a home, where the "buyer" and the "seller" were given different information – reference points -- on what the owner had initially paid for the home and where the asking price was manipulated at different levels. However, the goal of this particular study was to determine if the elapsed time since the buyer's initial purchase had an impact on the final negotiated purchase price. The initial experiment set the initial purchase date at two years; this experiment set the purchase date at one year. This experiment studied issues of fairness and how reference points are employed in a negotiation. The research hypothesis was that the reduced time period would tend to reduce the negotiated

purchase price. The author discovered that changes in elapsed time since the initial purchase appeared to have no effect on settlement price. Although Aycock op. cit. has made a remarkable contribution in real estate negotiation study, the exclusion of other variants of heuristics is obviously absent in his works.

The gap in the above literature review on anchoring and adjustment heuristics is in the area of research into the three other types of heuristics. Abundant research exists in the area of anchoring and adjustment to the neglect of other types of heuristics. This work intends to explore these other types of heuristics.

CHAPTER THREE

CONCEPTUAL FRAMEWORK

3.1 Introduction

Following from issues discussed and the gaps identified in the preceding chapter, the present chapter presents a concept of expectations regarding each of the study objectives. These expectations are then formalized into a-prior expectations for testing in subsequent chapters.

3.2 Expectations on Objective One

The first objective is to examine whether valuers are influenced by anchoring and adjustment, availability, positivity and representative heuristics in property valuation practice in the study areas.

The conceptual expectations of the researcher in this regard address a more eclectic framework of heuristic influences on valuation judgements than has hitherto been undertaken. As was shown in the literature review, prior research has focused on only one of the four identified heuristic influences. Prior literature would therefore seem to suggest that only anchoring and adjustment heuristics is at play on valuer judgment. The conceptual expectations of the researcher do not accept this implied restriction. Rather, it is expected that valuers are subject to a more holistic scope of influences. In essence all the four heuristic influences are expected to be at work on the valuer's decision making, leading to inaccurate valuation judgements. The study would seek to test this proposition - the occurrence of every one of the four heuristics - in the valuation judgement of valuers in the study area. This proposition is conceptualized into the following specific expectations:

- Valuers anchor on prior valuations (in the conduct of present valuations) and adjust such anchors in an effort to bring them up to date.

- Valuers tend to employ data inputs (yield, rental values, outgoings etc) most easily recalled or obtained in their calculations rather than derive the inputs through market surveys (the availability heuristic).
- Valuers tend to assume that a property for valuation is essentially a stereotype of one or more similar properties they have valued before and that accordingly, the valuation features and calculation should be the same as the stereotype (the representative heuristic).
- Valuers seek market information to confirm their pre-valuation ideas of the value of properties for valuation and avoid the collection of market evidence potentially falsifying such preconceived values (the positivity heuristic).

3.3 Expectations on Objective Two

The second objective measures the relative level of occurrence of the four heuristics in property valuation. On reflection, it was reasoned that the level of occurrence of each heuristic is dependent on the level of occurrence of conditions precedent of each heuristics.

- The condition precedent to the use of anchoring and adjustment heuristic is the existence of a suitable anchor.
- The condition precedent to representative heuristics is the existence of stereotype buildings.
- The condition precedent to availability heuristics is the existence of readily available rule of thumb indices.
- The condition precedent to positivity heuristics is the existence of overstated market expectations in a stagnant market.

The research concept with regard to the relative level of occurrence of each of the four heuristics is contingent on the expectations on the relative level of occurrence of the pre-conditions.

- Accordingly, the availability heuristics is expected to be the most often resorted to since anytime the valuer uses the investment method of valuation he needs to form an opinion on the appropriate yield and rules of thumb are always easier to obtain than market surveys.

- The anchoring and adjustment heuristics is expected to rank second in relative level of occurrence because it is expected that quite often the valuer would have access to suitable anchors.
- The representative heuristics is expected to rank third in usage because it is expected that the valuer would be confronted with stereotype building valuation less frequently than the previously stated two heuristics.
- The positivity heuristics is expected to occur least frequently in data-available cities like Lagos, Portharcout, and Abuja because the probability that a valuer would overstate market price is likely only in less active/less data available markets where the valuer cannot easily predict rental values/yield. This is not likely to occur often in active/data available market like the case study cities. In essence, the positivity heuristics is expected to occur least frequently because of the relative stable property market evident in Nigeria.

3.4 Expectations on Objective Three

The third objective examines which factors affect the usage of the heuristics. This objective investigates how usage intensity of the four heuristics varies according to defined variables. Variables in this regard were drawn from the literature review, supplemented by personal reasoning and discussions with colleagues.

For instance, (Adegoke and Aluko, 2007; Aluko, 2007; and Gallimore, 1994, 1996) amongst others discovered that unfamiliarity of terrain in valuation has an effect on the adoption of anchoring and adjustment heuristics. Reflecting on this, the research envisaged that the relationship between familiarity with the terrain of operation could potentially be related with the adoption of the various heuristic types.

Certain factors influencing inaccuracy in valuation were also expected to influence the usage of various types of heuristics. One of these is the complexity of the valuation method used. The Ojo (2004)/Ogunba and Ojo (2007) model stipulated that the use of different investment valuation models (non-growth explicit and growth explicit) is a factor that causes valuation inaccuracy. Ogunba's (1997, 2003) structure-conduct performance model also states that the manner of valuer's use of investment valuation inputs such as gross income, mode of deduction for outgoings and the determination of yield (capitalization rate) are amongst the factors responsible

for inaccuracy in valuation. On reflection, the research envisaged that the higher the level of complexity of the investment valuation model adopted, the more likely the valuer is to increase the usage of the various heuristic types.

Another potential factor influencing usage of heuristics was gleaned from Aluko's (1998 and 2000) model of factors responsible for inaccurate valuations. This factor is that of relevant/inaccurate data. The research envisaged, on reflection, that the availability of easily obtained rule of thumb data is a potential factor affecting the increased use of positivity heuristics.

Another factor envisaged to potentially influence the usage of heuristics is the academic and professional experience of the valuer. In this regard, Northcraft and Neale (1987) discovered a relationship between the level of post qualification (academic and professional experience) and the various heuristic types. Ogunba's (1997, 2003) structure-conduct performance model also identified academic and professional qualifications and experience amongst other factors responsible for valuation inaccuracy. On reflection, the research envisaged that the greater the level of post qualification experience of the valuer, the more he would potentially depend on such experience (using heuristic short cuts) rather than on thorough market surveys.

Aluko's (1998 and 2000) model of factors responsible for inaccurate valuations highlighted as one such factors the unrealistic valuation assumption made by valuers. Hence, the level of assumptions employed by values is also a variable to be related with the various heuristic types. Specifically, it was envisaged that the greater the level of assumptions made by the valuer (in place of actually verifying issues), the more he would depend on heuristic shortcuts.

Again Ogunba's (1997, 2003) structure-conduct performance model attributes organizational type of valuation firm and location of the valuation firm/organization as factors responsible for valuation inaccuracy. This study considered that such attributes of valuation firms (such as the age of the firm; location of the firm) and also the size of the firm - including the number of branches and the number of estate surveyors in the employ of such firms – could potentially influence the usage of the various heuristic types.

The above potential factors were conceptualized into the following expectations:

- That usage of all four heuristics is a function of the degree of familiarity of the area of operation. In other words, the less familiar an area where valuation is to be carried out, the more the usage of simplifying shortcuts to simplify the valuation decision making.
- That usage of all four heuristics is a function of the complexity of the investment valuation models employed. Investment valuation models are of different levels of complexity. The most direct and simple are the traditional models (Term and Reversion, Layer/Hard Core, Equivalent Yield Model). The most complex models are the Equated Yield, Rational Valuation Model and Real Value Models (in increasing order of complexity), according to Trott (1986). It is expected that the more complex the investment valuation model, the more the valuer resorts to simplifying shortcuts.
- That usage of all four heuristics is a function of the amount of data available. In other words, the more available data is of comparable sales, yields, outgoings etc, the less the resort to cognitive heuristic shortcuts.
- That usage of all four heuristics is a function of the level of skill and experience of the valuer. In other words, it is expected that the greater the level of post qualification experience of the valuer, the more he depends on such experience (using heuristic short cuts) rather than on thorough market surveys.
- That usage of all four heuristics is a function of the level of assumptions made by the valuer. In any valuation, the valuer should make assumptions as to any contingent and limiting conditions upon which the valuation is based. According to RICS Red Book (2005), these would include, assumptions as to title and encumbrances; assumptions as to matters which would be revealed by a local search; assumptions that the inspection and report do not purport to be a building survey and any assumptions made regarding inaccessible parts and latent defects including rot; assumptions as to the presence or absence of deleterious or hazardous substances or about latent defects; assumptions of the period required to obtain vacant possession of a property or that a certain piece of land could be acquired to complete a development site; assumptions as to whether the presence of contamination has been investigated or whether it is assumed not to be present; and assumptions as to the planning position e.g. present lawful user. It is

expected that the greater the level of assumptions made by the valuer (in place of actually verifying issues), the more he depends on heuristic shortcuts.

- That usage of all four heuristics is a function of level of socio-economic development of respondents such as educational qualification, level of professional qualification, years of experience, age of firm, age of respondent, It is expected that the less advanced a valuer respondent is in age, age of firm, post qualification experience etc, the more he resorts to heuristics as he increasingly relies on such experience rather than on market surveys. Conversely, it is expected that the more educated the valuer is, in terms of academic and professional qualification, the less he will result to heuristics shortcuts since his greater training should point out to him the futility of cognitive shortcuts.

3.5 Expectations on Objective Four

The fourth objective has to do with the effect of these heuristics on valuation accuracy/consistency. Valuation inaccuracy itself is a function of four factors: accuracy of data, accuracy of valuation assumptions, accuracy of valuation methods/models and accuracy of valuation judgement (Aluko, 2000). If one holds three of these factors (data, assumptions, and methods) constant, then, the accuracy of the valuer's judgement is determined solely by heuristic influences and client influence. If one further assumes no client influence, then, the accuracy of the valuer's judgement is determined solely by heuristic influences.

Following from the above discussion, it is expected that for contemporaneous valuations, valuers who use cognitive shortcuts would produce less accurate valuations when compared with valuers who conduct thorough market surveys-aspect of normative valuation process- (please refer to figure 3.1). This proposition is conceptualized into the following expectations:

- Valuations are less a proxy for market prices where valuers anchor on prior valuations (in the conduct of present valuations) and adjust such anchors in an effort to bring them up to date.
- Valuations are less a proxy for market prices where valuers tend to employ data inputs (yield, rental values, outgoings etc) most easily recalled or obtained in their calculations rather than derive the inputs through thorough market surveys (the availability heuristic).

- Valuations are less a proxy for market prices where valuers tend to assume that a property for valuation is essentially a stereotype of one or more properties they have valued before and that accordingly, the valuation features and calculation should be the same (the representative heuristic).
- Valuations are less a proxy for market prices where valuers seek market information to confirm their pre-valuation ideas of the value of properties for valuation and avoid the collection of market evidence potentially falsifying such preconceived values (the positivity heuristic).

The overall conceptual model in respect of the four objectives is presented in Fig. 3.1 below:

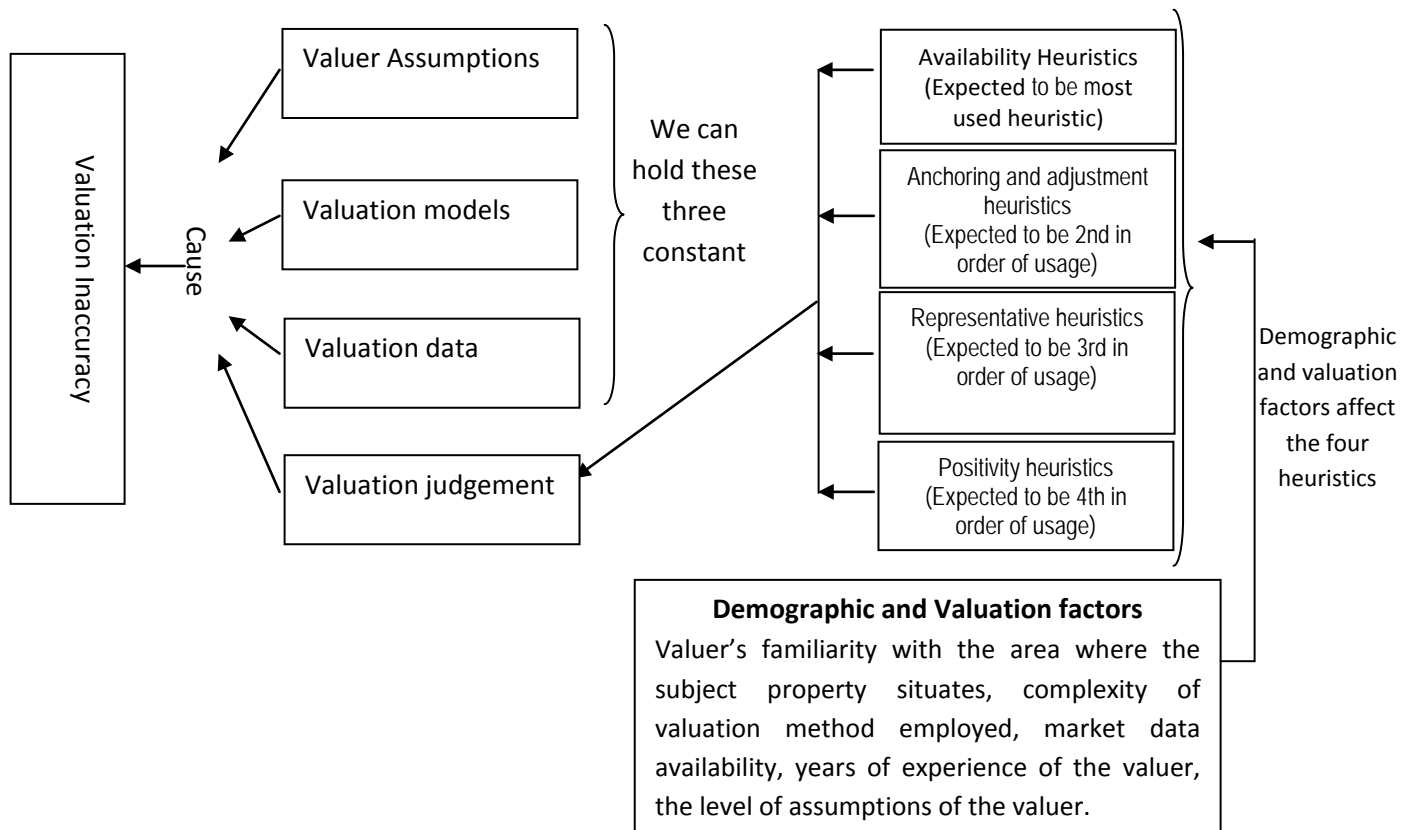


Figure 3.1: Eclectic Model of Heuristic Influences on Valuation Accuracy

In essence, what is being depicted in the diagram is that valuation accuracy is a function of valuer assumptions, models, data and judgment. For the purpose of this study, the first three are held constant. Valuer judgment is taken to be negatively influenced by all four and not just one heuristics, though the degree of valuer usage of each heuristic is expected to vary. Availability

heuristics are expected to be most often used, followed by anchoring and adjustment heuristics and then by representative heuristics and positivity heuristics. The adoption of heuristics in valuation in place of comprehensive market surveys is affected by a variety of demographic and valuation factors listed in the bottom box. Ultimately, the usage of the four heuristics is expected to have a negative impact on valuation accuracy.

3.6 Chapter Summary

The following fourteen a-prior expectations have been drawn from the chapter's conceptual expectations to address the study objectives:

1. Valuers anchor on prior valuations (in the conduct of present valuations) and adjust such anchors in an effort to bring them up to date.
2. Valuers tend to employ data inputs (yield, rental values, outgoings etc) most easily recalled or obtained in their calculations rather than derive the inputs through thorough market surveys (the availability heuristic).
3. Valuers tend to assume that a property for valuation is essentially a stereotype of one or more properties they have valued before and that accordingly, the valuation features and calculation should be the same (the representative heuristic).
4. Valuers seek market information to confirm their pre-valuation ideas of the value of properties for valuation and avoid the collection of market evidence potentially falsifying such preconceived values (the positivity heuristic).
5. The relative usage of the four types of heuristics follows the following order of usage (starting from the most used): Availability, anchoring and adjustment, representative and positivity.
6. The less familiar an area where valuation is to be carried out, the more the usage of simplifying shortcuts to simplify the valuation decision making.
7. The more complex the investment valuation model, the more the valuer resorts to simplifying shortcuts.
8. The more available data is of comparable sales, yields, construction costs etc, the less the resort to cognitive heuristic shortcuts.

9. The greater the level of post qualification experience of the valuer, the more he depends on such experience (using heuristic short cuts) rather than on thorough market surveys.
10. The greater the level of assumptions made by the valuer (in place of actually verifying issues), the more he depends on heuristic shortcuts.
11. Valuations are less a proxy for market prices where valuers anchor on prior valuations (in the conduct of present valuations) and adjust such anchors in an effort to bring them up to date.
12. Valuations are less a proxy for market prices where valuers tend to employ data inputs (yield, rental values, outgoings etc) most easily recalled or obtained in their calculations rather than derive the inputs through thorough market surveys (the availability heuristic).
13. Valuations are less a proxy for market prices where valuers tend to assume that a property for valuation is essentially a stereotype of one or more properties they have valued before and that accordingly, the valuation features and calculation should be the same (the representative heuristic).
14. Valuations are less a proxy for market prices where valuers seek market information to confirm their pre-valuation ideas of the value of properties for valuation and avoid the collection of market evidence potentially falsifying such preconceived values (the positivity heuristic).

CHAPTER FOUR

RESEARCH METHODS

4.1 Introduction

The focus in this Chapter is on the various aspects of methodology necessary for fulfilling the research objectives and confirming or refuting of the study's a-priori expectation. To address this focus, the Chapter has been structured into the following sub-headings: research design; sources of data and data requirement; study population and sample frame; data requirement; sample size; method of sampling; method of data collection; method of measuring variables; and thereafter methods of data analysis.

4.2 Research Design

Research Design is considered as a "blueprint" for research, dealing with at least four problems: which questions to study, which data are relevant, what data to collect, and how to analyze the results? Every design has its positive and negative sides and as such none can be regarded as the best. However, "the best design" depends on the research question as well as the orientation of the researcher.

Various classifications of research design do exist. For instance, in sociology, there are three basic designs, which are considered to generate reliable data; these are cross-sectional, longitudinal, and cross-sequential. Research is also designed as experimental, Non-experimental, and quasi experimental. To some others, research design can be divided into fixed and flexible research designs (Robson, 1993). Others have referred to this distinction as 'quantitative research designs' and 'qualitative research designs,' respectively. However, fixed designs need not be quantitative, and flexible design need not be qualitative.

In fixed designs, the design of the study is fixed before the main stage of data collection takes place. Fixed designs are normally theory driven; otherwise it's impossible to know in advance

which variables need to be controlled and measured. Often, these variables are measured quantitatively. Flexible designs allow for more freedom during the data collection process. One reason for using a flexible research design can be that the variable of interest is not quantitatively measurable, such as culture. In other cases, theory might not be available before one starts the research. Flexible research designs are found in research that entails case studies, Ethnographic and Grounded Theory studies.

Hence, from the foregoing, the research design for this work is that of a fixed design resulting from a survey as variables to be measured quantitatively are already known before setting stage for this research.

4.3 Sources of Data and Data Requirement

Sources of data are generic terms used to describe the way information is being collected. There are basically two sources of data: primary and secondary sources. The study relied on both sources. The primary data requirement included the following:

In respect of the first objective (and a-priori expectations 1-4 which address it),

- Perceptual data on valuation anchors and adjustment of such anchors
- Data on valuation inputs (yield, rental values, outgoings etc) most easily recalled or obtained by valuers
- Data on pre conceived valuation stereotypes
- Data on whether valuers seek to confirm their pre-valuation ideas of the value of properties for valuation and avoid the collection of market evidence potentially falsifying such preconceived values

In respect of objective 2 (and a-priori expectation 5 which addresses this objective),

- Data for relative usage of the four types of heuristics

In respect of objective 3 (and a-priori expectations 6 - 10 which addresses the objective),

- Data on the relationship between valuer familiarity with valuation environments
- Perceptions of complexity of valuation methods
- Data on how available data on comparable sales, yields, outgoings is
- Demographic data (years of valuer experience, age, sex, location etc)
- Data on the size of firm

- Data on assumptions used by valuers

In respect of objective 4 (and a-priori expectations 11 - 14 which addresses this objective),

- Data on recently sold properties

Secondary data was sought in respect of published materials such as the Directory of the Nigerian Institution of Estate Surveyors and Valuers (2009). Other secondary sources included relevant books, journal articles, internet sources, etc.

4.4 Study Populations and Sample Frame

According to Kidder (1981) and Frankfort-Nachmias & Nachmias (1992), a population is an aggregation of people to which we want to generalize. Reflecting on the above primary data requirement by objective, it appeared clear that only one such aggregation/group of people - Estate Surveyors and Valuers, particularly those who work in the private sector were required for fulfilling the objectives. The focus is on valuers in the private sector was because the research is principally concerned with valuation as rendered by the private sector valuer. The scope of the study has earlier been restricted to the coverage to Valuers operating in Lagos Metropolis, Abuja and Port Harcourt.

The sample frame of registered Valuation firms in the three study areas was secured from the most recent Directory of the Nigerian Institution of Estate Surveyors and Valuers (2009). The Directory indicates a total sample frame of 338 practicing Estate Surveying and Valuation firms comprising of 270 in Lagos Metropolis, 29 in Abuja and 39 In Port Harcourt respectively. These figures represent a proportion of 47.4%, 5% and 6.8% respectively to the total number of 570 valuation firms in the country.

4.5 Sample Size

The findings of an empirical research work are only considered representative of the entire study population where there is an adequate survey size. Hence, there was a need to capture a sufficiently ample sample size which could be taken as representative of the study population. The appropriate sample size from the sample frame of 270 firms in Lagos Metropolis was derived by resort to a demographic formula usually adopted for determination of sample sizes (see for example Otte, 2006) as follows:

$$N = P (100-P) \times Z^2 / D^2 \dots\dots\dots (1)$$

Where:

N = required sample size

P = anticipated prevalence

D = allowable error estimate (desired precision)

Z = appropriate value (standard value) from the normal distribution for the desired confidence level

However, where the sample size derived is quite large, a readjustment is deduced as follow:

$$N' = N / (1 + N/T) \dots\dots\dots(2)$$

Where:

N' = adjusted sample size

N = previous sample size

T = total population

The research anticipated a minimum response rate of 50%, an allowable error estimate of within $\pm 5\%$ of the true prevalence and a desired confidence of 95%. Accordingly, the following deductions are made:

$$50 (100-50) \times (1.96^2 / 5^2) = 384.16$$

Following readjustment:

$$384.16 / (1 + (384.16/270)) = 158.56$$

This is approximately equal to 159.

Thus, it was decided that a total of 159 firms would form the sample size of the valuation firms to be studied in Lagos Metropolis. This represents about 58.9% of the sample frame.

From the Directory of the Nigerian Institution of Estate Surveyors and Valuers (2009), a total of 29 and 39 Estate Surveying firms are located in Abuja and Port-Harcourt respectively. In this regard, the researcher reflected on the observations of Denscombe (2003) that for a population of less than 30 people, a total enumeration survey (census) rather than a sample should be considered. Accordingly, and upon reflection, the decision was that a total enumeration survey of all the estate surveying firms in both Abuja and Port Harcourt would be carried out.

4.6 Method of Sampling

With regard to the method of sampling for Lagos Metropolis, the researcher considered it useful to adopt random sampling so as to avoid any form of sampling prejudice that could potentially mar the objectivity and conclusive findings of the research. However, the random selections were undertaken within a stratified sampling framework, following the stratification in earlier accuracy studies (Ogunba, 1997; Ogunba and Ajayi, 1998; Iroham, 2007), namely: Lagos Island, Victoria Island, Ikoyi Island, Apapa Island, Surulere and Ikeja business districts. The number of firms randomly selected within each stratum was in proportion to the number in the total population (that is, 56% in each stratum).

4.7 Data Collection Instruments

It was considered on reflection that questionnaires administered in the form of conducting interviews would be the most effective method of primary data collection for objectives 1 and 2, and 3 while objective 4 would require a combination of questionnaires and a degree of participant observation.

The advantage of using the questionnaire is the wide coverage it permitted to the research and also the relative speed it afforded. The questionnaires were administered in the manner of conducting interviews so as to discover issues not specifically highlighted in the questionnaire. Moreover, a study of respondents through interviews revealed certain mannerisms, which would permit the detection of attitudes not consistent with written responses.

Participant observation involved experimentation with groups of valuers who were asked to value a recently sold property (without their being aware of the sale price), first by use of the various types of heuristics and second by provision of recent comparable evidence on a different occasion. It was then possible to compare the accuracy of the valuations based on heuristics with that based on market data.

Questionnaires were delivered by hand by the researcher or his field assistants so as to avoid instances of non-delivery or misplacement in transit associated with posted questionnaires. The researcher also identified a willing point man in every firm for relevant follow-up so as to avoid treatment of questionnaires with triviality which could result in delay of retrieval, shortfalls or even complete abandonment of questionnaires.

4.8 Questionnaire Design

In the questionnaire design, first, a guarantee of confidentiality was provided in the introductory section of the questionnaire to help assure the confidentiality of respondents who might otherwise be reluctant to disclose sensitive information.

The remainder of the questionnaire was structured into four distinct sections. The first was to address the profile (bio-data) of respondents. The second focused on how valuation is being carried out by the respondents while section three was based on a-priori expectations relating to objectives one, two and three. The final section divided into two separate parts addressed the fourth objective. Respondents were asked to conduct valuations on recently sold properties using the various cognitive shortcuts without being aware of the sale price. Thereafter, a simulated valuation was carried out by respondents given full details of properties recently sold/valued and value placed on comparable

4.9 Methods of Measuring Variables

Four scales of measurement are typically discussed in statistics - nominal, ordinal, interval and ratio scales. The first two of these scales are appropriate for perceptual data while others are appropriate for more quantitative responses. The intention here is to present the type of measurement scale considered appropriate for questioning on each of the a-priori expectations bearing in mind that the manner variables are measured in questionnaires strongly influences the statistics to use in data analysis.

The modes of measurement of the variables in the a-priori expectations were as follows:

Table 4.1- Methods of Measuring A-Priori Expectations/Operationalization of Variables

S/N	A-Priori expectation	Measurement scale/Operationalization in questionnaire
1	Valuers anchor on prior valuations (in the conduct of present valuations) and adjust such anchors in an effort to bring them up to date.	A variety of questions were put to respondents to capture the degree to which they employ anchoring and adjustment in valuation. The required responses were perceptual and were measured in the questionnaire on ordinal (Likert type) scales
2	Valuers tend to employ data inputs (yield, rental values, outgoings, etc) most easily recalled or obtained in their calculations rather than derive the inputs thorough market surveys (the availability heuristic)	A variety of questions were put to respondents to capture the degree to which they employ easily obtained data on yields etc rather than market surveys in valuation. Here again, the required responses were perceptual and were measured in the questionnaire on ordinal (Likert type) scales
3	Valuers tend to assume that a property for valuation is essentially a stereotype of one or more properties they have valued before and that accordingly, the valuation features and calculation should be the same (the representative heuristic)	Questions were put to respondents to capture the degree to which they employ stereotyping in valuation. The required responses were perceptual and were measured in the questionnaire on ordinal (Likert) scales
4	Valuers seek market information to confirm their pre-valuation ideas of the value of properties for valuation and avoid the collection of market evidence potentially falsifying such preconceived values (the positivity heuristic)	Questions were put to respondents to capture the degree to which they employ positivity heuristics in valuation so as to seek evidence to support previously conceived ideas of value. Again, the required responses were perceptual and was measured in the questionnaire on ordinal (Likert type) scales

5	The relative usage of the four types of heuristics follows the following order of usage (starting from the most used): Availability, anchoring and adjustment, representative and positivity.	The measurement of this a-priori expectation was by asking respondents to indicate how many times on average in 20 valuations they use the various heuristics. This kind of measurement in the questionnaire is a form of ratio scale.
6	The less familiar an area where valuation is to be carried out, the more the usage of simplifying shortcuts to simplify the valuation decision making.	Questions were put to respondents to capture the degree to which they employ each of the heuristics (dependent variable) and their operation in unfamiliar locations (independent variable). The required responses were perceptual and were measured as dummy variables on ordinal (Likert) scales for the dependent variable and on nominal scales for the independent variable.
7	The more complex the investment valuation model, the more the valuer resorts to simplifying shortcuts.	Respondents were presented with investment valuation models in order of complexity and asked to indicate the frequency of usage of each (independent variable). Further questions sought the degree of usage of each heuristic (dependent variable) for each valuation method. The required responses were perceptual and were measured as dummy variables on ordinal (Likert) scales for the dependent variable and on nominal scales for the independent variable.
8	The more available data is of outgoings, yields, rental evidence etc, the less the resort to cognitive heuristic shortcuts.	Respondents was asked to show how easily available data on outgoings, yields, rental evidence etc, is on an ordinal scale (independent variable). They were also asked to state the degree of usage of heuristics (dependent variable), also on an ordinal scale.
9	The greater the level of post qualification experience of the	Respondents were asked demographic data such as level of academic and professional qualifications, age,

	<p>valuer, the more he depends on such experience (using heuristic short cuts) rather than on thorough market surveys.</p>	<p>and years of practical experience (independent variable). This was measured on nominal scales. Data on this variable was compared with data on usage of heuristics (dependent variable), measured using ordinal scales.</p>
10	<p>The greater the level of assumptions made by the valuer (in place of actually verifying issues), the more he depends on heuristic shortcuts.</p>	<p>Questions were put to valuers to indicate the level of usage of valuation assumptions (independent variable). This was measured on an ordinal scale. Data on this variable was compared with data on usage of heuristics (dependent variable), measured using ordinal scales.</p>
11	<p>The greater attributes subscribed to a firm, (such as the older the firm, location in places where valuation is mostly carried out, the bigger the size of the firm in terms of number of branches and number of surveyors in the firms' employ) the more their usage of the heuristic types</p>	<p>Respondents were asked questions to indicate the attributes of the firm they work in terms of location, age, number of branches the firm has and the number of estate surveyors in the employ of the firm (these were the independent variable). The independent variable was measured on nominal scales. The dependent variable - usage of heuristics - was measured using ordinal scales.</p>
12	<p>Valuations are less a proxy for market prices where valuers anchor on prior valuations and adjust such anchors in an effort to bring them up to date.</p>	<p>This involved parametric ratio/interval scale data. Recently sold properties were determined, and valuers were asked to conduct two valuations of the sold properties without knowing sale figures: one of the valuations was by resort to anchoring and adjustment and the other with supplied current market data.</p>
13	<p>Valuations are less a proxy for market prices where valuers tend to employ data inputs (yield, rental values, capital values etc) most easily recalled or obtained in</p>	<p>This involved parametric ratio/interval scale data. Recently sold properties were determined, and valuers were asked to conduct two valuations of the sold properties without knowing sale figures: one of the valuations was by resort to most easily available data</p>

	their calculations rather than derive the inputs thorough market surveys (the availability heuristic)	and the other with supplied current market data.
14	Valuations are less a proxy for market prices where valuers tend to assume that a property for valuation is essentially a stereotype of one or more properties they have valued before and that accordingly, the valuation features and calculation should be the same (the representative heuristic)	This involved parametric ratio/interval scale data. Recently sold properties were determined, and valuers were asked to conduct two valuations of the sold properties without knowing sale figures: one of the valuations was by resort to stereotyping while the other was by reference to supplied current market data.
15	Valuations are less a proxy for market prices where valuers seek market information to confirm their pre-valuation ideas of the value of properties for valuation and avoid the collection of market evidence potentially falsifying such preconceived values (the positivity heuristic)	This involved parametric ratio/interval scale data. Recently sold properties were determined, and valuers were asked to conduct two valuations of the sold properties without knowing sale figures: one of the valuations was by resort to positivity heuristics and the other with supplied current market data.

Source: Author's Concept

4.10 Methods of Data Analysis

The data collated for this work involve data measured using nominal, ordinal, and ratio scales. Hence, appropriate techniques for the analysis of such data cut across various statistical tests adaptable to the various measurement scales. Such techniques also range from descriptive to inferential statistics.

For objectives 1, (represented by a-prior expectations 1-4), the data collected pertained to usage of four heuristics, measured using ordinal scales. Each point on the scale was assigned a weight and a form of weighted frequency ranking technique was required. Accordingly, the techniques considered appropriate for the analysis was a combination of frequency distribution, and the Relative Important Index.

Objective 2 (which is represented by a-prior expectation 5) required ranking of the usage of the four heuristics. Data was measured using ratio scales, that is, measuring how often out of 20 valuations each heuristic was used. Such data was analyzed first using frequency distributions/means and the data so analyzed was further analyzed using maximum and minimum values, means/standard deviations and ultimately ranking of such means.

For objective 3, (represented by a-prior expectations 6 to 11), the analysis required an examination of influence of each of six factors on a dependent variable (usage of heuristics). As stated above, the dependent variable in each of the six a-prior expectations was measured as dummy variables using ordinal scales while the respective factors (independent variables) were also measured using nominal and ordinal scales. The relationship between variables was analyzed using regression analysis with the Beta coefficient and coefficient of determination used to measure the strength of the relationship.

Objective 4 (represented by a-prior expectations 12 to 15) involved the comparison of two streams of capital value data: heuristically determined capital values and the market data determined capital values which would each be compared with actual sale prices. The appropriate data analysis techniques considered appropriate for such comparison was the One Group T Test and the Analysis of Variance (ANOVA).

These analyses was carried out with the use of Statistical Package for Social Scientists (SPSS, Version 17) software based on 95% degree of confidence posited on a one-tailed test of significance for the tests on directional expectations while other tests were based on the-two tailed tests of significance.

CHAPTER FIVE

PRESENTATION, DISCUSSION AND INTERPRETATION OF DATA

5.1 Introduction

This chapter is focused on the analysis of data collected from fieldwork by means of various statistical techniques mentioned in the penultimate chapter. For aid of analysis, this chapter has been structured into various sections. The first section is introductory; the second section addresses survey details, while the third section deals with the profile of the respondents based on the various study areas. Thereafter the subsequent four sections deal with the analysis of data on each of the four objectives of study.

5.2 Survey Details

The field survey spanned a period of about eight months, precisely between the months of October 2010 and June 2011. The survey was undertaken personally with the aid of about eight field assistants. The various responses were subsequently coded and analyzed by means of the Statistical Package for Social Scientists (SPSS Version 17).

Table 5.1 presents details of the distribution and response rates of questionnaires presented to the respondents.

Table 5.1: Distribution of Questionnaires to Head Offices of Estate Surveying Firms

Location	Sample Frame	Distributed (Sample Size)	Retrieved	Response Rate (%)
Lagos	270	159	119	74.84%
Abuja	29	29	25	86.21%
Port-Harcourt	39	30	23	76.67
Total	338	218	167	76.61

Source: Author's Field Survey, 2011

A total of 159 questionnaires were administered to the head offices of Estate Surveying firms in Lagos Metropolis. A response rate of 74.84% was achieved, that is, 119 questionnaires duly

filled and returned. This high rate can be attributed to the relentlessness of the researcher and the field assistants in questionnaire retrieval. Essentially, this involved persistent visits to respondents who would otherwise have considered themselves too busy.

For Head Offices of Estate Surveying firms in Abuja, a response rate of 86.21% was achieved. The high rate is attributed to the fact that the researcher had worked in the area and had accordingly gained a degree of familiarity with many surveyor respondents in the area.

Port-Harcourt area also recorded an encouraging response rate. The field officer arranged to cover this area is an indigene of this study area and is also himself an estate surveyor practitioner in the area. His network of friendship among respondents facilitated the high response rate of 76.67%.

Accordingly, the overall mean response rate of 76.61%, which is certainly high, can be attributed not just to the relentless approach to data collection adopted by the researcher and field assistants but also to the researcher's wide network of friendship among respondents.

5.3 Profile of Respondents

The preliminary questions in the questionnaire sought information on the socio-economic profile of the respondents and the firms from which they carry out Estate Surveying and Valuation. Sections 5.3.1 to 5.3.3 address the responses in this regard from Lagos, Abuja and Port Harcourt respectively.

5.3.1. Profile of Respondents in Lagos Metropolis

As was highlighted above, Lagos Metropolis (which was zoned into six strata), recorded a 74.84% response rate. Out of the 159 questionnaires distributed, 119 were retrieved in a manner useful for analysis. Table 5.2 presents the details of the profile of the 119 respondents in Lagos Metropolis.

Table 5.2: Profile of Respondents in Lagos Metropolis

Parameters	Sub-Division	Frequency	Percentage
Age in years	21-30	33	27.7
	31-40	66	55.5
	41-50	17	14.3
	51-60	3	2.5
	Above 60	0	0
Highest Educational Qualification	OND	3	2.5
	HND	46	38.7

	BSC	59	49.6
	MSC	9	7.6
	PhD	2	1.7
Highest Professional Qualification	ANIVS	107	89.9
	RSV	8	6.7
	FNIVS	2	1,7
	MRICS	2	1.7
	FRICS	0	0
Years of Experience in years	1-5	62	52.1
	6-10	39	32.8
	11-15	11	9.2
	16-20	1	0.8
	21-25	5	4.2
	Above 25	1	0.8
Position in Firm	Partner	10	8.4
	Head, Valuation Department	26	21.8
	Surveyor	83	69.7
Age of firm	1-5	21	17.6
	6-10	19	16
	11-15	19	16
	16-20	27	22.7
	21-25	16	13.4
	Above 25	17	14.3
Number of Branches	1	98	82.4
	2	10	8.4
	3	1	0.8
	4	6	5
	5	1	0.8
	Above 5	3	2.5
Number of Estate Surveyors in Firm	1-5	52	43.7
	6-10	33	27.7
	11-15	9	7.6
	16-20	1	0.8
	21-25	11	9.2
	Above 25	13	10.9

Source: Author's Field Survey, 2011

5.3.2. Profile of Respondents in Abuja

In the case of Abuja, as stated earlier, there was 86.21% response rate culminating to a total of 25 duly filled and retrieved questionnaires from a total of 29 questionnaires distributed to respondents. The profile of the respondents in this study area is presented in Table 5.3.

Table 5.3: Demographic Profile of Respondents in Abuja

Parameters	Sub-Division	Frequency	Percentage
Age in years	21-30	6	24
	31-40	11	44
	41-50	5	20
	51-60	2	8
	Above 60	1	4
Highest Educational Qualification	OND	0	0
	HND	8	32
	BSC	12	48
	MSC	5	20
	PhD	0	0
Highest Professional Qualification	ANIVS	18	72
	RSV	4	16
	FNIVS	3	12
	MRICS	0	0
	FRICS	0	0
Years of Experience in years	1-5	11	44
	6-10	4	16
	11-15	5	20
	16-20	2	8
	21-25	2	8
	Above 25	1	4
Position in Firm	Partner	9	36
	Head, Valuation Department	5	20
	Surveyor	11	44
Age of firm	1-5	5	20
	6-10	5	20
	11-15	7	28
	16-20	3	12
	21-25	0	0
	Above 25	5	20
Number of Branches	1	17	68
	2	2	8
	3	3	12
	4	1	4
	5	1	4
	Above 5	1	4
Number of Estate Surveyors in Firm	1-5	10	40
	6-10	7	28
	11-15	3	12
	16-20	1	4
	21-25	0	0
	Above 25	4	16

Source: Author's Field Survey, 2011

5.3.3. Profile of Respondents in Port-Harcourt

Just as in the other two study areas stated above, Port-Harcourt also had a high rate of response. Out of the 30 questionnaires distributed in this study area, 23 were duly filled and retrieved, culminating to a total of 76.67% response rate. A breakdown of the profile of the respondents is presented in Table 5.4:

Table 5.4: Demographic Profile of Respondents in Port-Harcourt

Parameters	Sub-Division	Frequency	Percentage
Age in years	21-30	5	21.7
	31-40	11	47.8
	41-50	4	17.4
	51-60	3	13
	Above 60	0	0
Highest Educational Qualification	OND	1	4.3
	HND	6	26.1
	BSC	12	52.2
	MSC	4	17.4
	PhD	0	0
Highest Professional Qualification	ANIVS	20	86.9
	RSV	3	13
	FNIVS	0	0
	MRICS	0	0
	FRICS	0	0
Years of Experience in years	1-5	10	43.5
	6-10	7	30.4
	11-15	4	17.4
	16-20	0	0
	20-25	0	0
	Above 25	2	8.7
Position in Firm	Partner	7	30.4
	Head, Valuation Department	5	21.7
	Surveyor	11	47.8
Age of firm	1-5	6	26.1
	6-10	7	30.4
	11-15	2	8.7
	16-20	2	8.7
	21-25	3	13
	Above 25	3	13
Number of Branches	1	16	69.6
	2	4	17.4
	3	0	0

	4	0	0
	5	1	4.3
	6	2	8.7
Number of Estate Surveyors in Firm	1-5	14	60.9
	6-10	0	0
	11-15	2	8.7
	16-20	2	8.7
	21-25	1	4.3
	Above 25	4	17.4

Source: Author's Field Survey, 2011

Discussion on Tables 5.2 to Table5.4

In the three study areas, Lagos, Abuja and Port-Harcourt, it is obvious that majority of the respondents fall within the age bracket of 31-40 years. This is perhaps due to the fact that the age bracket can be regarded as the most active in business. The highest academic qualification for most respondents in the three towns of study is the Bachelor of Science (B.Sc) degree. This perhaps suggests practitioner disinclination to acquiring higher degrees.

Most respondents, irrespective of the city in focus have the basic professional qualification of Associate membership of the Nigerian Institution of Estate Surveyors and Valuers (NIESV). The crave for foreign affiliation with the parent body is slim perhaps due to the fact that such qualification is not an essential requirement for practice in Nigeria. The research also reveals that majority of the respondents have years of professional experience spanning between 1-5 years. The analysis of questionnaire also reveals that most estate surveying firms do not have other branches of practice and moreover are of small size (most comprise of between 1-5 estate surveyors).

The next sections (Sections 5.4 to Sections 5.7) analyze data on each of the study objectives and the a-priori expectations attached to the respective objectives.

5.4: Responses on Usage of the Four Heuristics (Objective One)

Objective one examines whether valuers are influenced by four heuristics in valuation practice: anchoring and adjustment, availability, positivity and representative heuristics. A-priori expectations 1-4 pertain to this objective.

5.4.1 Anchoring and Adjustment Heuristics

The first a-priori expectation states that Valuers anchor on prior valuations (in the conduct of present valuations) and adjust such anchors in an effort to bring them up to date. In order to investigate this proposition, respondents in the three study areas were questioned on whether they make recourse to previous valuation/sales in the valuation of properties. The responses to this inquiry were measured using a nominal scale (yes or no responses). Thereafter there was an investigation into the frequency of utilization of anchoring and adjustment in valuation, measured using an ordinal scale and analyzed by means of relative importance indices. Table 5.5 and Table 5.6 present the findings on these two lines of inquiry.

Table 5.5 Anchoring in Valuation

			Anchoring & adjustment on past valuations/sales		Total
			Yes	No	
Study Area	Lagos	Count	91	28	119
		% within Lagos	76.5%	23.5%	100.0%
		% within all locations	71.1%	71.8%	71.3%
	Abuja	Count	18	7	25
		% within Abuja	72.0%	28.0%	100.0%
		% within all locations	14.1%	17.9%	15.0%
	Port-Harcourt	Count	19	4	23
		% within Port- Harcourt	82.6%	17.4%	100.0%
		% within all locations	14.8%	10.3%	13.8%
Total	Count	128	39	167	
	% within Location of firm	76.6%	23.4%	100.0%	
	% within all locations	100.0%	100.0%	100.0%	

Table 5.6 Frequency of Use of Anchoring & Adjustment in Valuation

		Frequency Opinions					Total	RII
		Very Often	Often	Seldom	Never			
Study Areas Lagos	Count	17	39	37	26	119	2.395	
	% within Lagos	14.3%	32.8%	31.1%	21.8%	100.0%		
	% within all locations	89.5%	68.4%	66.1%	74.3%	71.3%		
Abuja	Count	1	9	10	5	25	2.24	
	% within Abuja	4.0%	36.0%	40.0%	20.0%	100.0%		
	% within all locations	5.3%	15.8%	17.9%	14.3%	15.0%		
Port-Harcourt	Count	1	9	9	4	23	2.304	
	% within P. Harcourt	4.3%	39.1%	39.1%	17.4%	100.0%		
	% within all locations	5.3%	15.8%	16.1%	11.4%	13.8%		
Total	Count	19	57	56	35	167	2.359	
	% within Location of firm	11.4%	34.1%	33.5%	21.0%	100.0%		
	% within all locations	100.0	100.0%	100.0%	100.0%	100.0%		

Source: Author’s field survey

Discussion on Table 5.5 and Table 5.6

An analysis of Table 5.5 above indicates that majority of respondents make use of anchoring in carrying out valuation assignments. For instance 128 (76.6%) of respondents in all locations answered yes to the use of anchoring, while only 39 (23.4%) of respondents indicated non-use of anchoring. These figures represent 76.5%, 72% and 82.6% affirmation of the use of anchoring amongst valuers in Lagos, Abuja and Port-Harcourt respectively.

With regard to the frequency of use of anchoring & adjustment in valuation, Table 5.6 reveals that in each of the three study areas - Lagos, Abuja and Port-Harcourt - the weighted mean (RII) score was above average (2.395; 2.24 and 2.304). The overall RII score for all locations is 2.359. This is quite substantial (above average, given the maximum of 4). Only 21.8%, 20% and 17.4% of the respondents in Lagos, Abuja and Port-Harcourt respectively (21% in all locations) never made use of anchoring in valuation. These results demonstrate that anchoring is substantially evident in Nigerian valuation.

A further line of anchoring & adjustment inquiry in the questionnaire was an investigation of the maximum interval between present valuations and anchored past sales/valuations. Responses however showed that valuers do not really restrict themselves to any maximum period between present valuations and anchors.

Further inquiry on anchoring and adjustment focused on the medium of adjustment of anchored values. Table 5.7 below provides details of findings in this regard.

Table 5.7 Alternative Media of Adjustment on Anchored Values

		Alternative Media of Adjustment						
		Inflation Rate	Bank Rate	Price Index	Experience of property values	Opinion of other Surveyor	All of the above	total
Lagos	Count	10	4	7	76	7	15	119
	% within Lagos	8.4%	3.4%	5.9%	(63.8%)	5.9%	12.6%	100.0%
	% within all 3 locations	58.8%	100.0%	77.8%	67.85%	87.5%	88.2%	71.3%
Abuja	Count	2	0	0	21	1	1	25
	% within Abuja	8.0%	.0%	.0%	(84.0%)	4.0%	4.0%	100.0%
	% within all 3 locations	11.8%	.0%	.0%	18.75%	12.5%	5.9%	15.0%
Port-Harcourt	Count	5	0	2	15	0	1	23
	% within Port-Harcourt	21.7%	.0%	8.7%	(65.2%)	.0%	4.3%	100.0%
	% within all 3 locations	29.4%	.0%	22.2%	13.4%	.0%	5.9%	13.8%
Total	Count	17	4	9	112	8	17	167
	% all 3 locations	10.2%	2.4%	5.4%	(67%)	4.8%	10.2%	100.0%
	% Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Source: Author's field survey

Discussion on Table 5.7

Table 5.7 reveals that experience of past valuations is the most important medium for the adjustment made on anchored values. More than half of the respondents in all locations (about 67% of the respondents) attested to this. The specific responses per location were 63.8% in

Lagos 84% in Abuja and 65.2% in Port-Harcourt respectively. Other factors such as inflationary rates, bank rates, price index, subjective assessment based on the opinions of other surveyors were other benchmarks of adjustment but were not widely used compared to experience of property values.

The results above confirm the first a-priori expectation that valuers anchor on prior valuations in the conduct of present valuations and adjust such anchors in an effort to bring them up till date.

5.4.2 Availability Heuristics:

This sub section addresses the second a-priori expectation - under the first objective – which investigates the existence of availability heuristics amongst Nigerian valuers. This a-priori expectation states that Valuers employ availability heuristics, that is, they tend to employ data inputs (yield, rental values, outgoings etc) that are most easily obtained in their valuation calculations rather than derive the inputs from thorough market surveys. In the questionnaire, three related questions were asked to determine the existence of availability heuristics. Details of the responses in this regard are as shown in Table 5.8, Table 5.9 and Table 5.10:

Table 5.8: Use of Available Outgoings Versus Market Derived Outgoings

			Method of Determining Outgoings		
			Valuer uses easily available (rule of thumb) outgoings	Valuer determines outgoings from market evidence	Total
Study Area	Lagos	Count	83	36	119
		% within Lagos	69.7%	30.3%	100.0%
		% within all 3 locations	69.17%	76.6%	71.3%
	Abuja	Count	18	7	25
		% within Abuja	72.0%	28.0%	100.0%
		% within all 3 locations	15.0%	14.9%	15.0%
	Port-Harcourt	Count	19	4	23
		% within Port-Harcourt	82.6%	17.4%	100.0%
		% within all 3 locations	15.83%	8.5%	13.8%
Total	Count	120	47	167	
	% for all 3 locations	71.9%	28.1%	100.0%	
	% Total	100.0%	100.0%	100.0%	

Source: Author's field survey

Table 5.9 Use of Available Rental Evidence Versus Market Derived Rental Evidence

			Method of obtaining Rental Evidence		Total
			Use of available rental evidence	Use of market derived rental evidence	
Study Area	Lagos	Count	62	57	119
		% within Lagos	52.1%	47.9%	100.0%
		% within all locations	66.7%	77.0%	71.3%
	Abuja	Count	16	9	25
		% within Abuja	64.0%	36.0%	100.0%
		% within all locations	17.2%	12.2%	15.0%
	Port-Harcourt	Count	15	8	23
		% within Port-Harcourt	65.2%	34.8%	100.0%
		% within all locations	16.1%	10.8%	13.8%
Total	Count	93	74	167	
	% for all 3 locations	55.7%	44.3%	100.0%	
	% Total	100.0%	100.0%	100.0%	

Table 5.10 Use of Easily Available (Rule of Thumb) Yields Versus Market Derived Yields

			Method of Yield determination		Total
			Use of easily available (rule of thumb) yields	Derivation of yield from market evidence	
Study Area	Lagos	Count	44	75	119
		% Within Lagos	37.0%	63.0%	100.0%
		% within all locations	72.1%	70.8%	71.3%
	Abuja	Count	6	19	25
		% within Abuja	24.0%	76.0%	100.0%
		% within all locations	9.8%	17.9%	15.0%
	Port-Harcourt	Count	11	12	23

	% within Port-Harcourt	47.8%	52.2%	100.0%
	% within all locations	18.0%	11.3%	13.8%
Total	Count	61	106	167
	% for all 3 locations	36.5%	63.5%	100.0%
	% Total	100.0%	100.0%	100.0%

Discussion on Table 5.8, Table 5.9, and Table 5.10

Table 5.8 reveals that taking all study areas collectively, 120 (71.9%) respondents make use of easily available (rule of thumb) methods in determining outgoings as against 28.1% respondents who determine outgoings from a sample of similar properties. Taking each study area individually, 69.7%, 72.0% and 82.6% of respondents in Lagos, Abuja and Port-Harcourt respectively use easily available rule of thumb methods in the determination of outgoings.

Table 5.9 presents data on the use of easily available rental evidence versus market surveys. The table reveals that most of the respondents in the entire study areas use easily available rental evidence as against those that determine rental evidence through market surveys. For individual study locations, 52.1 %, 64% and 65.2% of the respondents in Lagos, Abuja and Port-Harcourt respectively adopt easily available rental evidence. Taking all study areas collectively, 55.7% of respondents make use of easily rental evidence in preference to market surveys.

Unlike in the two preceding tables above, Table 5.10 reveals a different picture on usage of availability heuristics when it comes to yields. The respondents are not apt to the use of easily available yield; rather - taking all study areas collectively - the majority of the respondents (that is, 106 or 63.5%) calculate the yield from market evidence. For individual study areas, 63%, 76% and 52.2% of the respondents in Lagos metropolis, Abuja and Port-Harcourt calculate yields from market evidence rather than through availability heuristics.

Hence while respondents are apt in the use of easily available outgoings and rental evidence while carrying out investment method of valuation, they are not very susceptible to availability heuristics in the case of yields.

5.4.3 Representative Heuristics:

The third a-priori expectation - under the first objective – has to do with representative heuristics, which refers to stereotyping in valuation. To ascertain whether stereotyping (representative

heuristics) is practiced, respondents were asked if values they would place on properties with almost identical design would vary very much, marginally or not at all if the design/features of the comparable varied slightly according to any of six indicators. The indicators focused on slight variations such as a difference in location (but still within the neighborhood/vicinity); an extra bathroom or toilet; a larger plot size; a bigger parking space; an extra garage or more costly floor and wall finishes. The responses were analyzed with the use of frequency tables, and thereafter with the Relative Important Index (RII). Table 5.11 below presents data on the degree to which valuers use representative heuristics (stereotyping), by way of ascribing the same value for properties of identical design, ignoring differences in location of comparables within the neighbourhood/vicinity.

Table 5.11 The Degree to which Valuers Ascribe the Same Value to Identical Design Properties in Different Locations of the Three Study Areas

			Variation in valuation due to different Locations			Total	RII	
			W=1 Very Much	W=2 Marginally	W=3 No Difference			
Location of firm	Lagos	Count	47	63	9	119	1.6807	
		% within Lagos	39.5%	52.9%	7.6%	100.0%		
		% within all Locations	78.3%	78.8%	33.3%	71.3%		
	Abuja	Count	12	3	10	25		1.92
		% within Abuja	48.0%	12.0%	40.0%	100.0%		
		% within all Locations	20.0%	3.8%	37.0%	15.0%		
	Port-Harcourt	Count	1	14	8	23		2.3043
		% within Port-Harcourt	4.3%	60.9%	34.8%	100.0%		
		% within all Locations	1.7%	17.5%	29.6%	13.8%		
Total		Count	60	80	27	167	1.80	
		% within Location of firm	35.9%	47.9%	16.2%	100.0%		

% within entire Locations	100.0%	100.0%	100.0%	100.0%	
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Source: Author’s Field Survey 2011

From Table 5.11 we can see that representative heuristics (which ignores differences in location) does exist in the study areas though minimally in Lagos and Abuja. Representative heuristics is seen here in the form of valuers ascribing the same or largely the same value for properties of identical design, ignoring differences in location in the study areas, particularly in Port-Harcourt. The RII scores for the study areas were Lagos, 1.6807; Abuja, 1.92; Port-Harcourt, 2.3043. Taking the three study areas together, the overall score was 1.80, which on the 3 point scale represents moderate use of the heuristic. On a maximum scale of 3, 1.8 is above ½ i.e. 1.50, which means that the existence of representative heuristics (where valuers ignore difference in location of comparable properties within the neighbourhood/vicinity) is moderately substantiated overall though such heuristics are quite substantially substantiated in Port-Harcourt.

Another indicator of representative heuristics investigated is whether valuers ascribe the same value to properties of identical design, ignoring the only difference - an extra bathroom or toilet in the comparable property. Table 5.12 below presents details of the responses in this regard.

Table 5.12 The Degrees to which Valuers in the Three Study Areas Ascribe the Same Value to Similar Design Properties Differentiated by an Extra Bathroom or Toilet.

			Variation in valuation of stereotype property due to extra bathroom and toilet			Total	RII
			W=1 Very much	W=2 Marginally	W=3 No difference		
Study Area	Lagos	Count	35	63	21	119	1.882
		% within Lagos	29.4%	52.9%	17.6%	100.0%	
		% within all 3 locations	85.4%	75.9%	48.8%	71.3%	
Abuja	Abuja	Count	4	10	11	25	2.28
		Expected Count	6.1	12.4	6.4	25.0	
		% within Abuja	16.0%	40.0%	44.0%	100.0%	
		% within all 3 locations	9.8%	12.0%	25.6%	15.0%	

Port-Harcourt	Count	2	10	11	23	2.39
	% within Port-Harcourt	8.7%	43.5%	47.8%	100.0%	
	% within all 3 locations	4.9%	12.0%	25.6%	13.8%	
Total	Count	41	83	43	167	2.012
	% for all 3 locations	24.6%	49.7%	25.7%	100.0%	
	% Total	100.0%	100.0%	100.0%	100.0%	

Source: Author's Field Survey (2011)

From Table 5.12 we can see that representative heuristics does exist for prototype property which is differentiated by an extra bathroom or toilet. This is the case in all the three study areas particularly in Port-Harcourt. The RII scores for each study area were as follows: Lagos, 1.882; Abuja, 2.28; Port-Harcourt, 2.39. Taking the entire study areas together, the overall score was 2.012 on a 3-point scale where 3 represents highest existence of representative heuristics. It can be deduced that since all rankings are actually above the mid-point, that is, above 1.50, the existence of representative heuristics (where valuers ignore an extra bathroom or toilet) is moderately substantiated.

The study proceeded to the third indicator – to investigate the existence of representative heuristics for prototype (identical design) property differentiated by plot size variations. Details of the responses in this regard are given in Table 5.13:

Table 5.13 The Degree to which Valuers in the Three Study Areas Ascribe the Same Value to Identical Design Properties with Disparate Plot Size

		Variation in valuation of stereotype property occasioned by different plot size			Total	RII	
		W=1 Very much	W=2 Marginally	W=3 No Difference			
Location of firm	Lagos	Count	74	40	5	119	1.42
		% within Lagos	62.2%	33.6%	4.2%	100.0%	
		% within all 3 locations	72.5%	90.9%	23.8%	71.3%	
	Abuja	Count	12	3	10	25	1.92
		% within Abuja	48.0%	12.0%	40.0%	100.0%	

	% within all 3 locations	11.8%	6.8%	47.6%	15.0%	
Port-Harcourt	Count	16	1	6	23	1.57
	% within Port-Harcourt	69.6%	4.3%	26.1%	100.0%	
	% within all 3 locations	15.7%	2.3%	28.6%	13.8%	
Total	Count	102	44	21	167	1.51
	% for all 3 locations	61.1%	26.3%	12.6%	100.0%	
	% Total	100.0%	100.0%	100.0%	100.0%	

From Table 5.13 above we can see that valuers exercise moderate representative heuristics in valuation of stereotype property differentiated by plot size (the collective RII score for the 3 locations was 1.51 which is marginally above the mid-point). However, when we consider the individual RII scores for the 3 locations, we see that the heuristics are more prominent in Abuja and Port-Harcourt. The Relative Importance Index scores were Lagos, 1.42; Abuja, 1.92; Port-Harcourt, 1.57. This is enough evidence to substantiate the collective existence of representative heuristics. We must note however, that the operation of this heuristic in Lagos metropolis in particular is rather low (RII is below 1.5).

The fourth indicator employed to investigate the use of representative heuristics in the study areas was to ascertain whether valuers would adopt the same values for prototype properties ignoring differences in parking space of comparable stereotype properties. The responses to this indicator are presented in Table 5.14:

Table 5.14 The Degree to which Valuers in the Three Study Areas Ascribe the Same Value to Two Identical Design Properties with One Having a Larger Parking Space

		Variation in valuation of stereotype property due to divergent parking space sizes			Total	RII	
		W=1 Very Much	W=2 Marginally	W=3 No Difference			
Study Area	Lagos	Count	66	44	9	119	1.52

	% within Lagos	55.5%	37.0%	7.6%	100.0%	
	% within all 3 locations	79.5%	77.2%	33.3%	71.3%	
Abuja	Count	9	6	10	25	2.04
	% within Abuja	36.0%	24.0%	40.0%	100.0%	
	% within all 3 locations	10.8%	10.5%	37.0%	15.0%	
Port-Harcourt	Count	8	7	8	23	2.0
	% within Port-Harcourt	34.8%	30.4%	34.8%	100.0%	
	% within all 3 locations	9.6%	12.3%	29.6%	13.8%	
Total	Count	83	57	27	167	1.66
	% for all 3 locations	49.7%	34.1%	16.2%	100.0%	
	% Total	100.0%	100.0%	100.0%	100.0%	

From Table 5.14 we deduce that representative heuristics does exist for prototype properties with diverse parking space in the study areas. The Relative Important Index scores for each study area were as follows (Lagos, 1.52; Abuja, 2.04; Port-Harcourt, 2.0). The collective score for the three locations was 1.66 which is above the midpoint of the scale of 3. From this we deduce the existence of representative heuristics which ignores parking spaces in the valuation of stereotype property.

The fifth indicator employed to investigate the existence of representative heuristics was the inquiry into whether valuers would ascribe the same value to two similar design properties where one was differentiated by the presence of an extra garage. Table 5.15 presents the findings in this regard.

Table 5.15 The Degree to which Valuers in the Study Areas Ascribe the Same Value to Two Identical Design Properties when One is Slightly Different through Possessing an Extra Garage.

		Variation in values ascribed to stereotype property where one has an extra garage			Total	RII	
		W=1 Very Much	W=2 Marginally	W=3 No Difference			
Study Area	Lagos	Count	31	57	31	119	2.0

	% within Lagos	26.1%	47.9%	26.1%	100.0%	
	% within all 3 locations	81.6%	76.0%	57.4%	71.3%	
Abuja	Count	5	7	13	25	2.32
	% within Abuja	20.0%	28.0%	52.0%	100.0%	
	% within all 3 locations	13.2%	9.3%	24.1%	15.0%	
Port-Harcourt	Count	2	11	10	23	2.35
	% within Port-Harcourt	8.7%	47.8%	43.5%	100.0%	
	% within Locations	5.3%	14.7%	18.5%	13.8%	
Total	Count	38	75	54	167	2.1
	% within all 3 locations	22.8%	44.9%	32.3%	100.0%	
	% Total	100.0%	100.0%	100.0%	100.0%	

From Table 5.15 it is deduced that representative heuristics does exist as valuers indicated that they would ignore the extra garage in all the study areas. The Relative Important Index scores for the 3 locations were: Lagos, 2.0; Abuja, 2.32; Port-Harcourt, 2.35). The collective score for the 3 locations was 2.1 on a scale of 3 where 3 represents maximum usage of representative heuristics. It can be deduced that since all rankings are actually above $\frac{1}{2}$ i.e. 1.50, the existence of representative heuristics is largely substantiated.

The last indicator employed to investigate the existence of representative heuristics was the inquiry into whether valuers in the study areas take into account the effect of costly floor and wall finishes in their valuation of prototype properties. Table 5.16 provides the details of responses in this regard:

Table 5.16 The Degree to which Valuers in the Study Areas Ascribe the Same Value to Two Identical Design Properties with One Slightly Different through Possessing High Quality Floor/Wall Finishes

	Variation in valuation due to diverse floor/wall finishes			Total	RII
	Very Much	Marginally	No Difference		

Study Area	Lagos	Count	57	50	12	119	1.62
		% within Lagos	47.9%	42.0%	10.1%	100.0%	
		% within all 3 locations	75.0%	78.1%	44.4%	71.3%	
Abuja		Count	10	5	10	25	2.0
		% within Abuja	40.0%	20.0%	40.0%	100.0%	
		% within all 3 locations	13.2%	7.8%	37.0%	15.0%	
Port-Harcourt		Count	9	9	5	23	1.83
		% within Port-Harcourt	39.1%	39.1%	21.7%	100.0%	
		% within all 3 locations	11.8%	14.1%	18.5%	13.8%	
Total		Count	76	64	27	167	1.71
		% for all 3 locations	45.5%	38.3%	16.2%	100.0%	
		% Total	100.0%	100.0%	100.0%	100.0%	

From Table 5.16 it is deduced that representative heuristics exists, as respondents ascribe the same value to similar properties ignoring differences such as costly, elaborate floor and wall finishes in properties in the study areas. The Relative Important Index scores are as follows Lagos, 1.62; Abuja, 2.0; Port-Harcourt, 1.83. The collective score for the three locations was 1.71 on a scale of 3 which is above half of the scale, that is, above 1.50. From this it is deduced that representative heuristics exists in the comparison of stereotype property as differences such as elaborate floor and wall finishes are ignored.

Looking at the results from all six indicators, it is evident that representative heuristics does exist in the study areas, though the degree of usage is more apparent for some indicators than for others. Valuers tend to resort more to representative heuristics when similar design properties are differentiated by bathroom/toilets, garages and location than when they are differentiated by plot size and parking space.

5. 4.4 Positivity Heuristics:

The fourth a-priori expectation – under the first objective - focuses on positivity heuristics. The positivity heuristics a-priori expectation is that valuers seek market information to confirm their pre-valuation ideas of the value of properties for valuation and avoid the collection of market evidence potentially falsifying such preconceived values. In other words, the study investigated

the proposition that valuers would tend to support their preconceived value even when this turns out to be in contrast to market evidence. This insistence on the pre-evidence value by the concerned valuers is presumably based on a somewhat undue confidence in their professional market experience and predictive ability. The inquiry into the existence or otherwise of this heuristic proceeded in form of two questions: first, respondents were asked if they had come across situations where the values they obtained from market evidence and calculations for a property were below what they initially believed the property could fetch in the market. The second question was a follow up: respondents were asked what their actions would be in cases where preconceived values exceeded calculated values. The summary of responses on the first question is as shown in Table 5.17 below:

Table 5.17 Responses on whether Preconceived Value Exceed Calculated Value

			Preconceived Values exceeding Prices		Total
			Yes	No	
Study Area	Lagos	Count	100	19	119
		% within Lagos	84.0%	16.0%	100.0%
		% within all 3 locations	74.1%	59.4%	71.3%
Abuja	Abuja	Count	16	9	25
		% within Abuja	64.0%	36.0%	100.0%
		% within all 3 locations	11.9%	28.1%	15.0%
Port-Harcourt	Port-Harcourt	Count	19	4	23
		% within Port-Harcourt	82.6%	17.4%	100.0%
		% within all 3 locations	14.1%	12.5%	13.8%
Total		Count	135	32	167
		% for all 3 locations	80.8%	19.2%	100.0%
		% Total	100.0%	100.0%	100.0%

Source: Author's field survey

From Table 5.17 it is deduced that 135 (80.8%) of the respondents in all three locations have experienced preconceived value varying from calculated value. This attestation cuts across all the three study areas (percentage scores were 84%; 64% and 82.6% in Lagos Metropolis, Abuja and Port-Harcourt respectively).

Table 5.18 below present's results of the follow up question where respondents were asked what their actions would be in cases where preconceived values exceeded calculated values.

Table 5.18: Action Taken if Preconceived Value Varies from Calculated Value

		Action taken if preconceived value varies from calculated value					
		Adopt Calculated value	Adjust calculated to expected value	average of expected and calculated value	Discard investment for cost method	Total Response for Positivity Heuristics	Total
Lagos	Count	16	40	33	30	103	119
	% within Lagos	13.4%	33.6%	27.8%	25.2%	86.6%	100.0%
	% within all Locations	84.2%	61.5%	73.3%	78.9%	69.6%	71.2%
Abuja	Count	1	17	5	2	24	25
	% within Abuja	4.0%	68.0%	20.0%	8.0%	96%	100.0%
	% within all Locations	5.3%	26.2%	11.1%	5.3%	16.2%	15.0%
Port-Harcourt	Count	2	8	7	6	21	23
	% within Port-Harcourt	8.7%	34.8%	30.4%	26.1%	91.3%	100.0%
	% within all Locations	10.5%	12.3%	15.6%	15.8%	14.2%	13.8%
Total Count		19	65	45	38	148	167
% within Location of firm		11.4%	38.9%	26.9%	22.8%	88.6%	100.0%
% within entire Locations		100.0%	100.0%	100.0%	100.0%	100%	100.0%

From the responses in Table 5.18 we note that the only response that indicates the absence of usage of positivity heuristics is the option of adopting the calculated value over preconceived value. We see that those who chose this option are very few – only 11.4% for all the locations taken collectively. Most of the other respondents who answered the question indicated that they would adopt a variety of responses – such as adjusting calculated to pre-conceived value or taking the average of pre- conceived and calculated value - which are all indicative of positivity heuristics. The results for usage of positivity heuristics in the different locations were as follows: 86.6%; 96% and 91.3% in Lagos, Abuja and Port-Harcourt respectively. The collective usage of the heuristics in all three locations was 88.6%. Based on these figures, the existence of positivity heuristics in all the study areas is substantially validated.

In summary, looking at the results of sections 5.4.1 to 5.4.4, it is evident that all of the first four a-priori expectations postulated under the first objective have been confirmed. We can accordingly state conclusively that not only anchoring and adjustment heuristics are in operation amongst Nigerian respondents as is inadvertently suggested in earlier studies (Adegoke and Aluko,2007; Adegoke, 2008; Aluko, 2007). Rather all the four major heuristics - anchoring & adjustment, availability, representative and positivity heuristics - influence valuers in the conduct of valuation in the three study areas.

5.5 Responses on Relative Level of Occurrence of the Four Heuristics in Property Valuation:

The second objective of study is concerned with the relative level of occurrence of the four heuristics in the conduct of the investment method of valuation. This objective is addressed by the study's fifth a-priori expectation, and this expectation envisaged the following decreasing order of usage: availability, anchoring and adjustment, then representative and lastly positivity heuristics.

To address this a-priori expectation, respondents were asked to rate how many of every typical 20 valuations they have carried out:

- (a) That they had access to previously conducted valuations for the same or a very similar property that they adjusted to derive the value for the present valuation (in other words the frequency of use of anchoring and adjustment).

- (b) That they valued stereotype buildings ignoring differences in building features of comparable stereotype buildings in arriving at value (that is, the frequency of their use of representative heuristics).
- (c) That they made use of easily available rules of thumb rates for outgoings, rental evidence and yield, etc rather than freshly determined market rates (that is to say the frequency of use of availability heuristics).
- (d) That they justified and adopted their preconceived ideas of what the property value was, ignoring later market based market evidence and calculations (that is, use of positivity heuristics)

Table 5.19 provides the responses on the above four questions – the frequency of typical usage of each heuristic within a total of 20 valuations.

Table 5.19 Rate of Occurrence of the Four Heuristics in Typical 20 Valuations

Number of Supposed Valuations in 20 outcomes	Rating of typical occurrence of Anchoring and adjustment by respondents	Rating of typical occurrence of Availability heuristics by respondents	Rating of typical occurrence of Representative heuristics by respondents	Rating of typical occurrence of Positivity heuristics by respondents
0	25	20	24	39
1	9	4	17	9
2	14	6	11	16
3	12	7	8	10
4	7	3	7	9
5	19	9	20	17
6	2	5	3	2
7	1	4	3	4
8	6	6	3	0
9	1	0	2	0
10	13	15	13	3
11	2	1	1	0
12	1	5	0	0
13	0	2	1	1
14	0	4	0	0
15	4	9	4	0
16	1	4	0	0
17	0	0	0	0
18	5	4	2	3
19	0	0	0	0
20	1	6	0	1

Total	123	114	119	114
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Table 5.19 reveals that out of 167 respondents 123, 114, 119 and 114 respondents answered the questions relating to anchoring and adjustment, availability, representative and positive heuristics respectively. From the frequency table, the relative occurrence of each heuristic was deduced in Table 5.20.

Table 5.20 Relative Level of Occurrence of Various Heuristics

Heuristics (a)	N (b)	Minimum (c)	Maximum (d)	Mean (e)	Std. Deviation (f)	Relative level of occurrence (g)	Rank (h)
Anchoring	123	.00	20.00	5.0569	5.01032	18.62%	2
Representative	119	.00	18.00	4.3866	4.32005	15.63%	3
Availability	114	.00	20.00	7.8421	6.18388	26.77%	1
Positivity	114	.00	20.00	3.0614	3.96061	10.41%	4

The relative level of occurrence (g) was obtained as follows:

$$g = ((e \times b) / 167) / 20 \times 100.$$

From Table 5.20 we observe that in the three study areas, respondents use more of availability heuristics (this has the largest level of occurrence of 26.77%), followed by anchoring and adjustment heuristics (18.62%); representative heuristics (15.63%) and least of all positivity heuristics (10.41%). This collective position is a complete confirmation of the conceptual expectation (a-priori expectation 5).

It would be useful to consider whether the individual positions in each of the three cities confirm the a priori expectation. Tables 5.21 and 5.22 address the individual position in Lagos while tables 5.23 & 5.24 and 5.25 & 5.26 address the respective positions in Abuja and Port Harcourt respectively.

Table 5.21 Rate of Occurrence of the Four Heuristics in Lagos Valuations

Number of Supposed Valuations in 20 outcomes	Rating of typical occurrence of Anchoring and adjustment by respondents	Rating of typical occurrence of Availability heuristics by respondents	Rating of typical occurrence of Representative heuristics by respondents	Rating of typical occurrence of Positivity heuristics by respondents
0	20	14	18	29
1	8	2	14	6
2	10	6	5	11
3	7	6	5	7
4	4	1	3	5
5	12	7	14	10
6	0	4	2	2
7	0	1	3	3
8	3	4	2	0
9	0	0	1	0
10	9	8	9	1
11	2	1	0	0
12	0	4	0	0
13	0	1	1	1
14	0	4	0	0
15	2	6	3	0
16	1	4	0	0
17	0	0	0	0
18	5	1	2	3
19	0	0	0	0
20	0	6	0	0
<i>Total</i>	83	80	82	78

From the frequency table, the relative occurrence of each heuristic was deduced in Table 5.22.

Table 5.22 Relative level of occurrence of various heuristics in Lagos Metropolis

Heuristics (a)	N (b)	Minimum (c)	Maximum (d)	Mean (e)	Std. Deviation (f)	Relative level of occurrence (g)	Rank (h)
Anchoring	83	0	18	4.78	5.222	16.67%	2
Availability	80	0	20	7.93	6.408	26.66%	1
Representative	82	0	18	4.43	4.568	15.26%	3
Positivity	78	0	18	2.94	3.998	9.94%	4

The relative level of usage of heuristics deduced in Table 5.22 is as follows: Availability heuristics (26.66%) followed by Anchoring and Adjustment heuristics (16.67%); then Representative heuristics (15.26%); and last, positivity heuristics (9.94%). This certainly follows the pattern of the collective result and confirms the a-priori expectation.

The results for Abuja are presented in Tables 5.23 and 5.24.

Table 5.23 Rate of Occurrence of the Four Heuristics in Abuja Valuations

Number of Supposed Valuations in 20 outcomes	Rating of typical occurrence of Anchoring and adjustment by respondents	Rating of typical occurrence of Availability heuristics by respondents	Rating of typical occurrence of Representative heuristics by respondents	Rating of typical occurrence of Positivity heuristics by respondents
0	1	1	1	6
1	1	2	1	1
2	3	0	3	2
3	2	0	2	2
4	1	0	1	2
5	2	1	2	2
6	0	0	0	0
7	0	0	0	1
8	1	2	1	0
9	1	0	1	0
10	3	4	3	0
11	1	0	1	0
12	0	1	0	0
13	0	1	0	0
14	0	0	0	0
15	1	3	1	0
16	0	0	0	0
17	0	0	0	0
18	0	2	0	0
19	0	0	0	0
20	0	0	0	0
<i>Total</i>	17	17	17	16

From Table 5.23, the relative occurrence of each heuristic was deduced in Table 5.24.

Table 5.24 Relative Level of Occurrence of Various Heuristics in Abuja

Heuristics (a)	N (b)	Minimum (c)	Maximum (d)	Mean (e)	Std. Deviation (f)	Relative level of occurrence (g)	Rank (h)
Anchoring	17	0	15	5.88	4.328	19.99%	2
Availability	17	0	18	9.94	5.651	33.80%	1
Representative	17	0	15	5.88	4.328	19.99%	2
Positivity	16	0	7	2.25	2.266	7.2%	4

We note that the relative level of occurrence of the heuristics is largely the same in Abuja. The pattern of heuristics usage was as follows: Availability heuristics (33.80%), Anchoring and Adjustment heuristics (19.99%), Representative heuristics (19.99%), and then finally positivity heuristics (7.2%). The pattern here again fully confirms the a-priori expectation.

The results for Port-Harcourt are presented in Tables 5.25 and 5.26.

Table 5.25 Rate of Occurrence of the Four Heuristics in Port-Harcourt Valuations

Number of Supposed Valuations in 20 outcomes	Rating of typical occurrence of Anchoring and adjustment by respondents	Rating of typical occurrence of Availability heuristics by respondents	Rating of typical occurrence of Representative heuristics by respondents	Rating of typical occurrence of Positivity heuristics by respondents
0	5	5	5	4
1	2	0	2	2
2	3	0	3	3
3	1	1	1	1
4	3	2	3	2
5	4	1	4	5
6	1	1	1	0
7	0	3	0	0
8	0	0	0	0
9	0	0	0	0
10	1	3	1	2
11	0	0	0	0
12	0	0	0	0
13	0	0	0	0
14	0	0	0	0
15	0	0	0	0
16	0	0	0	0
17	0	0	0	0
18	0	1	0	0
19	0	0	0	0
20	0	0	0	1
<i>Total</i>	<i>20</i>	<i>17</i>	<i>20</i>	<i>20</i>

From table 5.25, the relative occurrence of each heuristic was deduced in Table 5.26.

Table 5.26 Relative Level of Occurrence of Various Heuristics in Port-Harcourt

Heuristics (a)	N (b)	Minimum(c)	Maximum (d)	Mean (e)	Std. Deviation (f)	Relative level of occurrence (g)	Rank (h)
Anchoring	20	0	10	2.95	2.645	12.83%	3
Availability	17	0	18	5.35	4.911	19.77%	1
Representative	20	0	10	2.95	2.645	12.83%	3
Positivity	20	0	20	4.20	4.742	18.26%	2

We note that the relative level of occurrence of the heuristics is largely different in Port-Harcourt. The pattern of heuristics usage was as follows: Availability heuristics (19.77%), positivity heuristics (18.26%), Anchoring and Adjustment heuristics (12.83%), and Representative heuristics (12.83%). The difference is in the relative usage of the representative and positivity heuristics. The pattern here does not fully confirm the a-priori expectation.

5.6 Identification and Examination of Factors Influencing the Usage of Heuristics in Property Valuation:

The focus in this section is on the third objective. This objective examines factors potentially influencing the occurrence of the various types of heuristics in property valuation. The factors to be tested were derived from literature (see section 3.4). These factors were conceptualized into a-priori expectations 6-11. The dependent variable for each of these a-priori expectations was the occurrence of heuristics. The independent variables were the respective potential factors.

The intention was to establish both the direction of relationship between the dependent and independent variables – that is, whether as one variable is increasing, the other is increasing or decreasing - and as well the strength or significance of the relationship. To establish the direction of the relationship, the study employed the Spearman's rank correlation coefficient. The significance/strength of the relationship was addressed with regression analysis.

5.6.1 Test of A-Priori Expectation 6

The first a-priori expectation addressed under this objective was the sixth listed at the end of the conceptual framework. This sixth a-priori expectation investigates the influence of valuer's familiarity with locations on the occurrence of heuristics. It suggests that the less familiar an area where valuation to be carried out is to the valuer, the more the usage of heuristic shortcuts to simplify the valuation decision making. The relationship between the usage of heuristics (Table 5.28) and familiarity of terrain (Table 5.27) is the focus of analysis below. 167 respondents responded to questions in this regard.

Table 5.27 Frequency of Operation in Unfamiliar Terrain (Independent Variable)

Operation in unfamiliar terrain	Frequency	Percent
Never	3	1.80
Rarely	8	4.79
Sometimes	24	14.37
most times	51	30.54
Always	81	48.50
Total	167	100.0

The corresponding data on the dependent variable - frequency of adoption of heuristics (Table 5.28) - was graded on an ordinal scale of usage: 1 representing no usage; 2 representing rare usage; 3 representing occasional usage; 4 representing frequent usage; and 5 representing all time usage.

Table 5.28 Frequency of Adoption of Heuristics (Dependent Variable)

Heuristics	Never (1)	Rarely (2)	Sometimes (3)	Frequently (4)	Always (5)	Total
Anchoring and Adjustment	33	43	64	23	4	167
Availability	43	45	51	24	4	167
Representative	61	30	46	18	12	167
Positivity	46	36	65	15	5	167

From Tables 5.27 and Table 5.28, the regression and correlation relationship between operation in unfamiliar locations and the usage of the four heuristic types was derived and is presented below.

Table 5.29 Regression Relationships between Operation in Unfamiliar Locations and Usage of Heuristics

Heuristic type	Regression equation	Coefficients of rank correlation & determination
Independent variable – Unfamiliar location		
Anchoring & adjustment	$H = 2.136 + 0.089U$ ($p = 0.251$)	$R = 0.08, R^2 = 0.008$
Availability	$H = 1.930 + .102U$ ($p = .192$)	$R = 0.102, R^2 = 0.010$
Representative	$H = 1.543 + .146U$ ($p = .059$)	$R = .146, R^2 = .021$
Positivity	$H = 2.443 - .013U$ ($p = .192$)	$R = .013, R^2 = 0.00$

Discussion of Results

(a) Anchoring and adjustment heuristics

The regression results point to a positive relationship between respondents' carrying out valuation in an unfamiliar terrain and the adoption of anchoring and adjustment heuristics. This is evidenced from the positive beta value of .089 and the positive correlation coefficient. The finding in respect of the direction of the relationship is therefore that the less a terrain is familiar to a valuer, the more he adopts anchoring and adjustment heuristics.

However, the R^2 value of .008 indicates that only 0.8% of the usage of anchoring and adjustment heuristics is explained by respondents' operation in unfamiliar terrain. Moreover, the p value of 0.251 (which is greater than 0.05) indicates that the relationship between dependent and independent variables is not significant at the 5% significance level and as such the regression relationship must be interpreted with caution.

(b) Availability Heuristics

The results point to a positive relationship between respondents' carrying out valuation in an unfamiliar terrain and the adoption of availability heuristics. This is evidenced from the positive beta value of 1.02 and the positive correlation coefficient. The conclusion is therefore that the less a terrain is familiar to a valuer, the more he adopts availability heuristics. However, the R^2 value of .010 indicates that only 1% of the usage of availability heuristics is explained by respondents' operation in unfamiliar terrain. Moreover, the p value of 0.102 (which is greater than 0.05) indicates that the relationship between dependent and independent variables is not significant at the 5% significance level and as such the relationship between both variables here must also be interpreted with caution.

(c) Representative heuristics

The conclusion from the positive beta and coefficient of correlation is that the more valuers carry out valuation in unfamiliar areas, the more the usage of representative heuristics. The R^2 value of .021 indicates that 2.1% of the usage of representative heuristics is expressed by respondents' operation in unfamiliar terrain. The p value of 0,59 indicates that the relationship between dependent and independent variables is not significant at the 5% significance level and the results must accordingly be handled circumspectly.

(d) Positivity Heuristics

The negative beta value (-.013) suggests that positivity heuristics is used more when respondents are carrying out valuation jobs in areas they are very familiar with. We note however that the R^2 value is .000, which means there is no correlation between the dependent and independent variables in this case. Moreover, the p value is .867 which is greater than 0.05 indicating that the relationship is not significant at the 5% level of significance; as such, the conclusions on the relationship between the variables must be treated circumspectly.

It is evident from the analysis above that the usage of three heuristics is evident in the study areas (though in a rather weak manner) in places where respondents are not so familiar with. This is a somewhat weak confirmation of the sixth a-priori expectation of the research. The exception is however different with positivity heuristics. Apparently, valuers do not stick to preconceived values in areas they are not familiar with.

5.6.2 Test of A-Priori Expectation 7

The seventh a-priori expectation suggests that the more complex the investment valuation model, the more the valuer resorts to simplifying shortcuts. To address this a-priori expectation, respondents were asked of the various investment valuation methods they employ, ranging from term and reversion method; layer/hardcore model; equivalent yield model; equated yield model; rational model and real value model in an ascending order of complexity as propounded by Trott (1986).

Table 5.30 Usage of the Various Models of Investment Valuation

Investment Methods of Valuation	Frequency of usage	Percentage (%)
Term and reversion Model	142	85.029
Layer/hardcore Model	3	1.79
Equivalent yield Model	21	12.57
Equated Yield Model	0	0
Rational Valuation Model	0	0
Real value Model	1	0.598

From the results in Table 5.30, the frequency of usage of these methods in ascending order of complexity is 142 (85.029%); 3 (1.79%); 21 (12.57%) and 1 (.598%) for term and reversion,

layer/hardcore model, equivalent yield and real value models. Respondents indicated no usage of equated yield model and rational valuation models.

The usage of the various methods of investment valuation (ranked according to complexity) was related (by means of regression analysis) with the usage of the various forms of heuristics. Table 5.31 provides the summary of results in this regard.

Table 5.31 Regression Relationships between Complexity of Valuation Model and Usage of Heuristics

Heuristic type	Regression equation	Coefficients of rank correlation & determination
Independent variable – Complexity of valuation model		
Anchoring & adjustment	$H = 2.793 - .137C$ ($p = .077$)	$R = -.137$, $R^2 = .019$
Availability	$H = 2.165 + .121C$ ($p = .119$)	$R = .121$, $R^2 = .015$
Positivity	$H = 2.358 + .013C$ ($p = .87$)	$R = .013$, $R^2 = 0.00$
Representative	$H = 2.316 + .011C$ ($p = .889$)	$R = .011$, $R^2 = .000$

Discussion of Results

(a) Anchoring and Adjustment

We see from the results that complexity of investment models has an inverse relationship with usage of anchoring and adjustment heuristics ($R = -.137$) due to the negative rank correlation value, meaning respondents will tend to adopt more of anchoring and adjustment heuristics when the investment method of valuation is less complex. From the R^2 value of .019, we note that only 1.9% of the usage of anchoring and adjustment heuristics is influenced by the complexity of investment methods of valuation adopted. The p value of .077 which is greater than 0.05 at the 5% significance level indicates that the relationship between both values are not significant at 5% and as such the regression relationship must be interpreted cautiously.

(b) Availability Heuristics

The relationship between the complexity of investment models and usage of availability heuristics is positive (.121) due to the positive Beta and rank correlation values. This means that the more complex the investment method of valuation used, the more availability heuristics is adopted. Such usage could be perhaps to reduce the complexity involved in the valuation. From the R^2 value of 0.015 it is noted that only 1.5% of the usage of availability heuristics is

influenced by the complexity of investment methods of valuation adopted. The p value of .119, which is greater than 0.05, indicates that we cannot be 95% confident of the absence of type 1 or 2 errors, meaning that here again, the relationship between the variables must be interpreted with caution.

(c) Positivity Heuristics

Due to the positive Beta Value (.013) and the positive R value, a positive relationship between the complexity of investment method used and the adoption of positivity heuristics is revealed. It is accordingly deduced that the positive relationships is such that the more complex the methods of investment valuations used, the more the usage of positivity heuristics. The explanation might be that valuers do not want to lose sight of their preconceived values in the midst of valuation complexity. However, from the R^2 value of .000, we deduce that there is no determination between the dependent and independent variables. The p value of .870 which is greater than 0.05 means that at the 5% significance level, the relationship between both values are not free from type 2 or two errors and as such the regression relationship between both values must be interpreted very circumspectly.

(d) Representative Heuristics

The relationship between dependent and independent variables is positive as revealed by the positive coefficient of correlation and Beta values. This indicates that the more complex the method of investment valuation adopted, the more the adoption of representative heuristics. This could again be explained by valuers' desire to avoid further complexity leading them to an inclination to stereotyping: ignoring slight differences such as different locations within the same locality; extra bathroom and toilet; larger plot size; bigger parking space; extra garage; better floor/wall finish.

From the R^2 value of .000, we deduce that there is nothing of the variation in the dependent variable is determined by the independent variables. The p value of .889 which is greater than 0.05 indicates that at the 5% significance level the relationship between both variables is not necessarily free from error and as such the relationship between both variables must be interpreted warily.

A analysis of all the above four results reveals that apart from the anchoring and adjustment heuristic regression relationship, all other relationships agree with the a-priori expectation that

the more the complexity in the investment method of valuation, the more the recourse to cognitive short-cut (heuristics). This conclusion is however not absolutely irrefutable in view of the high p values.

5.6.3 Test of the Eighth A-priori Expectation

The eighth a-priori expectation postulates that the more the availability of data on outgoings, rental evidence and yields (and so on) the less the resort to heuristic shortcuts. The proposition in other words is that with easy access to data for calculating investment method values, respondents will be less inclined to make use of heuristics.

To address the independent variable (availability of data) in this proposition, the ease of obtaining data was ranked by respondents on a 5-point ordinal scale ranging from 1 (representing data never available) to 5 (representing very much available). The tabulation of the responses in this regard is shown in Table 5.32.

Table 5.32 Frequency Distribution of the Availability of Data Used for Investment Valuation

	Never available (1)	Not easily available (2)	Indifferent (3)	Available (4)	Very much available (5)	Total
Availability of Data	84	16	31	2	34	167

The responses of each respondent in the above table (independent variable) were compared with their usage of heuristics (dependent variable) to form the regression relationships documented in Table 5.33 below.

Table 5.33 Regression Relationships between Availability of Investment Valuation Data and Usage of Heuristics

Heuristic type	Regression equation	Coefficients of rank correlation & determination
Independent variable – Availability of data		
Anchoring & adjustment	$H = 2.641 - .071A$ ($p = .361$)	$R = -.071^a$, $R^2 = .005$
Availability	$H = 2.343 + .040A$ ($p = .608$)	$R = .040^a$, $R^2 = .002$
Representative	$H = 2.359 - .009A$ ($p = .905$)	$R = -.009^a$, $R^2 = .000$
Positivity	$H = 2.340 + .027A$ ($p = .726$)	$R = .027^a$, $R^2 = .001$

Discussion of Results

a. Anchoring and Adjustment Heuristics

From Table 5.33, it is evident from the negative value of beta coefficient and the coefficient of rank correlation (-.071) that easy availability of data has a negative relationship with the usage of anchoring and adjustment heuristics. The interpretation is that the more the availability of investment valuation data, the less the usage of anchoring and adjustment heuristics. This is certainly reasonable: respondents should be expected to be less inclined to anchor and adjust from past valuations when they could easily employ easily available and current data to form more dependable valuations. The R^2 value of .005 indicates that only 0.5% percent of the usage of anchoring and adjustment heuristics is explained by availability of data. The p value of .361 (which is greater than 0.05) indicates that the relationship between the dependent and independent variables is not necessarily free from type 1 & 2 errors at the 5% level of significance; the relationship between the variables must accordingly be interpreted cautiously.

b. Availability heuristics

Table 5.33 reveals a positive relationship between availability of data and the usage of availability heuristics. This is evident from the positive beta and coefficient of rank correlation values (.040). The positive relationship is interpreted as meaning that the more the availability of data, the more respondents' use of availability heuristics. This result is reasonable, as availability heuristics by definition depends on readily available data such as rule of thumbs. The R^2 value of .002 indicates that 0.2% of the usage of availability heuristics is explained by the availability of data. The p value of .608 which is greater than 0.05 indicates that at the 5% significance level the relationship between dependent and independent variables might be subject to type 1 or 2 errors. and as such the results must be interpreted warily.

c. Representative Heuristics

Results from Table 5.33 point to a negative relationship between availability of data and the usage of representative heuristics. This is evident from the negative beta and coefficient of rank correlation values (-.009). We interpret this as meaning that the more data is available, the less the adoption of representative heuristics. This result is reasonable as it should be expected that increased market data would result in more valuation sensitivity to differences in comparable property rather than resulting in stereotyping. However, from the R^2 value of .000, we see that

nothing of the variation in the dependent is explained by the independent variables. The p value of .905 which is considerably greater than 0.05 indicates that at the 5% significance level the stated regression relationship is not necessarily free from type 1 or 2 errors. Taking the R^2 value and p value, we see that there is no real regression relationship.

d. Positivity Heuristics

A positive relationship is observable between availability of data and the adoption of positivity heuristics in Table 5. 33. This can be seen from the positive beta coefficient of (.027) and from the positive coefficient of rank correlation. The result means that with more data availability, there is an increased inclination of valuers to preconceive values prior to market calculations. This result also appears reasonable: apparently, when there is increased information on investment property, valuers have confidence in the accuracy of pre-conceived values arrived at through direct comparison before undertaking investment valuation calculations. The R^2 value of .001 indicates that only 0.1% percent of the usage of positivity heuristics is determined by availability of data. The p value of .726 which is greater than 0.05 indicates that at the 5% significance level, the regression relationship between dependent and independent variables is not conclusive and as such the relationship must be interpreted circumspectly.

5.6.4 Test of the Ninth A-Priori Expectation

The ninth a-priori expectation posits that the greater the level of post qualification experience of the valuer, the more he depends on heuristic shortcuts rather than on thorough market surveys. Post qualification experience in the above relationship was investigated through a variety of independent variables derived from respondents' demographic data: their level of academic and professional qualifications, age, years of experience and position in the firm. The influence of each of these on usage of heuristics was investigated separately.

1. Academic Qualification

The first independent variable considered under this a-priori expectation was academic qualification. The academic qualification of respondents, were measured on a 4-point nominal scale ranging from OND (Ordinary National Diploma) through to Ph.D. qualifications. The distribution of academic qualification of respondents is presented in Table 5.34

Table 5.34: The Academic Qualifications of Respondents

Educational Qualification	Frequency	Percent
HND	60	35.9
BSc	83	49.7
MSc	18	10.8
PhD	2	1.2
Total	167	100

The regression relationships between academic qualification and the usage of the various heuristics are as presented in Table 5.35

Table 5.35 Regression Relationships between Academic Qualification of Respondents and Usage of Heuristics

Heuristic type	Regression equation	Coefficients of rank correlation & determination
Independent variable – educational qualification		
Anchoring & adjustment	$H = 2.887 - .079E$ ($p = .310$)	$R = -.079, R^2 = .006$
Availability	$H = 2.382 + .006E$ ($p = .934$)	$R = .006, R^2 = .000$
Representative	$H = 2.968 - .140E$ ($p = .071$)	$R = -.140, R^2 = .020$
Positivity	$H = 2.932 - .145E$ ($p = .061$)	$R = -.145^a, R^2 = .021$

Discussion of Results

a. Anchoring and Adjustment Heuristics

Results from Table 5.35 reveal a negative relationship between academic qualification of respondents and the usage of anchoring and adjustment heuristics (the beta coefficient and coefficient of correlation are negative, that is, $-.079$). The regression relationship is interpreted as meaning that the greater the academic qualification of the respondents, the less they adopt anchoring and adjustment heuristics. The R^2 value of $.006$ indicates that only 0.6% of the usage of anchoring and adjustment heuristics is determined by educational qualification of respondents. The p value of $.310$ is greater than 0.05 meaning that at the 5% significance level, the relationship between both variables is not necessarily free from error.

b. Availability heuristics

A positive relationship between the educational qualification of respondents and the usage of availability heuristics is evident from a positive Beta coefficient value of $.006$. Accordingly, the higher the educational qualification of respondents, the more they adopt availability heuristics.

However, from the R^2 value of .000, we see that the variation in the dependent variable is not at all explained by the independent variable. Moreover, the p value of .934 is very much greater than 0.05 which indicates that at the 5% significance level, the relationship between the variables is not necessarily conclusive with respect to type 1 and 2 errors. The implication is that there is no reliable regression relationship between dependent and independent variables (based on the R^2 and p values).

c. Representative Heuristics

A negative relationship between the educational qualification of respondents and the usage of representative heuristics is evident from the negative beta coefficient and rank correlation coefficients of -.140. This means that the more educated the respondents, the less they adopt representative heuristics. The R^2 value of .020 indicates that 2% of the usage of representative heuristics is determined by educational qualification of respondents. The p value of .071 which is greater than 0.05 indicates that at the 5% significance level the relationship between both variables is not necessarily free from type 1 and 2 errors significant and as such the relationship must be interpreted circumspectly.

d. Positivity Heuristics

The negative coefficient of correlation and beta values of -.145 reveal a negative relationship between educational qualification of respondents and the usage of positivity heuristics. This means that the less educated respondents tend to adopt of positivity heuristics more. The R^2 value of .021 indicates that 2.1% of the usage of positivity heuristics is determined by educational qualification of respondents. The p value of .061 is greater than 0.05 meaning that at the 5% significance level the conclusions on the relationship between the variables is not necessarily free from error and accordingly, the relationship must be interpreted with caution.

The negative relationship between the usage of three heuristics and level of respondents' education means that the more educated valuers realize that usage of heuristics in place of thorough market surveys is erroneous. However, the contrary discovery with the usage of availability heuristics vis-à-vis level of respondents' education suggests that more education does not protect valuers from being guilty of positivity presumptions while carrying out valuation for heterogeneous properties.

2. Professional Qualifications

This section addresses the relationship between professional qualifications of the respondents (the third independent variable under the ninth a-priori expectation) and the usage of various types of heuristics. To measure the independent variable, respondents were asked to specify their highest professional qualification. in real estate professional practice in Nigeria/the Commonwealth. These qualifications were ranked in ascending order of magnitude beginning with Associate membership of the Nigerian Institution of Estate Surveyors and Valuers and ending with fellowship membership of the RICS. The ranking were as follows: ANIVS, RSV, FNIVS, MRICS and FRICS. The justification for this ranking is that any of the listed professional qualification s more or less a pre-requisite to the one preceding it. MRICS and FRICS though UK/Commonwealth qualifications, are not necessarily pre-requisites for practice in Nigeria but are apparently acquired for enhancement of professional status and practice in the Commonwealth. The RICS qualifications were ranked highest because it was assumed that anyone practicing in Nigeria acquiring such qualification, would have at least attained a Nigerian professional qualification.

The summary distribution of the professional status of the respondents (independent variable) is presented in Table 5.36 while the regression relationships are in Table 5.37.

Table 5.36 Frequency Distribution of the Professional Qualification of the Respondents

Professional Qualification of Respondents	Frequency	Percent
ANIVS	145	86.81
RSV	15	8.98
FNIVS	5	2.99
MRICS	2	1.2
FRICS	0	0
Total	167	100

Table 5.37 Regression Relationships between Professional Qualification of Respondents and Usage of Heuristics

Heuristic type	Regression equation	Coefficients of rank correlation & determination
Independent variable – Professional qualification		
Anchoring & adjustment	$H = 2.638 - .045P$ ($p = .565$)	$R = .045, R^2 = .002$
Availability	$H = 2.148 + .104P$ ($p = .181$)	$R = .104, R^2 = .011$
Representative	$H = 2.242 + .034P$ ($p = .659$)	$R = .034, R^2 = .001$
Positivity	$H = 2.343 + .016P$ ($p = .835$)	$R = .016, R^2 = .000$

Discussion of Results

a. Anchoring and Adjustment Heuristics

Table 5.37 reveals a negative relationship between usage of anchoring and adjustment heuristics, and the professional status of respondents. This is evident from a negative beta value of $-.045$. This means that the higher the professional qualification of the respondents the less they adopt anchoring and adjustment heuristics. The R^2 value of $.002$ indicates that 0.2% of the usage of anchoring and adjustment heuristics is explained by professional qualification of respondents. The p value of $.565$ is greater than 0.05 meaning that at the 5% significance level the stated relationship between variables are not necessarily free from error. The implication is that the relationship between the dependent and independent variables must be interpreted with caution.

b. Availability Heuristics

The positive beta coefficient value ($.104$) reveals a positive relationship between professional qualification of respondents and the usage of availability heuristics. This means that respondents with higher professional qualification adopt more of availability heuristics. The R^2 value of $.011$ indicates that 1.1% of the usage of availability heuristics is determined by professional qualification of respondents. The p value of $.181$ (which is greater than 0.05), indicates that we are not necessarily ninety-five per cent confident that the relationship between the variables is free from error. For this reason, the relationship must be interpreted circumspectly.

c. Representative Heuristics

A positive beta value of $.034$ indicates that the higher the professional status of the respondents the more recourse is made to the adoption of representative heuristics. The R^2 value of $.001$ indicates that only 0.1% of the usage of representative heuristics as being determined by

professional qualification of respondents. The p value of .659 which is greater than 0.05, indicates that the relationship between both variables are not significant at the 5% significance level and as such the relationship between both variables must be circumspectly interpreted.

d. Positivity Heuristics

It is evident from Table 5.37 (the positive beta value of .016) that the professional qualification of respondents has a positive relationship with the usage of positivity heuristics. Thus, the higher the professional attainment of respondents, the more recourse is made to the adoption of positivity heuristics. However, from the R^2 value of .000, it is clear that no percentage of the usage of positivity heuristics is determined by the professional attainment of respondents. The p value of .835 (which is greater than 0.05), indicates that the relationship between both variables is not necessarily free from error at the 5% significance level and as such the regression relationship between the variables must be interpreted warily.

In summary, we see that apart from anchoring and adjustment heuristics which has a negative correlation with increased professional qualification of respondents, all other heuristic types (availability, representative, and positivity) respectively have a positive relationship with the increased professional qualification of respondents. The conclusion is that the more qualified the valuer is, the more he adopts availability, representative, and positivity heuristics, but the less he adopts anchoring and adjustment heuristics. Apparently, as valuers increase in qualification and experience, they tend to depend more on such experience (represented by heuristics) and tend to depend less on market surveys - except with anchoring and adjustment. As variously stated however, these conclusions are not necessarily free from error at the 95% confidence level.

3. Age of Respondents

The third independent variable investigated under the ninth a-priori expectation was the age of the respondents. The age limits of respondents were measured on an interval scale in classes from 21-30, 31-40 through 51-60 and above 60 years of age. The expectation was that the older the respondents, the more they would rely on cognitive shortcuts.

The summary distribution of the age of respondents is given in Table 5.38 while the regression relationships between age of respondents and usage of heuristics are presented in Table 5.39.

Table 5.38: Distribution of the Age of Respondents

Age of respondents	Frequency	Percent
21-30	44	26.36
31-40	88	52.69
41-50	26	15.57
51-60	8	4.79
Above 60yrs	1	0.59
Total	167	100.0

Table 5.39 Regression Relationships between Age of Respondents and Usage of Heuristics

Heuristic type	Regression equation	Coefficients of rank correlation & determination
Independent variable – Age of Respondents		
Anchoring & adjustment	$H = 2.796 - .104A$ ($p = .183$)	$R = -.104, R^2 = .011$
Availability	$H = 2.469 - .023A$ ($p = .768$)	$R = .023, R^2 = .001$
Positivity	$H = 2.354 + .011A$ ($p = .887$)	$R = .011, R^2 = .000$
Representative	$H = 2.420 - .025A$ ($p = .747$)	$R = .025, R^2 = .001$

Discussion of Results

a. Anchoring and Adjustment Heuristics

There is a negative relationship between age of respondents and the usage of anchoring and adjustment heuristics (evident from the negative beta coefficient of $-.104$). This is interpreted as meaning that the older the respondents, the less they adopt anchoring and adjustment heuristics. The R^2 value of $.011$ indicates that 1.1% of the usage of anchoring and adjustment heuristics is expressed by the age of respondents. The p value is $.183$ which is greater than 0.05 . This means that the relationship between the variables is not necessarily conclusive at the 5% significance level. The implication is that the relationship between the variables must be interpreted circumspectly.

b. Availability Heuristics

The negative coefficient of correlation and beta coefficient of $-.023$ indicates a negative relationship between age of respondents and the usage of availability heuristics. This means that the older the respondents, the less they adopt availability heuristics. The R^2 value of $.001$ indicates that 0.1% of the usage of availability heuristics is explained by age of respondents. The p value of $.768$ is greater than 0.05 . This indicates that the relationship between the dependent

and independent variables is not necessarily free from type 1 and 2 errors at the 5% significance level, which means the regression relationship must be interpreted warily.

c. Positivity Heuristics

There is a positive relationship between age of respondents and the usage of positivity heuristics, evident from the positive beta coefficient of .011. Accordingly, we conclude that the older the respondents the more they adopt positivity heuristics. However, from the R^2 value of .000, it is evident that no variation in the dependent variable is caused by the independent variable. The p value of .887 is greater than 0.05 meaning that at the 5% significance level the relationship between both variables are not conclusive. The implication is that the regression relationship between the variables must be presented with caution.

d. Representative heuristics

A negative relationship between age of respondents and the usage of representative heuristics is revealed in Table 5.39 from the negative beta coefficient of -.025. Hence, the older the respondents the less they adopt representative heuristics. The R^2 value of .001 indicates that only 0.1% of the usage of availability heuristics is determined by age of respondents. The p value of .747 which is greater than 0.05 at the 5% significance level indicates that the relationship between the variables is not significant and as such the relationship between the variables must be handled circumspectly.

It is evident that apart from positivity heuristics, all other heuristic types have a negative relationship with the ages of valuers. Perhaps, since positivity heuristics is all about preconceived values, the certainty of prediction gets better with age which is synonymous with wisdom. On the contrary older valuers would not want to adopt the other heuristic types due to lack of certainty in predicting outcomes in the property market as older ones are known more for giving to details.

4. Years of Experience

The fourth independent variable investigated under the ninth a-priori expectation was the respondents' years of experience. The postulation was that the more years of experience of the respondents, the more the adoption of cognitive shortcuts (heuristics). The years of experience of the respondents were measured in classes from 1-5yrs, 6-10yrs, through to 21-25yrs and above

25yrs. The resulting distribution of the years of experience of the respondents is shown in Table 5.40 while the regression relationships between years of experience of the respondents and usage of heuristics are presented in Table 5.41

Table 5.40 Distribution of the Years of Experience of the Respondents

Years of Experience of Respondents'	Frequency	Percent
1-5yrs	83	49.7
6-10yrs	50	29.94
11-15yrs	20	11.98
16-20yrs	3	1.80
21-25yrs	7	4.19
Above 25yrs	4	2.39
Total	167	100.0

Table 5.41 Regression Relationships between Years of Experience of the Respondents and Usage of Heuristics

Heuristic type	Regression equation	Coefficients of rank correlation & determination
Independent variable – Years of Experience of Respondents		
Anchoring & adjustment	$H = 2.661 - .079Y$ ($p = .309$)	$-.079R = .0, R^2 = .006$
Availability	$H = 2.383 + .014Y$ ($p = .853$)	$R = .014, R^2 = .000$
Positivity	$H = 2.119 + .157Y$ ($p = .043$)	$R = .157, R^2 = .025$
Representative	$H = 2.358 - .009Y$ ($p = .912$)	$R = .009, R^2 = .000$

Discussion of Results

a. Anchoring and Adjustment

Table 5.41 reveals a negative relationship between years of experience of respondents and the usage of anchoring and adjustment. This is indicated from the negative beta value (-.079). This result means respondents who have been in practice for longer periods adopt less of anchoring and adjustment. The R^2 value of .006 indicates that 0.6% of the usage of anchoring and adjustment heuristics is determined by respondents' years of experience. The p value of .309 which is greater than 0.05, indicates that the relationship between the variables is not necessarily free from type 1 and 2 errors at the 5% significance level, with the implication that the relationship between the variables must be interpreted with caution.

b. Availability Heuristics

Table 5.41 reveals a positive relationship between the years of experience of respondents and the usage of availability heuristics, as evident from the positive beta value (.014). It is accordingly deduced that respondents' with longer years of experience make more recourse to availability heuristics. From the R^2 value of .000, it is deduced that the variation in the dependent is not explained to any degree by the independent variable. The p value of .853 is greater than 0.05 which indicates that the relationship between both variables is not conclusive at the 5% significance level. Accordingly, based on the R^2 and p values, there is no real or reliable relationship between the variables.

c. Positivity Heuristics

The positive beta value of .157 in Table 5.41 indicates a positive relationship between years of experience of the respondents and usage of positivity heuristics. This means that the more experienced the respondents are, the more they apply positivity heuristics in investment valuation. The R^2 value of .025 indicates that 2.5% of variation in usage of positivity heuristics is determined by respondents' years of experience. The p value of .043 is greater than 0.05 which indicates that the relationship between the variables is not free from error at the 5% significance level. The implication is that the relationship must be interpreted warily.

d. Representative Heuristics

The relationship between representative heuristics and the years of experience of respondents in Table 5.41 is negative (based on the negative beta value of -.009). The interpretation is that respondents with more years of experience adopt less of availability heuristics in investment valuation. From the R^2 value of .000, the variation in the dependent variable is not at all determined by the independent variable. Moreover, the p value of .912 is greater than 0.05, which indicates that the relationship between the variables is not statistically conclusive at the 5% significance level. The R^2 and p values show that there is no relationship between the variables.

In summary, apart from anchoring and adjustment heuristics, other heuristic types have a positive relationship with the years of experience (there is no relationship for representative heuristics). Generally speaking therefore, the more the years of experience, the more the

adoption of heuristics. This suggests that the more experienced valuers get, the more they rely on such experience in determining values (using heuristic shortcuts) rather than on market surveys.

5. Status of Respondents in the Various Firms

The fifth factor considered under the ninth a-priori expectation was the effect of the position of the respondents in their firm (independent variable) on the usage of the various types of heuristics (dependent variable). The independent variable was measured by classifying the cadre of the respondents on an increasing order of status 3-point ordinal scale starting from Estate Surveyor to Head of Valuation Department and finally to Partner in the firm.

The distribution of the status of respondents in the various firms is provided in Table 5.42 while the regression relationships between status of respondents in the various firms and usage of heuristics is presented in Table 5.43.

Table 5.42: The Status of Respondents in the Various Firms

Position of respondents in firms	Frequency	Percent
Surveyors	105	62.87
Head, Valuation	37	22.16
Partners	25	14.97
Total		167

Table 5.43 Regression Relationships between Status of Respondents in the Various Firms and Usage of Heuristics

Heuristic type	Regression equation	Coefficients of rank correlation & determination
Independent variable – Status of respondents in the firm		
Anchoring & adjustment	$H = 2.755 - .105S$ ($p = .178$)	$R = .105^a$, $R^2 = .011$
Availability	$H = 2.215 + .086S$ ($p = .270$)	$R = .086^a$, $R^2 = .007$
Positivity	$H = 2.323 + .028S$ ($p = .723$)	$R = .028^a$, $R^2 = .001$
Representative	$H = 2.502 - .062S$ ($p = .427$)	$R = .062^a$, $R^2 = .004$

Discussion of Results

a. Anchoring and Adjustment

The negative beta value derived for the relationship between usage of anchoring and adjustment and status of respondents (-.105) means that valuers in lower positions adopt anchoring and adjustment heuristics more. This could perhaps be as a result of access to details of past

valuation figures by the lower cadre surveyors in the firm. The R^2 value of .011 indicates that 1.1% of the usage of anchoring and adjustment heuristics is explained by status of respondents. The p value of .178 (which is greater than 0.05), indicates that the relationship between the dependent and independent variables is not significant at the 5% significance level and accordingly, the relationship between the variables must be interpreted with caution.

b. Availability Heuristics

The positive beta value derived (.086) means that the higher cadre (partners) in the firm adopt more availability heuristics than the lower cadre surveyors. This could perhaps be because partners in firms have more access to available rules of thumb for valuation. The R^2 value of .007 indicates that 0.7% of the variation in usage of availability heuristics is explained by the status of respondents. The p value of .270 (which is greater than 0.05), indicates that the relationship between the variables is not statistically significant at the 5% significance level. The implication is that the relationship between the variables must be interpreted circumspectly.

c. Representative heuristics

The negative beta value (-.062) means that representative heuristics is adopted more by the lower cadre surveyors. The reason could be that these surveyors find it easier to identify prototype properties. The R^2 value of .004 indicates that 0.4% of the usage of representative heuristics is explained by status of respondents. The p value of .427 which is greater than 0.05 indicates that the relationship between both variables are not significant at the 5% significance level with the implication that the relationship between the variables must be interpreted warily.

d. Positivity Heuristics

Based on the positive beta value of .028, we surmise that positivity heuristics is used more by partners in firms than by their lower status counterparts. This might perhaps be explained by partners being more confident in preconceiving values based on their previous predictive experience in the market. The R^2 value of .001 indicates that 0.1% of variation in the usage of positivity heuristics is explained by status of respondents. However, the p value of .723 (which is greater than 0.05), indicates that the relationship between the variables are not decisive at the 5% significance level and as such the relationship between the variables must be interpreted with caution.

5.6.5 Test of the Tenth A-priori expectation

The tenth a-priori expectation examines the relationship between the level of assumptions made by valuers (the independent variable) and their usage of heuristics (the dependent variable). The proposition is that the greater the level of assumptions made by the valuer (in place of actually verifying issues), the more he depends on heuristic shortcuts.

To measure the independent variable, the level of assumptions made in investment valuations by valuers was graded on a 5-point ordinal scale from no assumptions made to substantial assumptions are always made. Table 5.44 provides the distribution of responses in this regard.

Table 5.44 Distribution of the Level of Assumption made by Respondents

Level of Assumption	Frequency	Percent
Never assume	18	10.78
Rarely assume	46	27.55
Assume sometimes	49	29.34
Assume most times	41	24.55
Assume always	13	7.78
Total	167	100.0

. Table 5.45 below shows the relationship between the level of assumption made by valuers and the usage of the various heuristics

Table 5.45 Regression Relationships between the Level of Assumption made by Valuers and Usage of Heuristics

Heuristic type	Regression equation	Coefficients of rank correlation & determination
Independent variable – Level of assumption made by valuers		
Anchoring & adjustment	$H = 2.491 + .016L$ ($p = .842$)	$R = .016^a$, $R^2 = .000$
Availability	$H = 2.267 + .050L$ ($p = .525$)	$R = .050^a$, $R^2 = .002$
Positivity	$H = 2.817 - .156L$ ($p = .044$)	$R = .156^a$, $R^2 = .024$
Representative	$H = 2.409 - .021L$ ($p = .792$)	$R = .021^a$, $R^2 = .000$

Discussion of Results

a. Anchoring and Adjustment Heuristics

The positive beta value ($=0.016$) indicates that there is a positive relationship between the level of assumptions made by valuers and the usage of anchoring and adjustment heuristics. From the

R^2 value of .000, we deduce that none of the variation in usage of anchoring and adjustment heuristics is explained by level of assumptions made. The p value of .842 is much greater than 0.05 meaning that at the 5% significance level the relationship between the variables is not free from type 1 and 2 errors. The R value and the p values taken together indicate that in this case, the regression relationship is both unreliable and inconclusive.

b. Availability Heuristics

From the positive beta value of .050, in Table 5.45, we deduce that there is a positive relationship between the level of assumption made by the respondents and the usage of availability heuristics. This appears reasonable because the use of availability heuristics is itself a use of rule of thumb assumptions. The R^2 value of .002 indicates that 0.2% of the usage of availability heuristics is explained by the level of assumptions made by respondents. The p value of .525 is greater than 0.05 meaning that the relationship between dependent and independent variables is not conclusive. The implication is that the relationship between the variables must be interpreted with caution.

c. Representative Heuristics

The negative beta value of -.021 in Table 5.45 indicates a negative relationship between the levels of assumptions made by the respondents and the usage of representative. This signifies that the more the level of assumptions made by the respondents, the less the adoption of representative heuristics. Perhaps the explanation might be that assumptions are seen as varied for different stereotype properties. From the R^2 value of .000, we deduce that none of the variation in the dependent variable is explained by the independent variable. The p value of .792 is greater than 0.05 meaning that at the 5% significance level the relationship between the variables is not necessarily error free. The implication is that the regression relationship must be treated circumspectly.

d. Positivity Heuristics

From the negative beta value of -.156, we deduce that the more the assumptions made by respondents the less the adoption of positivity heuristics. The R^2 value of .024 indicates that 2.4% of the usage of positivity heuristics is explained by the level of assumptions of respondents. The p value of .044 is greater than 0.05 which indicates that the relationship between the variables is not conclusive at the 5% significance level.

5.6.6 Test of the Eleventh A-Priori Expectation

The eleventh a-priori expectation examines three attributes of respondent estate surveying firms (age, location, and size) as potential factors affecting the usage of heuristics. Each of these potential factors is examined as an independent variable in regression relationships against the usage of heuristics.

1. Age of Firm

The age of firms was measured on a progressive ordinal scale from 1-5yrs; 6-10yrs; through to 21-25yrs and finally to above 25yrs. Table 5.46 presents the distribution of the age of firms

Table 5.46 Distribution of the Age of Firms

Age of firm	Frequency	Percent
1-5yrs	32	19.16
6-10yrs	31	18.56
11-15yrs	28	16.77
16-20yrs	32	19.16
21-25yrs	19	11.38
Above 25yrs	25	14.97
Total	167	100.0

The regression relationships between the age of the firms and the usage of the various types of heuristics are presented in Table 5.47.

Table 5.47 Regression Relationships between Age of Firms and Usage of Heuristics

Heuristic type	Regression equation	Coefficients of rank correlation & determination
Independent variable – Age of firm		
Anchoring & adjustment	$H = 2.724 - .095A$ ($p = .222$)	$R = .095^a$, $R^2 = .009$
Availability	$H = 2.672 - .125A$ ($p = .108$)	$R = .125^a$, $R^2 = .016$
Positivity	$H = 2.391 - .004A$ ($p = .961$)	$R = .004^a$, $R^2 = .000$
Representative	$H = 2.639 - .121A$ ($p = .121$)	$R = .121^a$, $R^2 = .015$

Discussion of Results

a. Anchoring and Adjustment Heuristics

We deduce from the negative beta value of $-.095$ in the first regression relationship in Table 5.47 that younger firms are more inclined to adoption of anchoring and adjustment heuristics. The R^2

value of .009 indicates that 0.9% of the usage of anchoring and adjustment heuristics is explained by age of firm. The p value of .222 (which is greater than 0.05), means that the relationship between the variables is not necessarily free from type 1 or 2 error at the 5% significance level, with the implication that the regression relationship must be interpreted warily.

b. Availability Heuristics

Based on the negative beta value of -.125, we deduce that younger firms are more inclined to adoption of availability heuristics. The R^2 value of .016 indicates that 1.6% of variation in the usage of availability heuristics is explained by age of firm. The p value of .108 is greater than 0.05 meaning that the relationship between both variables is not significant at the 5% significance level and accordingly, the relationship between the variables must be interpreted with caution.

c. Representative Heuristics

Table 5.47 reveals a negative Beta value (-.121) for representative heuristics, which is interpreted as meaning that older firms employ representative heuristics more than younger firms. The R^2 value of .015 indicates that 1.5% of the usage of representative heuristics is explained by age of firm. The p value of .121 is greater than 0.05 which indicates that the relationship between the variables is not significant at the 5% significance level. The implication is that the relationship between the variables must be interpreted circumspectly.

d. Positivity Heuristics

The negative beta value of -.004 is indicative of a negative relationship between the age of firm and the adoption of positivity heuristics. This means that younger firms are more inclined to the use of positivity heuristics. From the R^2 value of .000, we deduce that nothing in the variation in the dependent variable is explained by the independent variables. The p value of .961 (which is much greater than 0.05) means that the relationship between the variables is not necessarily statistically conclusive at the 5% significance level. The implication of the zero R^2 and high p values is that the regression relationship in this case is both unreliable and inconclusive.

In summary, taking all the four regression relationships together, it is clear that the younger firms adopt all the heuristics more than the older firms. The greater use of heuristic shortcuts suggests that younger firms are often more in a hurry to complete valuation assignments than older firms,

which might further suggest that younger firms might be more inaccurate in their valuation conclusions. In interpreting the results however, we must reiterate that none of the conclusions is necessarily free from error at the 5% level of significance.

2. Location of Firms

The second indicative factor employed to examine the eleventh a-priori expectation (the relationship between attributes of respondent estate surveying firms and usage of the various types of heuristics) was the location of the firms. To measure the location of firms, firms were grouped on a 3 point scale based on their location: Lagos, Abuja and Port Harcourt. Lagos the commercial nerve centre of the country where most valuation jobs are being carried out was ranked 3. Abuja being the administrative capital of the country with several government valuation jobs was ranked 2. Port-Harcourt locations were ranked 1. Table 5.48 presents the summary distribution of location:

Table 5.48: Distribution of the Location of the Firms:

Location	Frequency	Percentage
Port-Harcourt	23	13.77
Abuja	25	14.97
Lagos	119	71.26
Total	167	100.0

Table 5.49 presents regression relationships between location of firms and usage of heuristics

Table 5.49 Regression Relationships between Location of Firms and Usage of Heuristics

Heuristic type	Regression equation	Coefficients of rank correlation & determination
Independent variable – Location of Firms		
Anchoring & adjustment	$H = 2.063 + .128L$ ($p = .100$)	$R = .128^a$, $R^2 = .016$
Availability	$H = 2.173 + .060L$ ($p = .439$)	$R = .060^a$, $R^2 = .004$
Positivity	$H = 2.051 + .087L$ ($p = .264$)	$R = .087^a$, $R^2 = .008$
Representative	$H = 1.682 + .146L$ ($p = .060$)	$R = .146^a$, $R^2 = .021$

Discussion of Results

a. Anchoring and Adjustment Heuristics

The positive beta value of .128 is indicative of a positive relationship between location of firms and the usage of anchoring and adjustment heuristics. We deduce accordingly that Lagos firms

are more inclined to the use of anchoring and adjustment heuristics than those in smaller commercial centers like Abuja and Port Harcourt. The R^2 value of .016 indicates that 1.6% of the usage of anchoring and adjustment heuristics is explained by location of firms. The p value of .100 is greater than 0.05 meaning that at the 5% significance level the relationship between the variables are not necessarily conclusive and accordingly the relationship between the variables must be treated circumspectly.

b. Availability Heuristics

In Table 5.49 we see a positive beta value of .060 in the regression relationship between the location of firms and the usage of availability heuristics. This means that valuers in a commercially big location like Lagos are more inclined to adopt availability heuristics than those in smaller commercial centers like Abuja and Port Harcourt. The R^2 value of .004 indicates that 0.4% of the usage of availability heuristics is explained by location of firms. The p value of .439 (which is greater than 0.05), indicates that the relationship between both variables are not conclusive at the 5% significance level, with the implication that the relationship between the variables must be interpreted with caution.

c. Representative Heuristics

The positive beta value (.146) in Table 5.49 is indicative of a positive relationship between representative heuristics and the location of firms. This means that in commercially larger locations like Lagos, valuers make more use of representative heuristics. The R^2 value of .021 indicates that 2.1% of the usage of representative heuristics is explained by location of firms. The p value (.060) is greater than 0.05 which indicates that the relationship between the dependent and independent variables is not conclusive at the 5% significance level. The implication is that the regression relationship between the variables must be interpreted warily.

d. Positivity Heuristics

A positive relationship is evident between the location of firm and the usage of positivity heuristics (beta value = .087). This means that in commercially larger locations like Lagos, valuers are more inclined to adopt positivity heuristics than their counterparts in smaller commercial locations. The R^2 value of .008 indicates that 0.8% of the usage of positivity heuristics is explained by location of firms. The p value of .264 is greater than 0.05 meaning that

at the 5% significance level, the relationship between the variables is not significant. The regression relationship must accordingly be interpreted with caution.

In summary, it is evident that valuers practicing in commercially larger locations make more recourse to all four heuristics. This suggests that valuers practicing in such locations are busier and accordingly might have less time to undertake thorough market surveys and might therefore possibly be undertaking less accurate valuations. We must reiterate however that based on the pervasively large p values in all four regression relationships, we cannot be entirely certain that this conclusion is not free from error.

3. Size of the Respondents' Firms

The third and last factor employed to examine the eleventh a-priori expectation (the relationship between attributes of respondent estate surveying firms and usage of the various types of heuristics) is the size of the respondents' firms. In this study, two indicators are employed to represent the size of firm: the number of branches the firm has and the number of estate surveyors and valuers in the employ of the firm. The more the number of branches and the number of surveyors that work in each firm, the bigger the size of the firm and vice-versa

3a Number of Branches of Firm

The number of branches of the firm was measured on a 6-point interval scale graded from 1 branch through to 5 branches and finally to above 5 branches. Table 5.50 presents the distribution of the number of branches of the firms.

Table 5.50 Frequency Distribution of the Number of Branches of Firms

Number of Branch(es)	Frequency	Percentage
1	138	82.63
2	16	9.58
3	3	1.79
4	6	3.60
5	2	1.20
Above 5	2	1.20
Total	167	100.0

In the table we see that most of the firms (82.63%) have just one branch, meaning that most firms are operating on a small scale. The regression relationships between the number of branches firms have and their usage of the various heuristic types is presented in Table 5.51.

Table 5.51 Regression Relationships between Number of Branches of Firms and Usage of Heuristics

Heuristic type	Regression equation	Coefficients of rank correlation & determination
Independent variable – Number of Branches of Firms		
Anchoring & adjustment	$H = 2.354 + .119B$ ($p = .124$)	$R = .119^a$, $R^2 = .014$
Availability	$H = 2.198 + .133B$ ($p = .088$)	$R = .133^a$, $R^2 = .018$
Positivity	$H = 2.357 + .017B$ ($p = .830$)	$R = .017^a$, $R^2 = .000$
Representative	$H = 2.480 - .075B$ ($p = .333$)	$R = .075^a$, $R^2 = .006$

Discussion of Results

a. Anchoring and Adjustment Heuristics

It is evident from Table 5.51 that a positive relationship exists between number of firms and the usage of anchoring and adjustment heuristics. The positive beta value of .119 indicates that the more the branches a valuation firm has, the more the usage of anchoring and adjustment heuristics. The R^2 value of .014 indicates that 1.4% of the usage of anchoring and adjustment heuristics is determined by number of branches of estate surveying firms. The p value of .124 is greater than 0.05, which indicates that the relationship between the variables is not necessarily error free at the 5% significance level and accordingly the relationship between the variables must be interpreted with caution.

b. Availability Heuristics

The relationship between the number of branches of estate surveying firms and the usage of availability heuristics is positive as is evident from the positive beta value of .133. We accordingly deduce that estate surveying firms that operate with more branches are more inclined to the adoption of availability heuristics. The R^2 value of .018 indicates that 1.8% of the usage of availability heuristics is explained by number of branches of estate surveying firm. The p value of .088 is greater than 0.05 meaning that the relationship between the variables is not necessarily free from type 1 & 2 errors at the 5% significance level. Accordingly, the relationship between the variables must be interpreted circumspectly.

c. Representative Heuristics

Table 5.51 reveals a negative relationship between the numbers of branches of firms and the usage of representative heuristics, as evident from the negative beta value of -.075. This means that firms with fewer branches are more inclined to adopt representative heuristics in investment

valuation than firms with more branches. The R^2 value of .006 indicates that 0.6% of the usage of anchoring and adjustment heuristics is explained by number of branches. The p value of .333 is greater than 0.05 indicating that the relationship between the variables is not necessarily conclusive at the 5% significance level. This implies that the relationship between the variables must be interpreted warily.

d. Positivity Heuristics

The positive beta value of .017 infers a positive relationship between the usage of positivity heuristics and the number of branches of estate surveying firm. This means that firms that operate more branches have a higher tendency to usage of positivity heuristics. However, from the R^2 value of .000, we deduce that nothing of the variation in usage of heuristics is explained by number of branches. The p value of .830 which is greater than 0.05 indicates that at the 5% significance level, the relationship between the variables is not necessarily conclusive. The zero R value and the very high p value mean the regression relationship in this case is both unreliable and inconclusive and as such this regression relationship must be regarded as very suspicious.

3b Number of Surveyors in the Employ of firms

The number of surveyors in the firm was measured on a 6-point interval scale grouped from 1-5 through to 21-25 and finally to above 25 surveyors. Table 5.52 provides the distribution of the number of estate surveyors in the employ of respondent firms.

Table 5.52 The Number of Estate Surveyors in the Employ of Firms

Number of surveyors in employ of Firms	Frequency	Percent
1-5	76	45.51
6-10	40	23.95
11-15	14	8.38
16-20	4	2.40
21-25	12	7.19
Above 25	21	12.57
Total	167	100.0

The regression relationships of the number of surveyors in the employ of firms vis-à-vis the usage of the various heuristics is presented in Table 5.53

Table 5.53 Regression Relationships between Number of Surveyors in the Employ of Firms and Usage of Heuristics

Heuristic type	Regression equation	Coefficients of rank correlation & determination
Independent variable – number of surveyors in the employ of firms		
Anchoring & adjustment	$H = 2.323 + .150S$ ($p = .053$)	$R = .150^a$, $R^2 = .023$
Availability	$H = 2.055 + .239S$ ($p = .002$)	$R = .239^a$, $R^2 = .057$
Representative	$H = 2.472 - .076S$ ($p = .328$)	$R = .076^a$, $R^2 = .006$
Positivity	$H = 2.284 + .069S$ ($p = .379$)	$R = .069^a$, $R^2 = .005$

Discussion of Results

a. Anchoring and Adjustment Heuristics

Table 5.53 reveals a positive relationship between the numbers of estate surveyors in the employ of firms and the usage of anchoring and adjustment heuristics. This is evident from the positive beta value of .150 derived in the regression analysis. The implication is that the more surveyors in the employ of firms, the more the usage of anchoring and adjustment heuristics. The R^2 value of .023 indicates that 2.3% of the usage of anchoring and adjustment heuristics is explained by number of estate surveyors in the employ of firms. The p value of .053 (which is greater than 0.05) indicates that the relationship between the variables are not necessarily free from type 1 & 2 errors at the 5% significance level which implies that the relationship between both variables must be interpreted circumspectly.

b. Availability Heuristics

The positive beta value (.239) indicates a positive relationship between the number of surveyors in the employ of firms and the usage of availability heuristics. This means that firms that employ more surveyors are more inclined to the use of availability heuristics. The R^2 value of .057 indicates that 5.7% of the usage of availability heuristics is explained by the number of surveyors in the employ of firms. The p value is .002 which is greater than 0.05 meaning that at the 5% significance level the relationship between the variables is not of necessity conclusive.

c. Representative Heuristics

It is evident from Table 5.53 that a negative relationship exists between the number of estate surveyors in the employ of firms and the usage of representative heuristics (the beta value is -.076). This is interpreted as meaning that firms that have fewer valuers in their employ adopt

more of representative heuristics. The R^2 value of .006 indicates that 0.6% of the usage of representative heuristics is explained by the number of valuers in employ. The p value of .328 (which is greater than 0.05) indicates that the relationship between the variables is not necessarily free from error and as such the relationship between the variables must be interpreted with caution.

d. Positivity Heuristics

The positive beta value of .069 indicates a positive relationship between the number of surveyors in the employ of firms and the usage of positivity heuristics. Accordingly, the more the valuers employed in firms, the more the adoption of positivity heuristics. The R^2 value of .005 indicates that 0.5% of the usage of positivity heuristics is explained by the number of valuers employed. The p value of .379 is greater than 0.05 meaning that the relationship between the variables is not necessarily conclusive and for this reason the regression relationship must be interpreted warily.

In summary, based on the results presented in Tables 5.51 and 5.53 we see (generally speaking), that the larger the number of branches and larger the number of employed surveyors a firm has, the more the use of heuristics (the singular exception to this rule is with representative heuristics where a negative relationship is observed). If usage of heuristics is linked to inaccuracy, then, this might suggest that the larger the firm, the more the potential for inaccuracy. It must be reiterated that the regression based conclusions established above are not fully conclusive at the 5% significance level due to the high p values.

5.7 Effects of Heuristics in Valuation Accuracy/Consistency

The focus in this section is on the fourth objective. The fourth objective investigates the effect of the usage of heuristics on property valuation accuracy. Four a-priori expectations (that is, a-priori expectations 11-14) were defined to address this objective.

The approach to investigating this objective was to first identify recently sold 'control' properties in each of the study areas. Second, respondents were asked to value these properties using each of the four types of heuristics. The third step involved asking respondents to carry out a fifth valuation, this time with supplied current market data. The fourth step involved examining the accuracy of valuations carried out using heuristic data relative to the accuracy of valuations carried out using market data. In both instances, the control properties were taken as the standard

for accuracy. The t-test at the 95% confidence interval was employed to test for inaccuracy in heuristically determined values relative to the sale values (values of the 'control' properties).

In the first step, recently sold/valued properties were identified in each of the study areas: Lagos, Abuja and Port Harcourt. Six of such properties were identified in Lagos metropolis because of the very large size of this market. In each of the Abuja and Port-Harcourt study areas, one recently sold property was identified.

In the second step, respondents were asked if they were aware of any property comparable to the one being valued that was earlier sold/valued within a space of one to two years. If yes, they were asked how much it was sold or valued for. They were then requested to undertake a percentage adjustment of the historic figure to present day value. The resultant value was their valuation by means of anchoring and adjustment. With regard to availability heuristics, they were asked for the most available rule of thumb yields, rental evidence, and outgoings. The resultant value from the use of such availability rates was their valuation by means of availability heuristics. In similar procedures, respondents were guided to determine most optimistic capital value which produced valuations by means of positivity heuristics. Then, to deduce respondents' valuations by means of representative heuristics, the respondents were asked to value the control properties by reference to the value of almost similar stereotype properties ignoring differences in finishes, plot sizes etc.

In the third step, respondents were required to carry out a valuation of the 'control' property by means of current market data supplied by the researcher's market survey. (NB: Suffice it to state here that the researcher's current market data supplied has taken cognisance of the seven steps involved in carrying out valuation (UK) or the six steps adopted in the (US) in order to arrive at the normative judgement (Diaz, 2002). This is contrary to the adoption of the cognitive shortcut (Heuristics).

Table 5.54 provides some details of the identified 'control' properties, including their descriptions, sale price, and date of sale.

Table 5.54 Details of the Control Properties

Area	Property Description	Extra Features	Sale Price (₦M)	Date of sale/valuation
Apapa	2 (Nos) 2 bedroom flat on a land of 300M ² on Calcutta Crescent	Two toilets each, fenced Paved compound, glazed aluminum doors and windows, PVC ceiling, wall paint finishing and paved floor	38M	March, 2010
Ikeja	7 Bedroom Detached House on 2000M ² land in GRA	Five toilets, fenced paved compound, glazed aluminum doors and windows, PVC ceiling, ceramic floor tiles and wall paint finishing	200M	August 2010
Ikoyi	acre of land of about 4000M ² on Bedwell Avenue	Fenced compound	800M	February 2011
Lagos Island	dilapidated tenement structure on 530M ² of land on Campus Street	Fenced and paved compound	120M	February 2010
Victoria Island	5 Bedroom Detached House on a 600M ² piece of land on Adeyemo Alakiya Street	Five toilets, fenced compound with interlocking tiles, Glazed aluminum sliding doors and windows, Pop ceiling, ceramic floor tiles, text coat wall paint finish	250 M	November, 2010
Yaba/Surulere	6 (Nos) 3 bedroom flat on a land of 600M ² at Mc Meil Street yaba	three toilets each, fenced in a paved compound, Victorian panel doors and louver windows, paved floors, wall paint finish	90M	June 2010
Abuja	2 Bedroom Bungalow on a 450M ² around Jabi	Two toilets, fenced in a paved compound, flush doors and louver windows, pvc floor tiles and asbestos ceiling	35M	April 2010
Port Harcourt	4 Bedroom Detached House on a 300M ² in Trans-Amadi	Three toilets, fenced in a paved compound, panel doors and aluminum sliding windows, terrazzo floor tiles and asbestos ceiling	35M	November 2009

Not all the respondents participated in the various valuation tasks. This was often because of inability to do so. For example, some of them had no recollection of any recent sale/valuation

that fit the description of the subject property and for that reason could not value the control property using anchoring and adjustment heuristics.

In the fourth step, the t-test (at the 95% confidence interval) was employed to test for inaccuracy in heuristically determined values relative to the sale values (values of the ‘control’ properties). The t-test compares mean values of two sets of data. In this case, the t-test was used to test the proposition that the variances of the two groups (valuations and sale prices) were statistically equal, with equality being indicative of accuracy. Table 5.55 presents the SPSS determined results in his regard.

Table 5.55 T-test Results on the Accuracy of Heuristic and Market Data Valuations Relative to Sale Prices

Test	Null t-test proposition	t-statistic	P value	Conclusion	Accept/reject decision
To test for Accuracy of Anchoring and adjustment valuations	No difference between Anchoring and adjustment valuations and sale prices	-1.948	.055 This is above 0.05, though marginally	Variances between the two groups of data are somewhat equal	Accept null proposition at the 5% level of significance but not at higher levels such as the 6% level
To test for accuracy of availability heuristic valuations	No difference between Availability valuations and sale prices	-1.948	.016 This is below 0.05	Variances between the two groups of data are not equal	Reject hypothesis at the 5% level of significance
To test for accuracy of representative heuristic valuations	No difference between Representative valuation and sale prices	-2.666	.009 This is below 0.05	Variances between the two groups of data are not equal	Reject null proposition at the 5% level of significance
To test for accuracy of positivity heuristic valuations	No difference between Positivity valuation and sale prices	-1.354	.179 This is above 0.05, though marginally	Variances between the two groups of data are equal	Accept null proposition at the 5% level of significance but not at higher levels such as 18%

To test for accuracy of market data valuations	No difference between Market data valuation and sale prices	.288	.774 This is very substantially above 0.05,	Variances between the two groups of data are clearly equal	Accept null proposition at the 5% level of significance
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In interpreting the above tabular analysis, we must note that with the t-test, the smaller the p value, the greater the variance between the two groups of data (that is, the smaller the p value, the more inaccurate the valuation). Accordingly, we deduce from the above results that valuations conducted through representative and availability heuristics are inaccurate relative to the sale prices at the 5% level of significance since their p values are lower than 0.05. However, valuations conducted through anchoring and adjustment or through positivity heuristics are somewhat accurate at the 5% level, though only marginally so since their p values are just marginally above 0.05. On the other hand, valuations conducted with current market data are very accurate (their p value was 0.774 which is very considerably higher than 0.05). Relating these results to a-priori expectations 12 to 15, it is clear that all these four expectations are substantially validated: the more the use of heuristics, the higher the incidence of inaccuracy, particularly for representative and availability heuristics.

As a matter of curiosity, the ANOVA F-Test was calculated to evaluate the accuracy of the four heuristic valuations relative to each other. The results are presented in Table 5.56.

Table 5.56 F-Test Results on the Relative Consistency of Heuristic Valuations

	F-statistic	P value
Anchoring and adjustment valuation	60.055	.000
Availability heuristics valuation	88.285	.000
Representative heuristics valuation	116.916	.000
Positivity heuristics valuation	76.128	.000

Table 5.56 above reveals p values that are all below 0.05. We accordingly deduce that the use of cognitive shortcuts (heuristics) in the conduct of valuations results is not only inaccuracy (from Table 5.55) but also inconsistent with valuations determined through other heuristics (Table 5.56).

CHAPTER SIX

IMPLICATION OF FINDINGS

6.1 Introduction

The intention in this chapter is to articulate and synchronize the mass of data derived in the last chapter into manageable results for each of the objective/a-priori expectations and when this is achieved, to interpret the results with an eye on policy implications.

6.2 Examination of the Occurrence of the Four Heuristics in Nigerian property Valuation Practice

This section pertains to the first objective. The objective was to examine whether valuers are influenced by availability, positivity and representative heuristics in property valuation practice in the study areas. A-priori expectations 1-4 were postulated in this regard. The results obtained on this objective are summarized in Table 6.11 below

Table 6.11: Summary of Results on Objective One

Propositions	Indicators	Finding
A-Priori expectation 1 Valuers anchor on prior valuations (in the conduct of present valuations) and adjust such anchors in an effort to bring them up to date.		A-Priori expectation fully substantiated. Collective usage of the heuristics in all three locations was 76.6%
A-Priori expectation 2 Valuers tend to employ data inputs (yield, rental values, outgoings, etc) most easily recalled or obtained in their calculations rather than derive the inputs thorough market surveys (the availability heuristic)	Outgoing heuristics	A-Priori expectation largely substantiated. Collective usage of the outgoing heuristics in all three locations was 71.9%
	Rental evidence heuristics	A-Priori expectation largely substantiated. Collective usage of the rental evidence heuristics in all three locations

		was 55.7%
	Yield heuristics	A-Priori expectation not substantiated. Collective usage of the yield heuristics in all three locations was 36.5%
A-Priori expectation 3 Valuers tend to assume that a property for valuation is essentially a stereotype of one or more properties they have valued before and that accordingly, the valuation features and calculation should be the same (the representative heuristic)	Equal value for stereotype property in different locations?	A-Priori expectation substantiated: Collective RII score for the 3 locations = 1.8 which is above 1.5 on a scale of 3 where 3 represents full use of the heuristic.
	Equal value for stereotype property differentiated with an extra bathroom or toilet?	A-Priori expectation substantiated: Collective RII score for the 3 locations = 2.012 which is above 1.5 on a scale of 3 where 3 represents full use of the heuristic.
	Equal value for stereotype property differentiated with plot size variations?	A-Priori expectation substantiated: Collective RII score for the 3 locations = 1.51 which is above 1.5 on a scale of 3 where 3 represents full use of the heuristic.
	Equal value for stereotype property differentiated with size of parking space?	A-Priori expectation substantiated: Collective RII score for the 3 locations = 1.66 which is above 1.5 on a scale of 3 where 3 represents full use of the heuristic.
	Equal value for stereotype property but extra garage?	A-Priori expectation substantiated: Collective RII score for the 3 locations = 2.1 which is above 1.5 on a scale of 3 where 3 represents full use of the heuristic.
	Equal value for stereotype property Stereotype property but one has high quality	A-Priori expectation substantiated: Collective RII score for the 3 locations = 1.71 which is above 1.5 on a scale of 3 where 3 represents full use of the heuristic.

	floor/wall finishes?	
A-Priori expectation 4 Valuers seek market information to confirm their pre-valuation ideas of the value of properties for valuation and avoid the collection of market evidence potentially falsifying such preconceived values (the positivity heuristic)		A-Priori expectation largely substantiated: Collective usage of the heuristics in all three locations was 88.6%.

In the above summary, the usage of anchoring and adjustment heuristics was abundantly substantiated. The usage of availability heuristics was partly substantiated: respondents are found to be inclined to the use of easily available outgoings and rental evidence, but are not very susceptible to easily available yields. The usage of representative heuristics was validated on the basis of all six indicators. Similarly, the usage of positivity heuristics was fully validated. This affirms conclusively that not only anchoring and adjustment heuristics are in operation amongst Nigerian respondents as is inadvertently suggested in earlier studies (Adegoke and Aluko,2007; Adegoke, 2008; Aluko, 2007). Rather all the four major heuristics - anchoring & adjustment, representative, positivity and to a large extent availability heuristics - influence valuers in the conduct of valuation in the three study areas.

The implications of the verification of the existence of the four heuristics are serious. The usage of heuristics is a usage of cognitive shortcuts. It is a rejection of the standard valuation process taught to valuers which emphasizes valuation based on thorough market surveys. This unfortunately suggests that valuers are getting lazy or finding it difficult to source current market data. Whatever the case, the use of shortcuts in place of market surveys is a potential sacrifice of valuation accuracy on the altar of a expeditious process. Such sacrifice does not portend well for the profession. In earlier studies like Ogunba & Ajayi (1999) the profession has been warned of the growing disdain it faces from increasing perceptions of the public and clients of the inaccuracy of its main product – valuations. Certainly, the profession, particularly its regulatory bodies would need to take urgent corrective action in this regard.

6.3 The Relative Level of Occurrence of Heuristics

The second objective was to investigate the relative level of occurrence of the four heuristics in property valuation. This objective was backed by the fifth a-priori expectation. The results obtained on this objective are summarized in the table below

Table 6.12: Summary of Results on the Objective Two

Expectation	Heuristic	Score	Rank	Conclusion
A-Priori expectation 5 The relative usage of the four types of heuristics follows the following order of usage (starting from the most used): Availability, anchoring and adjustment, representative and positivity.	Anchoring	18.62%	2	complete confirmation of a-priori expectation 5
	Representative	15.63%	3	
	Availability	26.77%	1	
	Positivity	10.41%	4	

In the above summary, we see that availability heuristics is the most often used, followed by anchoring and adjustment heuristics and then representative heuristics and last, positivity heuristics. This suggests that in the conduct of investment valuations, valuers first seek for available (rule of thumb) valuation indices such as yield, rental evidence and outgoings in an attempt to conduct a ‘fresh’ valuation. When these cannot be found, they go for past valuation/sale anchors. Where past anchors are not available, and if the properties are stereotype buildings, they simply adopt the value of the stereotype, whether or not the stereotype is in a different location or evinces different structural characteristics. If this is not available, then, they simply adopt the most optimistic value that suggests itself.

The results are important because they show the relative contribution of various heuristics to the valuation inaccuracy problem and thereby point to where the majority of corrective action should be devoted. They also demonstrate that the incidence of anchoring and adjustment in valuation, (which was the focus of 100 per cent of previous heuristic research), is merely secondary to availability heuristic manifestations. In this regard, prior research has been far from holistic, majoring on the minor. Future research should probably give more emphasis on availability heuristics since it is the more frequently occurring heuristic.

On reflection, perhaps it is fortunate that availability heuristics is the more frequently occurring heuristic since it is probably the heuristic than can be most easily resolved. Arguably, the availability heuristics is the least offensive heuristic because it at least

represents an attempt to conduct a market study based valuation; albeit with data which might or might not be accurate (the most easily available statistics is not necessarily inaccurate). Moreover, the availability heuristic is amenable to correction through a currently updated databank. The idea is this: if valuers are most inclined to use easily available statistics, then, if the profession can make accurate data very easily available (say through a regularly updated databank), then the tendency to resort to most easily available data would produce valuation accuracy. Other heuristics such as anchoring and adjustment might not easily lend itself to a similar corrective action.

6.4 Factors influencing the usage of heuristics

The third objective was to identify and examine factors influencing the usage of the various types of heuristics in property valuation. A-priori expectations 6-11 were postulated in this regard to investigate the significance of a variety of potential socio-economic and valuation factors. A tabular summary of the massive volume of results is presented in Table 6.13.

Table 6.13: Summary of Factors Influencing Usage of Heuristics

Expectation	Indicator (Dependent Variable)	Results	Conclusion
A-Priori expectation 6 The less familiar an area where valuation is to be carried out, the more the usage of simplifying shortcuts to simplify the valuation decision making.	Anchoring & adjustment	$H = 2.136 + 0.089U$ ($p = 0.251$)	confirmation of a-priori expectation 6 but conclusion not absolutely irrefutable
	Availability	$H = 1.930 + .102U$ ($p = .192$)	confirmation of a-priori expectation 6 but conclusion not absolutely irrefutable
	Representative	$H = 1.543 + .146U$ ($p = .059$)	confirmation of a-priori expectation 6 but conclusion not absolutely irrefutable
	Positivity	$H = 2.443 - .013U$ ($p = .192$)	A-priori expectation 6 not confirmed, but conclusion not absolutely irrefutable
A-Priori expectation 7. The more complex the investment valuation model, the more the valuer resorts to simplifying shortcuts.	Anchoring & adjustment	$H = 2.793 - .137C$ ($p = .077$)	No confirmation of a-priori expectation 7 but conclusion not absolutely irrefutable
	Availability	$H = 2.165 + .121 C$ ($p = .119$)	confirmation of a-priori expectation 7 but conclusion not absolutely irrefutable
	Positivity	$H = 2.358 + .013 C$	confirmation of a-priori

		(p = .87)	expectation 7 but conclusion not absolutely irrefutable
	Representative	H = 2.316 + .011C (p = .889)	confirmation of a-priori expectation 7 but conclusion not absolutely irrefutable
A-Priori expectation 8 The more available data is of outgoings, yields, rental evidence etc, the less the resort to cognitive heuristic shortcuts.	Anchoring & adjustment	H = 2.641 -.071A (p = .361)	No confirmation of a-priori expectation 8 but conclusion not absolutely irrefutable
	Availability	H = 2.343 + .040A (p = .608)	confirmation of a-priori expectation 8 but conclusion not absolutely irrefutable
	Representative	H = 2.359 -.009A (p = .905)	No confirmation of a-priori expectation 8 but conclusion not absolutely irrefutable
	Positivity	H = 2.340 +.027A (p = .726)	Confirmation of a-priori expectation 8 but conclusion not absolutely irrefutable
A-Priori expectation 9 The greater the level of post qualification experience of the valuer, the more he depends on such experience (using heuristic short cuts) rather than on thorough market surveys.	<u>Academic qualification</u>	H = 2.887-.079E (p = .310)	No confirmation of a-priori expectation 9 but conclusion not absolutely irrefutable
	Anchoring & adjustment		
	Availability	H = 2.382+ .006E (p = .934)	Confirmation of a-priori expectation 9 but conclusion not absolutely irrefutable
	Representative	H = 2.968 -.140E (p = .071)	No confirmation of a-priori expectation 9 but conclusion not absolutely irrefutable
	Positivity	H = 2.932 -.145E (p = .061)	No confirmation of a-priori expectation 9 but conclusion not absolutely irrefutable
	<u>Professional qualification</u>	H = 2.638 -.045P (p = .565)	No confirmation of a-priori expectation 9 but conclusion not absolutely irrefutable
	Anchoring & adjustment		
	Availability	H = 2.148 + .104P (p = .181)	Confirmation of a-priori expectation 9 but conclusion not absolutely irrefutable
Representative	H = 2.242 +.034P (p	Confirmation of a-priori	

		= .659)	expectation 9 but conclusion not absolutely irrefutable
	Positivity	H = 2.343 +.016P (p = .835)	Confirmation of a-priori expectation 9 but conclusion not absolutely irrefutable
	<u>Age of Respondents</u> Anchoring & adjustment	H = 2.796-.104A (p = .183)	A-priori expectation not confirmed, but conclusion not absolutely irrefutable
	Availability	H = 2.469 -.023A (p = .768)	A-priori expectation not confirmed, but conclusion not absolutely irrefutable
	Positivity	H = 2.354+.011A (p = .887)	Confirmation of a-priori expectation 9 but conclusion not absolutely irrefutable
	Representative	H = 2.420 -.025A (p = .747)	A-priori expectation not confirmed, but conclusion not absolutely irrefutable
	<u>Years of Experience</u> Anchoring & adjustment	H = 2.661-.079Y (p = .309)	A-priori expectation not confirmed, but conclusion not absolutely irrefutable
	Availability	H = 2.383+.014Y (p = .853)	Confirmation of a-priori expectation 9 but conclusion not absolutely irrefutable
	Positivity	H = 2.119+.157Y (p = .043)	A-priori expectation not confirmed, but conclusion not absolutely irrefutable
	Representative	H = 2.358 -.009Y (p = .912)	A-priori expectation not confirmed, but conclusion not absolutely irrefutable
	<u>Status of Respondents</u> Anchoring & adjustment	H = 2.755 - .105S (p = .178)	A-priori expectation not confirmed, but conclusion not absolutely irrefutable
	Availability	H = 2.215 +.086S (p = .270)	Confirmation of a-priori expectation 9 but conclusion not absolutely irrefutable
	Positivity	H = 2.323 + .028S (p = .723)	Confirmation of a-priori expectation 9 but conclusion

			not absolutely irrefutable
	Representative	$H = 2.502 - .062S$ ($p = .427$)	A-priori expectation not confirmed, but conclusion not absolutely irrefutable
A-Priori expectation 10	Anchoring & adjustment	$H = 2.491 + .016L$ ($p = .842$)	Confirmation of a-priori expectation 10 but conclusion not absolutely irrefutable
The greater the level of assumptions made by the valuer (in place of actually verifying issues), the more he depends on heuristic shortcuts.	Availability	$H = 2.267 + .050L$ ($p = .525$)	Confirmation of a-priori expectation 10 but conclusion not absolutely irrefutable
	Positivity	$H = 2.817 - .156L$ ($p = .044$)	A-priori expectation not confirmed, but conclusion not absolutely irrefutable
	Representative	$H = 2.409 - .021L$ ($p = .792$)	A-priori expectation not confirmed, but conclusion not absolutely irrefutable
A-Priori expectation 11	<u>Age of Firm</u> Anchoring & adjustment	$H = 2.724 - .095A$ ($p = .222$)	A-priori expectation not confirmed, but conclusion not absolutely irrefutable
The greater attributes subscribed to a firm, (such as the older the firm, location in places where valuation is mostly carried out, the bigger the size of the firm in terms of number of branches and number of surveyors in the firms' employ) the more their usage of the heuristic types	Availability	$H = 2.672 - .125A$ ($p = .108$)	A-priori expectation not confirmed, but conclusion not absolutely irrefutable
	Positivity	$H = 2.391 - .004A$ ($p = .961$)	A-priori expectation not confirmed, but conclusion not absolutely irrefutable
	Representative	$H = 2.639 - .121A$ ($p = .121$)	A-priori expectation not confirmed, but conclusion not absolutely irrefutable
	<u>Location of firm</u> Anchoring & adjustment	$H = 2.063 + .128L$ ($p = .100$)	Confirmation of a-priori expectation 11 but conclusion not absolutely irrefutable
	Availability	$H = 2.173 + .060L$ ($p = .439$)	Confirmation of a-priori expectation 11 but conclusion not absolutely irrefutable
	Positivity	$H = 2.051 + .087L$ ($p = .264$)	Confirmation of a-priori expectation 11 but conclusion not absolutely irrefutable

	Representative	H = 1.682 +.146L (p = .060)	Confirmation of a-priori expectation 11 but conclusion not absolutely irrefutable
	<u>No. of branches</u> Anchoring & adjustment	H = 2.354 +.119B (p = .124)	Confirmation of a-priori expectation 11 but conclusion not absolutely irrefutable
	Availability	H = 2.198 +.133B (p = .088)	Confirmation of a-priori expectation 11 but conclusion not absolutely irrefutable
	Positivity	H = 2.357 + .017B (p = .830)	Confirmation of a-priori expectation 11 but conclusion not absolutely irrefutable
	Representative	H = 2.480 -.075B (p = .333)	A-priori expectation not confirmed, but conclusion not absolutely irrefutable
	<u>No of surveyors</u> Anchoring & adjustment	H = 2.323 +.150S (p = .053)	Confirmation of a-priori expectation 11 but conclusion not absolutely irrefutable
	Availability	H = 2.055 +.239S (p = .002)	Confirmation of a-priori expectation 11 but conclusion not absolutely irrefutable
	Representative	H = 2.472 -.076S (p = .328)	A-priori expectation not confirmed, but conclusion not absolutely irrefutable
	Positivity	H = 2.284 +.069S (p = .379)	Confirmation of a-priori expectation 11 but conclusion not absolutely irrefutable

The above summary investigates six a-priori expectations by means of a large variety of indicators.

The first of these expectations (that is, the sixth a priori expectation) states that low familiarity with the area increases usage of heuristics. This is validated by 3 of the four regression indicators. Similarly, the seventh a-priori expectation which suggests that increased complexity of valuation method increases usage of heuristics is also validated by 3 of 4 of the indicators. The eighth expectation that lack of data increases usage of heuristics is

only partly confirmed (by 2 of 4 regression indicators). The ninth expectation that increased post qualification experience increases the use of heuristics is not confirmed as only 8 of 20 indicators support this assertion. The tenth expectation, that the more the assumptions made by the valuer, the more the usage of heuristics is only partly confirmed as only 2 of four indicators support the assertion. The eleventh expectation that the more established the firm is in age, size, experience etc the more the use of heuristics is largely validated as 10 of 16 regression indicators support the assertion. We must hasten to re-state however, that the p (alpha) values for virtually all the regression relationships were higher than 0.05 meaning that these a-priori expectation confirmations should not be taken as absolutely sacrosanct.

If we cautiously adopt the results however, then the interpretation is first that when valuers face difficulties in the valuation process, like unfamiliar terrain or complex valuation method, they tend to seek to reduce the difficulties by adopting cognitive shortcuts. This is an understandable even if not acceptable reaction to difficulties encountered in the valuation process. We must reiterate in the interest of valuation accuracy that there is no cognitive substitute to thorough market surveys in the valuation process. Second, we notice that the more well established the valuation firm, the greater the tendency to adopt heuristics. This is a surprising result that unfortunately suggests that the better established firms get, the more they become somewhat complacent in sourcing current market data. In the interest of valuation accuracy, an attitude of zero tolerance should be adopted by the valuation regulatory organizations to such valuation process violations permitting no sacred cows among the established firms.

6.5 The Effect of Heuristics on Valuation Accuracy

The fourth objective was to investigate the effect of these heuristics on valuation accuracy/consistency. A-priori expectations 12-16 were drawn up in this regard. The results are summarized in Table 6.14.

Table 6.14: Summary of Results on the Accuracy of Heuristic Valuations and Market Data Valuations

	Null t-test proposition	t-statistic	P value	Conclusion	Accept/reject decision
A-Priori expectation 12 Valuations are less a proxy for market prices where	No difference between	-1.948	.055 This is above	Variances between the two groups	Accept null proposition at the 5%

valuers anchor on prior valuations and adjust such anchors in an effort to bring them up to date.	Anchoring and adjustment valuations and sale prices		0.05, though marginally	of data are somewhat equal	level of significance but not at higher levels such as the 6% level
A-Priori expectation 13 Valuations are less a proxy for market prices where valuers tend to employ data inputs (yield, rental values, capital values etc) most easily recalled or obtained in their calculations rather than derive the inputs thorough market surveys (the availability heuristic)	No difference between Availability valuations and sale prices	-1.948	.016 This is below 0.05	Variances between the two groups of data are not equal	Reject hypothesis at the 5% level of significance
A-Priori expectation 14 Valuations are less a proxy for market prices where valuers tend to assume that a property for valuation is essentially a stereotype of one or more properties they have valued before and that accordingly, the valuation features and calculation should be the same (the representative heuristic)	No difference between Representative valuation and sale prices	-2.666	.009 This is below 0.05	Variances between the two groups of data are not equal	Reject null proposition at the 5% level of significance
A-Priori expectation 15 Valuations are less a proxy for market prices where valuers seek market information to confirm their pre-valuation ideas of the value of properties for valuation and avoid the collection of market evidence potentially falsifying such preconceived values (the positivity heuristic)	No difference between Positivity valuation and sale prices	-1.354	.179 This is above 0.05, though marginally	Variances between the two groups of data are equal	Accept null proposition at the 5% level of significance but not at higher levels such as 18%
To test for accuracy of market data valuations	No difference between Market data valuation	.288	.774 This is very substantially above 0.05,	Variances between the two groups of data are clearly equal	Accept null proposition at the 5% level of significance

	and sale prices				
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In the analysis in the earlier chapter, we deduced from the p values of the t-tests that: valuations conducted through representative and availability heuristics are inaccurate relative to the sale prices since their p values are lower than 0.05; valuations conducted through anchoring and adjustment or through positivity heuristics are somewhat accurate though marginally since their p values are just marginally above 0.05; and that valuations conducted with current market data are very accurate (their p value was 0.774 which is very considerably higher than 0.05). It is accordingly clear that all of a-priori expectations 12 to 15 are substantially validated: we confirm that the more the use of heuristics, the higher the incidence of inaccuracy, particularly for representative and availability heuristics.

It means that the preliminary suspicion in this study - that usage of heuristics leads to inefficient valuations and ultimately to inaccuracy is verified. The valuation inaccuracy noted in prior researches (such as Ogunba, 1997; Ogunba and Ajayi, 1998; Aluko, 2000; Ajayi 2003; Ogunba, 2004; Ojo, 2004; Ogunba & Ojo, 2007) is at least partly caused by the incidence of heuristics. There has been some earlier discussion on valuation inaccuracy being a result of volatility in the property market which has resulted in advocacy for a range of valuation estimates rather than point estimates. This research has demonstrated that more than this, inaccuracy – at least in the study area - is also facilitated by a refusal or difficulty or reluctance by valuers to conduct thorough market surveys in favour of cognitive shortcuts.

We must note that the implications of continued inaccuracy could be serious. Valuers could lose any confidence reposed on them by clients such as government officials, bank managers, taxation officers, multinationals, corporate bodies, and insurance analysts amongst other users of valuation report. In a bad case scenario, valuers could lose their statutory exclusive preserve of valuation to other contending professionals like accountants and financial analysts. Valuation reports prepared by valuers might have to be screened and vetted by these contending professionals. Consistent usage of these heuristics resulting to inaccurate values might in fact lead to the total extinction of the profession if clients are forced to look elsewhere.

CHAPTER SEVEN

SUMMARY, RECOMMENDATION AND CONCLUDING REMARKS

7.1 Introduction

This chapter provides a summary of the whole study and that of the major findings together with recommendations, areas for further research and conclusions.

7.2 Summary

This study stemmed from the gap observed in research on heuristics in property valuation which had hitherto focused only on anchoring and adjustment heuristics to the neglect of the other principal heuristic types - availability, representative and positivity heuristics. The study accordingly aimed at investigating the nature and conduct of heuristics among Nigerian valuers with a view to ascertaining possible effects on valuation accuracy. The specific objectives were to examine whether valuers are influenced by availability, positivity and representative heuristics in property valuation practice in the study areas; investigate the relative level of occurrence of the four heuristics in property valuation; and to identify and examine factors influencing the usage of the various types of heuristics in property valuation. The scope of this study was restricted to three major cities where valuation practice is most highly concentrated: Lagos metropolis, Abuja and Port Harcourt.

The study then proceeded to review literature. The central theme of the literature review was behavioral research in real estate particularly papers on heuristics in valuation. The review started from a consideration of accuracy and variance literature and the causes of inaccuracy. These causes were generally grouped into four categories, and the review narrowed down to a consideration of the behavioral causes. Papers on valuation behaviorism are in turn grouped into four lines of inquiry, and the review ultimately focused on the most relevant of the four to the study objectives, that is heuristic influences on valuation accuracy. The gap identified was the exclusive focus on anchoring and adjustment to the neglect of other types of heuristics.

The study subsequently proceeded to draw conceptual expectations regarding each of the study objectives. These expectations were then formalized into the following fifteen a-prior expectations for testing.

For Objective One:

- 1) Valuers anchor on prior valuations (in the conduct of present valuations) and adjust such anchors in an effort to bring them up to date.
- 2) Valuers tend to employ data inputs (yield, rental values, outgoings, etc) most easily recalled or obtained in their calculations rather than derive the inputs through market surveys (the availability heuristic)
- 3) Valuers tend to assume that a property for valuation is essentially a stereotype of one or more properties they have valued before and that accordingly, the valuation features and calculation should be the same (the representative heuristic)
- 4) Valuers seek market information to confirm their pre-valuation ideas of the value of properties for valuation and avoid the collection of market evidence potentially falsifying such preconceived values (the positivity heuristic).

For Objective Two:

- 5) The relative usage of the four types of heuristics follows the following order of usage (starting from the most used): Availability, anchoring and adjustment, representative and positivity.

For Objective Three:

- 6) The less familiar an area where valuation is to be carried out, the more the usage of simplifying shortcuts to simplify the valuation decision making.
- 7) The more complex the investment valuation model, the more the valuer resorts to simplifying shortcuts.
- 8) The more available data is of outgoings, yields, rental evidence etc, the less the resort to cognitive heuristic shortcuts.
- 9) The lower the level of educational qualification of the valuer, the more he depends on such experience (using heuristic short cuts) rather than on thorough market surveys.
- 10) The greater the level of professional qualification of the valuer, the more he depends on such experience (using heuristic short cuts) rather than on thorough market surveys.
- 11) The younger the valuers, the more they resort to cognitive shortcuts

- 12) The more the level of post qualification experience of the valuer, the more he depends on such experience (using heuristic short cuts) rather than on thorough market surveys.
- 13) The lesser the status of valuers in firms, the more they adopt heuristically determined values.
- 14) The lower the level of assumptions made by the valuer (in place of actually verifying issues), the more he depends on heuristic shortcuts.
- 15) Location of firms where valuation is majorly carried out result to more of heuristically determined property values.
- 16) Younger firms tend to adopt more heuristic than their older counterpart
- 17) the more branches and surveyors in the employ of firms, the more heuristically determined values are evident

For Objective Four:

- 18) Valuations are less a proxy for market prices where valuers anchor on prior valuations and adjust such anchors in an effort to bring them up to date.
- 19) Valuations are less a proxy for market prices where valuers tend to employ data inputs (yield, rental values, capital values etc) most easily recalled or obtained in their calculations rather than derive the inputs thorough market surveys (the availability heuristic)
- 20) Valuations are less a proxy for market prices where valuers tend to assume that a property for valuation is essentially a stereotype of one or more properties they have valued before and that accordingly, the valuation features and calculation should be the same (the representative heuristic)
- 21) Valuations are less a proxy for market prices where valuers seek market information to confirm their pre-valuation ideas of the value of properties for valuation and avoid the collection of market evidence potentially falsifying such preconceived values (the positivity heuristic)

The fourth chapter addressed the methodology for addressing these a-priori expectations. After consideration of various alternative methodologies employed in earlier related research papers, the study adopted a survey method as most suitable, and decided on firms of estate surveyors and valuers as the appropriate study population. The sample sizes of the study population in the study areas (Lagos, Abuja and Port-Harcourt) were calculated by formula as 159, 29 and 39 respectively. The data collection instrument adopted was questionnaire

backed up by interviews. The data derived was analysed with a series of statistical tools ranging from descriptive to inferential. Amongst such statistical tools include frequency distribution, Relative Important Index Arithmetic Mean, means/standard deviations, Spearman's Rank Correlation, One Group T Test, and the One Way ANOVA analyzed with the use of SPSS (Version 17) software. A survey response rate of over 76% was achieved.

7.3 Major Findings and Implications

The findings of the study by objective are summarized as follows:

- 1) All the four major heuristics - anchoring & adjustment, representative, positivity and to a large extent availability heuristics - influence valuers in the conduct of valuation in the three study areas. This is interpreted in this study as indicative of a rejection by valuers of the standard valuation process taught to them which emphasizes valuation based on thorough market surveys. It also unfortunately suggests that valuers are getting lazy or finding it difficult to source current market data through market surveys.
- 2) Availability heuristics was seen to be the most often used heuristic, followed by anchoring and adjustment heuristics and then representative heuristics and last, positivity heuristics. This result was considered important because it showed the relative contribution of various heuristics to the valuation inaccuracy problem and thereby pointed to where the majority of corrective action should be devoted. It also demonstrated that the 100 per cent focus devoted by previous heuristic research to anchoring and adjustment was majoring on the minor. The implication seen in this regard was that future research would need to give more emphasis on availability heuristics as the more frequently occurring heuristic.
- 3) The factors or groups of factors studied were found to influence the usage of heuristics in varying degrees. It was seen that low familiarity with the valuation area increases usage of heuristics. Similarly, increased complexity of valuation method increases usage of heuristics. Again, it was seen that the more established the firm is in size the more the use of heuristics etc. However, it must be reiterated that due to high p (alpha) values and low R^2 values, findings in this area cannot be taken as absolutely sacrosanct.
- 4) It was also deduced that the more the use of heuristics, the higher the incidence of inaccuracy, particularly for representative and availability heuristics. This means that

the valuation inaccuracy noted in prior researches (such as Ogunba, 1997; Ogunba and Ajayi, 1998; Aluko, 2000; Ajayi 2003; Ogunba, 2004; Ojo, 2004; Ogunba & Ojo, 2007) is at least partly caused by the incidence of heuristics. The implications of continuing in valuation inaccuracy were noted as being serious.

7.4 Recommendations

Based on the results of the research, the following recommendations are proffered:

- (a) Inaccuracy (resulting from use of heuristics) requires serious and urgent corrective action. Corrective action could start from more emphasis on the education of valuers. The emphasis on thorough market surveys in the standard valuation process taught to valuers which must be re-emphasized in academic/professional teaching. In such training, it must be emphasized that valuers must not allow themselves to get lazy. They must go the extra mile in deriving appropriate parameters to work with, recognizing that properties are heterogeneous by nature and circumstances surrounding the valuation of each could be unique. It must be painstakingly pointed out that in the interest of valuation accuracy there is no cognitive substitute to thoroughness in the valuation process. If valuers are finding it difficult to source current market data through market surveys, such difficulties must be identified and addressed by regulatory organizations.
- (b) Corrective action could also be facilitated for those who are already qualified surveyors through seminars in the regular Mandatory Continuous Professional Development (MCPD) Seminars organized by the Nigerian Institution of Estate Surveyors and Valuers (NIESV). Perhaps to drive home the point in this regard, the next National Conference can be devoted to this important topic.
- (c) There is need for the syllabus of valuation in all levels from the undergraduate through the postgraduate programmes to be embellished with corrective topics on psychology of valuation as this will help to correctly guide the upcoming practitioners through psychological/moral fortifications at their formative stages. This is with the intention of dissuading the inappropriate usage of cognitive shortcuts after going through rigorous processes of learning the normative models of handling valuation.
- (d) Guidance notes, standards and valuation information papers should be regularly issued by regulatory institutions. This should help to guide valuers on correct

valuation procedure and hopefully assist in curbing the incidence of usage of heuristics and valuation inaccuracy.

- (e) Use of heuristics, particularly reliance on availability heuristics can be discouraged if a regularly updated databank (to which all valuers would have access) is instituted and maintained. In such a case, valuers would just need to refer to the current market indices in the regularly updated databank while carrying out valuation instead of having to rely on inappropriate heuristics.
- (f) For researchers, the study has demonstrated that the 100 per cent focus hitherto devoted by previous heuristic research to anchoring and adjustment was majoring on the minor. Future research should be guided to give more emphasis to availability heuristics as the more frequently occurring heuristic. Research emphasis should also be given to all the occurring heuristics and to behavioural research in general to provide a holistic picture of the causes of valuation inaccuracy.
- (g) The study has established that the better established firms get, the more they become somewhat complacent in sourcing current market data. In the interest of valuation accuracy, an attitude of zero tolerance should be adopted by the valuation regulatory organizations to such valuation process violations permitting no sacred cows among the better established firms.

7.5 Areas for Further Research

Research on behavioural aspects of valuation has been sparse in Nigeria. This work has been able to add substantially to the literature in this area particularly as it relates to holistic heuristics study. There is however still a lot that can be done by upcoming researchers and it is hoped that this work will serve as a springboard generating interest for further research.

For instance, while the four major heuristics have been addressed in this study, there are still other 'minor' types of heuristics which are not so common (such as affect heuristics), the investigation of which could be beneficial to the real estate valuation accuracy study.

Again this study was limited to the investment method of valuation, there is need to undertake researches that will examine the occurrence and characteristics of heuristics

in other methods of valuation particularly the contractors method as it relates to heuristics.

In addition, this work was confined to three major cities: Lagos, Abuja, and Port-Harcourt. There could be prospects in studying other cities in Nigeria such as the state capitals for a more comprehensive assessment of the use of heuristics in the country.

7.6 Concluding Remarks

The contribution to knowledge in this study has been in providing a framework of information on the nature and causes of usage of all four major heuristics amongst Nigerian valuers. There has also been contribution in demonstrating the impact of usage on valuation accuracy. The results of the study should hopefully guide regulators of professional valuation in Nigeria in taking necessary corrective actions. It is expected that the urgent implementation of the recommendations proffered would make estate surveyors and valuers better and more accurate in their major area of specialization.

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Nykredit Mortgage Bank Plc v Edward Erdman Group Ltd (1996) 1 EGLR 119.

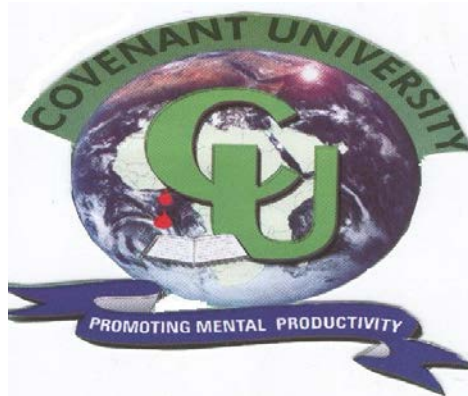
Private Bank and Trust Co. Ltd VS S (UK) Ltd (1993).

Singer and Friedlander Ltd v John D. Wood and Co. (1977) 2 EGLR 84..

Trade Credits Limited V Baillien Knight Frank (NSW) Ltd (1985).

APPENDIX

Prototype questionnaire



**DEPARTMENT OF ESTATE MANAGEMENT
SCHOOL OF ENVIRONMENTAL SCIENCES
COLLEGE OF SCIENCE AND TECHNOLOGY
COVENANT UNIVERSITY, OTA, OGUN STATE**

Dear Respondent,

I kindly appeal to you Sir/Ma to help me fill this questionnaire. It is a Ph.D research on “A Study of Heuristics in Property Valuation in Nigeria”. Please be assured that the information given will be treated with utmost confidentiality since it is required for academic purposes only. I will kindly require that you please help sign and stamp the filled questionnaire with your official stamp as this is required by my examiners to give credence to my work.

Thank you.

Yours faithfully,

IROHAM, Chukwuemeka Osmond

October, 2010

SECTION A

- (a) Name of Respondent (Optional)
- (b) Age of Respondent (A) 21-30 (B)31-40 (C) 41-50 (D) 51-60 (E) Above 60
- (c) Educational Qualification (A) OND..... (B) HND.... (C) B.SC..... (D) M.SC..... (E) PhD.....
- (d) Professional Qualification (A) ANIVS(B)RSV..... (C) FNIVS... (D)MRICS.... (E) FRICS.....
- (e) Years of Experience
- (f) Position in Firm (A) Surveyor..... ...(B) Head, Valuation Department..... ...(C) Partner.....
- (g) Name of Firm.....
- (h) Location of Firm
- (i) Age of Firm
- (j) Number of Branches.....
- (k) Location of the branches (if any)
- (l) Number of Estate Surveyors and valuers in firm

(m) SECTION B

- (a) Do you carry out valuation in unfamiliar locations? (A) Yes..... (B) No.....
- (b) If yes, how often? (A) Never (B) Rarely (C) Sometimes (D) Most times (E) Always....
- (c) What is your major source of data collection during valuation in an unfamiliar location? (A) Data from agency surveyors within the branch..... (B) Data from agency surveyors within the nearest branch office (C) Data from Prior Valuations/Sales..... (D) Data acquired from agency Surveyors from other firms.....
- (d) Do you form an initial opinion of value before the final valuation calculation? (A) Very Often..... (B) Often..... (C) Seldom (D) Never.....
- (e) Which data do you readily collect while using the Freehold Investment method? (A) Rental values (B) Outgoings (C) Yield (D) Others (Specify)
- (f) How readily do you get data while carrying out investment method of valuation (A) Never available (B) Not easily available (C) Indifferent (D) Available (E) Very much available
- (g) Which of these investment valuation models do you employ while carrying out valuation models (A) Term and Reversion, (B) Layer/Hard Core, (C) Equivalent yield models, The most complex models are the (D) equated yield, (E) Rational (F) Real Value Models (in increasing order of complexity), according to Trott, 1986..
- (h) Do you make assumptions while carrying out valuation? If yes, what level of assumptions do you make (A) Never assume (B) Rarely assume (C) Assume sometimes (D) Assume most times (E) Assume always

SECTION C

- (a) If you are asked to value a property and a prior valuation/sale exist. Do you make recourse to and adjust such valuation/sale to present value? (A) Yes.... (B) No.....
- (b) If yes, would you adjust a prior valuation/sale that is (A) 10 Yrs Old (B) 9 Yrs Old (C) 8 Yrs Old (D) 7 Yrs Old (E) 6 Yrs Old (F) 5 Yrs Old (G) 4.5 Yrs Old (H) 4 Yrs Old (I) 3.5 Yrs Old (J) 3

Yrs Old (K) 2.5 Yrs Old (L) 2 Yrs Old (M) 1.5 Yrs Old (N) 1 Yr Old (O) 9 Months Old (P) 6 Months Old (Q) 3 Months Old

- (c) If yes, how will you adjust such valuation estimates to make them current? (A) Inflation Rate.... (B) Bank Rate (C) Price Index..... (D) Subjective assessment based on experience of movement of property values..... (E) Subjective assessment based on the opinions of other Surveyors.....
- (d) In the use of the Investment method of valuation, do you deduct outgoings from rental values or assume that market rental evidence is net? (A) Yes I Deduct (B) NO, I don't
- (e) If yes, do you go out to sample average outgoings for similar properties or do you use a more available method of determining average outgoings? (A) I go out to sample average outgoings (B) I use a more available method
- (f) If you use a more available approach, which specific approach (es) do you use to determine the rate of outgoings? (A) Use of 25% for repairs, management and Insurance as suggested by the Lagos State Valuation Office (B) Use of rule of thumb rate depending on the intensity of the tenant use of the property e.g. A high rate for tenement buildings relative to detached houses (C) Use of rule of thumb suggested by text books (D) Use of rule of thumb based on the location of property
- (g) In determining the rental value of properties, do you go out to conduct property by property rental evidence or do you use a more available method of determining average rental values for similar property? (A) I conduct property by property rental survey (B) I use a more available method of determining average rental values for similar property
- (h) If you use a more available method of determining rental values which specific method do you use? (A) Consulting agency surveyors for average rental values for similar properties (B) Consulting property section of print and electronic medias for 'To Let' Offers (C) Updating available historical Rental evidence (D) Others (Specify).....
- (i) In determining the yield (Capitalization rate) for freehold valuation, do you calculate the yield from market evidence or do you use a more available method for determining the yield? (A) I calculate the yield from market evidence (B) I use a more available method for determining the yield
- (j) If you use a more available method which specific available method do you use ?(A) Use of a rule of thumb yield for specific locations (B) Use of a rule of thumb yield for different types of property (C) Use of the yield recommended by surveyors in other firms (D) Use of yields suggested in textbooks
- (k) Have you come across situations where the values you calculated for a property were below what you believed the property could fetch in the market? (A) Yes (B) No

(l) If yes, what did you do? (A) Adopt the calculated value (B) Adjust the calculated value to the expected value (C) Take the average of the expected and calculated value (D) Discard the investment method for giving an “unrealistic value” in favour of the cost method (D)

(m) If you are asked to value a particular property, would the value vary much for?

	Very Much	Marginally	No Difference
Different locations within the neighbourhood/ locality			
Extra bathroom and toilet			
Larger plot size			
Bigger parking space			
Extra Garage			
More costly floor and wall finishes			

(n) In your experience, out of every 20 valuations you do, how many of the 20 on average do you have access to previously conducted valuations for the same or a very similar property that you adjusted to derive the value for the present valuation?.....

(o) In your experience, out of every 20 valuations you do; approximately how many of the 20 involve valuing stereotype buildings?

(p) In your experience, out of every 20 valuations you do; approximately how many of the 20 do you have access to rule of thumb rates for outgoings and yield?.....

(q) In your experience, out of every 20 valuations you do; approximately how many of the 20 do you have a preconceived idea of what the value was which later turned to be an overvaluation?.....

(r) How often do you adopt the following strategies while carrying out valuation : 1=Never, 2=Rarely, 3=some times, 4=most times, 5=Always

Responses	1	2	3	4	5
If you are asked to value a property and you have access to a prior valuation/sale of the same or similar property. Do you					

make recourse to and adjust such prior valuation/sale to present value?					
In determining investment valuation variables such as yield, do you make use of information easily available such as say 5% yields in your locality rather than conduct market surveys					
If you are asked to value similar residential properties in a residential estate like University of Lagos would you value all such stereotype buildings with the same capital value irrespective of their different locations within the estate					
you adjust the calculated value to the expected value where the values you calculated for a property were below what you believed the property could fetch in the market					

SECTION D

Are you aware of that was sold/valued..... within a space of two or three months A) Yes..... (B)No.....

- (a) 2 No 2-bedroom flat on a land of 300m² on Calcutta Crescent (Apapa Respondents)
- (b) 7-bedroom Detached House on 2000m² land in GRA (Ikeja Respondents)
- (c) acre of land of about 4000m² on Bedwell Avenue (Ikoyi Respondents)
- (d) dilapidated tenement structure on 530m² of land on Campus Street (Lagos Island Respondents)
- (e) 5-bedroom Detached House on a 600m² piece of land on Adeyemo Alakiya Street (Victoria Island Respondents)
- (f) 6 No 3-bedroom flat on a land of 600m² at Mc Meil Street (Yaba Respondents)
- (g) 2-bedroom Bungalow on a 450m² around Jabi (Abuja Respondents)
- (h) 4-bedroom Detached House on a 300m² in Trans-Amadi (Port Harcourt Respondents)

If yes, when and how much was it sold or valued for?.....

If you want to adjust this historic figure to present day value, how much would you adjust it?.....

Whether you are aware of the valuation/sale or not, from experience how much do you think on average (*the description of the property above*) would be valued or sold for?.....

What is the most available rental evidence for this type of property?.....

What is the most available yield adopted for this type of property?.....

What is the most available rate of outgoings for this type of property?.....

What is the highest (optimistic) capital value for this kind of property?.....

Ignoring all finishes, plot size etc, what does a typical property like this command in capital value?

THANK YOU

SIMULATION VALUATION

As part of an academic process/research kindly place value on this property to enable the researcher confirm values.

(a) Apapa Respondents

Property Description	Comparable sale Price (₦)	Extra Features	Value placed
2 No 2- bedroom flat on a land of 300m ² on Calcutta Crescent Apapa	38m	Two toilets each, fenced Paved compound, glazed aluminum doors and windows, PVC ceiling, wall paint finishing and paved floor	

(b) Ikeja Respondents

Property Description	Comparable sale Price (₦)	Extra Features	Value placed
7-bedroom Detached House on 2000m ² land in GRA Ikeja	200m	Five toilets, fenced paved compound, glazed aluminum doors and windows, PVC ceiling, ceramic floor tiles and wall paint finishing	

(c) Ikoyi's Respondents

Property Description	Comparable sale Price (₦)	Extra Features	Value placed
acre of land of about 4000m ² on Bedwell Avenue Ikoyi	800m	Fenced compound	

(d) Lagos Island Respondents

Property Description	Comparable sale Price (₦)	Extra Features	Value placed
Dilapidated tenement structure on 530m ² of land on Campus Street. Lagos Island	120m	Fenced and paved compound	Value placed

(e) Victoria Island Respondents

Property Description	Comparable sale Price (₦)	Extra Features	Value placed
5-bedroom Detached House on a 600m ² piece of land on Adeyemo Alakiya Street. Victoria Island	250m	Five toilets, fenced compound with interlocking tiles, Glazed aluminum sliding doors and windows, Pop ceiling, ceramic floor tiles, text coat wall paint finish	

(f) Yaba/Surulere respondents

Property Description	Comparable sale Price (₦)	Extra Features	Value placed
6 No 3- bedroom flat on a land of 600m ² at Mc Neil Street Yaba	90m	three toilets each, fenced in a paved compound, Victorian panel doors and louver windows, paved floors, wall paint finish	

(g) Abuja Respondents

Property Description	Comparable sale Price (₦)	Extra Features	Value placed
2-bedroom Bungalow on a 450m ² around Jabi Abuja	35m	Two toilets, fenced in a paved compound, flush doors and louver windows, pvc floor tiles and asbestos ceiling	

(h) Port-Harcourt Respondents

Property Description	Comparable sale Price (₦)	Extra Features	Value placed
4-bedroom Detached House on a 300m ² Land in Trans-Amadi, Port Harcourt	35m	Three toilets, fenced in a paved compound, panel doors and aluminum sliding windows, terrazzo floor tiles and asbestos ceiling	

Table 2.1 Summary of Notable Research Efforts on Valuation Inaccuracy

S/n	Author (s)	Year	Country	Sample Size	Methodology	Results/Conclusions	Major Criticisms
1	Hager & Lord	1985	UK	2	Error metric	Only 40% office and 50% shop valuations are within $\pm 5\%$, and 90% office and 80% shop within $\pm 10\%$ of the 'true value'. Conclusion: Valuations not a good proxy for transaction prices.	-Hypothetical properties -Small sample -Absence of fees to valuers -Comparing valuations with valuations implies no market relativity
2	Guilkey, Cole & Miles	1986	USA	144	- Error metric -Used inflation adjustment to account for lag period	Mean absolute (inflation adjusted) error = 7.5% Range of error of between 18% to -28% Conclusion: Lower accuracy than suggested by Brown (1991) and IPD/DJ studies.	-The fact that only the successful or completed transactions are employed
3	IPD/Driver Jonas	1988	UK	1,442	Econometric and error metric	$R^2 = 0.834$ High level of bias as only 20% of valuations fell within $\pm 5\%$ of transaction prices.	-Non-contemporaneous valuations
	IPD/Driver Jonas	1990	UK	2,400		$R^2 = 0.99$. All property mean absolute difference = 9.9%. 66%	Extreme value leading to the problem of

							contemporaneous
						Conclusion: Valuations are good proxy for transaction prices.	-No information provided on valuation error.
5	Cullen	1994	UK	6,673	Econometric and error metric	Mean absolute error = 16.94%	-Reliable conclusions difficult given that average lag period between valuation and transaction price was 9.5months Non-contemporaneous valuations.
							- Extreme values leading to the problem of heteroscedasticity
							-Analysis involving large data set which may make potential impact of the lag period
						Conclusion: Bias towards under- valuations Lower level of valuation accuracy than suggested by Brown (1991) and IPD/DJ studies.	-The fact that only the successful or completed transactions are employed

6	Hebb	1994	USA	569	Econometric and error metric	<p>Mean absolute error = 10%</p> <p>Mean average error = 0.5%</p> <p>Found evidences of under valuations in rising market and vice-versa.</p> <p>Conclusion: Valuations not good enough proxy for transaction price.</p>	<p>-Non-contemporaneous valuations</p> <p>- Extreme value leading to the problem of heteroscedasticity</p> <p>-Analysis involving large data set which may make potential impact of the lag period</p> <p>-The fact that only the successful or completed transactions are employed</p>
7	Matysiak & Wang	1995	UK	317	Econometric and error metric	<p>Found evidence of bias in boom and slump conditions.</p> <p>Average undervaluation = 21%</p> <p>Average over valuation = 11.5%</p> <p>Absolute error = 16.7%</p> <p>Average error = 6.9%</p> <p>Probability of selling price within $\pm 10\%$ = 30% and $\pm 20\%$ = 70%.</p> <p>Conclusion: Lower level of valuation accuracy than Brown (1991) and IPD/DJ studies. Accuracy was a function of stable</p>	<p>-Non-contemporaneous valuations.</p> <p>-Extreme value leading to the problem of heteroscedasticity</p> <p>-The fact that only the successful or completed transactions are employed.</p>

						market.	
8	Patrick McAllister	1995	UK	57	Econometric and error metric	<p>$R^2 = 99\%$</p> <p>Overall mean absolute error = 15%</p> <p>Mean standard error = 10%</p> <p>56% of valuations accurate within 10% of the transaction prices.</p> <p>Conclusion: Valuations are good proxy for transaction prices.</p>	<p>-Non-contemporaneous valuations</p> <p>-Small sample bias</p> <p>-The fact that only the successful or completed transactions are employed.</p>
9	Hutchison et al;	1996	UK	446	Error metric	<p>Overall mean variation from mean valuation = 9.5% and a standard deviation = 8.6%</p> <p>Conclusion: Valuations are good proxy for transaction prices.</p>	<p>-Non-contemporaneous valuations</p> <p>-Hypothetical properties</p> <p>-The fact that only the successful or completed transactions are employed</p> <p>-Non-payment of fee for the valuation</p>

10	Parker	1998	Australia a	7	Econometric and error metric. Tried to address a number of practical limitations of quantitative analysis in terms of data, timing, transparency, independence and consistency	$R^2 = 0.99\%$ Overall valuations exceed transaction prices by 2.5% (dollar-weighted average) 85% of valuations fall within $\pm 10\%$ of market prices. Conclusion: Valuations are good proxy for transaction prices particularly at the portfolio level.	-Small sample bias
11	Newell & Kishore	1998	Australia a	218	Econometric and error metric. Used national property index to account for the effect of the lag period.	Mean absolute error (unadjusted) = -8.8% Mean absolute error (adjusted) = -5.3% Discovered differences in levels of error in active and depressed	-Non-contemporaneous valuations -The fact that only the successful or completed transactions are

						markets.	Employed
						Conclusion: Valuations are good proxy for transaction prices.	
12	Ogunba Ajayi	& 1998	Nigeria	2	Econometric and error metric	$R^2 = 0.242.$ Mean deviation from mean transaction price 33.43% and 36.47%. Range N124,065,000 and N123,371,430 Conclusion: Valuations are not good proxy for transaction prices.	-Sample too small -Non-payment of fee for the valuation
13	Blundell Wards	& 1999	UK	775	Econometric and error metric Attempted to control the effect of lag period.	Expected deviation a prior; = 18.13%. Actual deviation about 20% Conclusion: Lower accuracy than	-Non-contemporaneous valuations - Extreme value leading to the problem of heteroscedasticity -Analysis involving large data set which may make potential impact of the lag

					suggested by Brown (1991) and IPD/DJ studies.	period -The fact that only the successful or completed transactions are employed.
14	Ogunba	2004	Nigeria	200	Econometric, error metric ranges, analysis of variance to measure accuracy in 5 state capitals in south western Nigeria.	For Lagos metropolis the mean deviation is N40,017,857(67.91%) and $R^2 = 40.2\%$ P value = 0.000 Conclusion: Valuations are no good proxy for market prices. - Non- payment of fee

Source: Babawale (2008) pg 33-37