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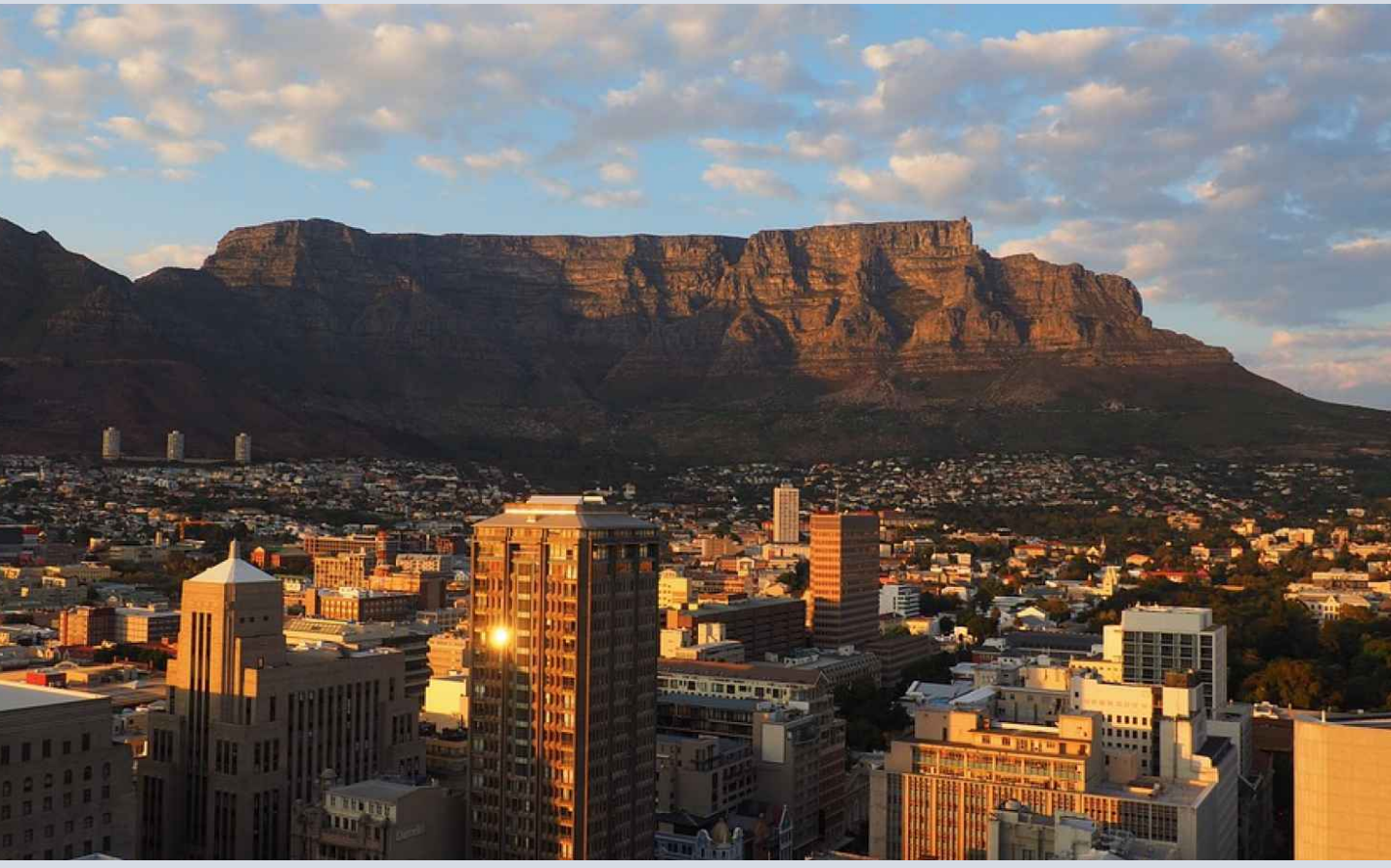

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Volume 3 Issue 1

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Editorial

The relaunch of the Journal of African Real Estate Research (JARER) provides an exciting new platform for the dissemination of scholarship engaged with the real estate sector in Africa. A central objective of the journal will be to convey the characteristics that define real estate markets in Africa as well as the diversity that exists within these markets. The relaunch and long-term success of JARER also reflects a long-standing objective of the African Real Estate Society – to promote research and education among property professionals across the continent..

The study of real estate in Africa offers a unique opportunity to develop a research agenda and body of knowledge that is different from those developed in more mature markets. An African-focussed real estate research agenda will need to deal with markets that are characterised by rapidly growing cities, a shortage of affordable residential and commercial space, and markets that function with relatively poor information flows. Real estate markets across the continent also reflect country-specific, historical and institutional arrangements resulting in unique market outcomes.
JARER will support the development of research methodologies and theoretical perspectives that are able to provide a new insights and a deeper understanding of market realities and the different avenues that exist for the sector to play a responsible role in promoting economic development and the delivery of broader socio-economic objectives.

A further important goal of JARER will be to provide valuable resources that support academic, as well as professional researchers across the continent. In achieving this goal, the journal will play an active role in promoting inquiry into topical themes including research that is focussed on the development of real estate academic programmes in Africa.

It is heartening to see the number of articles that the journal has attracted in a relatively short period of time, as well as the number of reviewers that have offered to actively participate in the journal. To ensure wide readership, the decision has been taken to make the JARER available as open access via an electronic platform hosted by the University of Cape Town.

This relaunch issue has the good fortune of showcasing a number of quality publications received from across the continent. Additionally, these papers have made valuable contributions to existing knowledge on critically important topics relating to real estate in Africa. These topics include: the role and use of technology in real estate practice, assessing real estate education at African institutions, the management of risk in real estate development in Africa, managing public housing in Ghana, Real Estate Investment Trusts and residential property in South Africa, and the challenges of land registration in Nigeria.
The standard and quality of these articles highlights the excellence that already exists across the continent and shows signs of great things to come for real estate research in Africa.

The relaunch of JARER was made possible by the support of board members of the African Real Estate Society, the library services at the University of Cape Town, and Journal Manager, Luke Boyle from the Urban Real Estate Research, who has worked tirelessly in coordinating this process. Additionally, I would like to extend my gratitude to Professor Karl-Werner Schulte, and the International Real Estate Business School, who have played a consistent and invaluable role in supporting the activities of JARER over the years.

I am confident that the JARER will, in the years to come, grow from strength to strength and fill an important gap in global real estate literature.

Felician Komu
Editor-in-Chief

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Factors Influencing the Deployment of ICT in Nigerian Real Estate Practice

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Abstract

Real estate is an intensive business that largely depends on information. Information technology has become a major form of communication in the real estate industry, a tool for marketing and information dispersion. As a result, diverse factors influence the use of information and communication technology (ICT). This study is aimed at investigating the factors influencing the use of ICTs in Nigerian real estate practices. Lagos state, the area of study, was delineated according to a central business district locational pattern to ascertain where the firms of real estate were grouped. Out of the 172 questionnaires that were conveniently administered to real estate firms within the study location, only 143 (83.14%) were retrieved and considered valid for the analysis. The collected data was then analysed using a factor analytical test. Findings revealed that technological infrastructure, service delivery efficiency enhancement, and productivity branding influenced the deployment of ICTs in Lagos' real estate industry. It was recommended that practitioners and real estate firms need to adopt emerging concepts and technological advancement in their quest for survival both locally and internationally. This will enhance their competitiveness and ensure that better value is provided.

Keywords: Real Estate Practice; ICT; Factors Influencing Globalization; Technology

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1. Introduction

During the late 1990s major structural changes brought about by globalisation, and Information and Communications Technologies (ICTs) shifted the norms of economics. Interconnectivity became the order of the day as technology and its capabilities were discovered. According to McAusland (2010), globalisation is a complex occurrence that has led to challenges but also opportunities for individuals and organisations in various fields. Economic globalisation has led to the emergence of a new world order characterised by geographically decentralised production, internationalisation and cross-boundary activities (McAusland, 2010). Within this international context, technology continues to improve and subsequently enhance the efficiency, performance and overall productivity of firms who employ it for their service delivery (Hamdi, 2013).

Before the globalisation surge, prominent technologies included radio, TV and print media. More recent technology development encompasses software information systems, internet connectivity, mobile phones and computers (Apulu & Latham, 2011). ICTs represent the most important industry in the world today (Swanepool & Tuccilino, 2003). Access to, and the usage of, technological facilities occurs with so much flexibility that it redefines man's interaction with people, business, governments and the environment (Crowston, Sawyer & Wigand, 2001; Agarwal & Karahanna, 2002; Zumpano, Johnson & Anderson, 2002). Modern ICT applications have been useful for automating processes such as information acquisition, resource sharing, data analysis, co-location using spatial data, decision support and social networking. ICT has become vital in handling and transferring data between individuals, businesses and machines themselves (Wigand et al, 2001).

The emergence of ICTs has influenced the business activities of real estate practitioners (Swanepool & Tuccilino, 2003; Kakulu, 2008; Babawale, 2012). Globally, real estate practices and purposes remain the same, but the mode of practice is subject to its geographic and cultural context (Dixon & Thompson, 2005; Reijo et al., 2007). The introduction of ICTs, particularly in other sectors of the economy, has led to changes in the conventional working process of real estate in Nigeria (Kakulu, 2008). The application of ICTs to real estate practice has provided a better corporate image, while simultaneously influencing business profitability (Sawyer et al., 2003). For example, in real estate agency practice, Cruzen (2006) stated that globally, 36 million visitors entered real estate websites in search for properties on the internet in 2006, compared with the 16 million visitors in 2001.

Information is essential to the real estate business. Information technology is a major form of communication - a tool for marketing and information dispersion. As a marketing tool, information technology gives extensive coverage to reach potential clients. Furthermore, information gathering is faster and more accurate. Additionally, it is probably the cheapest way to sell

products (Olukolajo, Ojo & Akinwamide, 2015). Estate agents connect buyers to sellers through control and dissemination of information. Clients value the role of the agents because of the information skills they offer in both listings and sales. In Nigeria, the adoption of information technology for real estate transactions began with a property website where property information was published. However, a number of challenges (such as the failure of the site to effectively meet customers' needs, unfulfilled promises on services, and non-functional or non-existent links) have discredited this medium (Chukwuemeka, 2012). The versatility of ICTs has led to its adoption in real estate services in Nigeria, but challenges have hindered the growth of its use.

According to Gwin (2004), potential buyers and/or sellers can easily and effectively find and compare properties, location and prices. Furthermore, both parties are given access to a multitude of real estate "e-information" with the click of a mouse even before contacting an agent. Globally, the studies of Wigand et al. (2001); Kirkwood (2003); Sawyer et al. (2005); Reijo et al. (2005, 2007) in the United States, and Peansupap and Walker (2005) in Australia have shown that real estate practice has been computerized with in-depth use of ICTs. Other studies by Sing (2005) in Singapore; Yang, Ahuja and Shankar (2007) in India; Alam and Moh'd-Kamal (2007) and Alam et al. (2011) in Malaysia, established that different factors motivate the use of ICTs in real estate practice in developing Asian countries.

This paper aims, therefore, to examine the extent and determinants of ICT adoption in a sample of real estate firms in Lagos, Nigeria. The study focusses particularly on the usage of ICTs to promote services in real estate. While some firms are at the forefront of ICT applicability for effective service delivery, others are yet to reach such a level. To achieve the aim of the research, the following questions are pursued:

i. What are the critical factors that impact the effective deployment of ICTs in Nigeria's real estate practice in the study area?

ii. To what extent have ICTs been adopted for effective delivery of real estate services in the study area?

The study aims to extend the frontiers of knowledge on the subject beyond the European and Asian experiences. It looks at real estate related ICT from the context of a developing economy in Africa. By identifying the factors influencing the deployment of ICTs within real estate firms, stakeholders involved in the delivery of real estate services will be able to fulfil the mission of promoting the use of ICTs and enhance their innovative and competitive capabilities through the utilisation of the technologies.

The data for the study is based on a survey of the knowledge of real estate practice and the rationale of thriving businesses in comparison to their less successful counterparts. The survey was conducted on 172 firms during a six-

month period (July-December 2017). The characteristics of the firm, factors that motivate the deployment of ICTs, and the aspects of real estate for which ICTs are used are at the core of this investigation. The need for this study to be conducted in Africa and particularly Nigeria, is a result of the fact that ICT deployment in the real estate sector is comparatively lower to other national sectors in the economy. Also, the Nigerian Institution of Estate Surveyors and Valuers (NIESV) does not permit practising firm to advertise in an overtly competitive manner.

This paper is structured to include an introduction to ICT and its relevance in contemporary real estate practice. This is followed by an assessment of ICT in real estate practices of developed and developing economies. The paper then highlights the research methodology of the study, the results and a discussion of findings from the research. It concludes with final remarks and recommendations.

2. Assessment of the Adoption of ICTs in Real Estate Practice

According to Kasim and Ang (2010), ICT is a technology dedicated to information storage, processing and communications. It involves a combination of hardware, software and networks that transform raw data into useful information for efficient retrieval (Gaith, Khalim & Ismail, 2009). The rate of change brought about by the introduction of ICT has led to the reorganisation of work patterns, skills and job retraining in many professions (Ogunsola & Aboyade, 2005). Real estate practices all over the world are information sensitive and intensive. The value of information skills available to Estate Surveyors and Valuers (ESV) determines how they connect landlords, tenants, sellers and buyers. Real estate professionals have embraced ICTs to maintain a competitive edge over other professionals and the market (Reijo et al., 2005; 2007).

The real estate industry is based on a competitive consumer culture in which professionals vie for business and ultimately, customers' loyalty (Jones & Benjamin, 2013). The presence of an agent makes real estate unique from retail and other industries where goods and services trade hands. The rise of various ICT applications over the years has led to new challenges for real estate agents and related professionals. Markus et al. (2008) notes that the increased prevalence of ICTs in various industries can become disruptive, causing individuals and organisations to either adapt or become obsolete. One of the most consistent patterns in business is the failure of leading companies to stay at the top of their industries when technologies or markets change.

Information and Communication Technology is a space where increased investment is necessary to remain competitive in the market. Investment within the ICT industry allows one to increase efficiency, reduce timescales and cost, and raise the entry level for a contracting business (Real Estate Insight, 2010).

Notwithstanding the apparent advantages of ICTs, it is commonplace today that the real estate industry invests little in ICTs. In comparison to other sectors of the economy, financial services and manufacturing industries, the real estate world has been considerably slower at exploiting the potential of ICT (Egbu & Botterill, 2002).

According to Crowston, Sawyer and Wigand (2001), the adoption of ICTs is influenced by individuals who change the conduct of their work in response to the availability of computing and communication technologies. The development and accessibility of ICTs has influenced all spheres of real estate practices, and its usage has brought about benefits to the profession (Dixon & Thompson, 2005). In real estate practice, the areas of application of ICTs include valuation property appraisal, construction design and management, property maintenance, estate agency and marketing, portfolio management, facility management, and administrative record keeping (Kakulu, 2003; Kirkwood, 2003). Cutting across these areas is the innovation of geographic information systems (GIS), which have been established as a distinct field of academic study for real estate practice. Kirkwood (2003) and Chang (2004) state that even though ESVs have embraced the use and integration of ICTs, many continue to work within the traditional paradigm of the profession.

Kummerow and Lun (2005) highlight that firms tend to achieve wider coverage due to their investment in ICT. Cheong (2006) also concluded that there is need for real estate professionals to evolve in cognitive change towards contemporary professional practices. Professionals must work with the advancements in information technology, specialisation, and master the new knowledge and techniques. The uniqueness of the real estate industry poses challenges to the implementation of automation and ICTs (Nielsen et al., 2007). In the face of these challenges however several factors demonstrate that the nature of the real estate industry is changing. Nielsen et al., (2007) asserts that, the use and adoption of ICTs in the construction industry is influenced by factors such as the project's value, technological capability of the parties involved, and previous experience with ICTs. Other factors include client demand, number of parties involved, the need for greater transparency, information overload and the need to reduce paper workload. Furthermore, factors such as partnering and the desire for better collaboration as well as the need for better and faster communication must be noted (Nielsen et al., 2007).

According to Perkinson and Ahmad (2006), the factors could also include an extensive lack of skilled workers, growing average age of staff, the inability to attract and retain talented/educated personnel, and increased industry competition. Other factors pointed out by Perkinson and Ahmad included the need for working in dangerous/inaccessible areas of operation, increased requirements for the quality of the work execution, and an increase in performance and reduction in costs. These factors are required to maintain a competitive advantage. Despite these factors and the inherent benefits of ICTs,

their utilisation in real estate services is yet to be fully embraced. This is evident in various firms where they continue to carry out their respective activities using traditional methods such as paper filing systems in cabinets and the use of manual typewriters. The under-exploitation of ICT could be attributed to the complex nature of the industry; financial constraints, poor availability of tools/software and improper understanding of the ICT implementation process (Perkinson and Ahmad, 2006).

Several studies have been carried out on ICTs and their associated relevance to real estate practice both in developed and developing economies (Muhanna, 2000; Crowston et al., 2001; Li & Wang, 2006; Oladapo, 2006; Adeyemo et al., 2015). For instance, Muhanna (2000) carried out a study on e-commerce in the real estate brokerage industry by assessing the perception of 150 real estate firms in Columbus, Ohio. The analysis was done using t-Tests and Analysis of Variants (ANOVA) techniques. The findings suggested that the size of the firm was a key determinant as to whether the firm is on the internet. The study, however, did not consider the respondents' views about the factors that motivate the use and the adoption of ICTs into real estate practice. Rowley (2005) studied the evolution of internet business strategies in the United Kingdom (UK) estate agency. This study focused on the relationship between business internet integration and service delivery. The study found that websites provide information, advice and newslinks to other businesses, search facilities, and provides opportunities for registration on estate agents' sites, which supports personalisation of communication with customers. The study considered internet business strategy to enhance service delivery in the UK and not in Nigeria. Li and Wang (2006) conducted a study on real estate agency in China. The study focused on the application of the internet to real estate agency practice in China. Findings revealed that the internet allowed agencies to broaden their business opportunities and served as a connection between the agencies and a fragmented customer base. The impacts and changes felt by Beijing real estate agents resulting from changes in information technology were highly correlated with parallel changes in the socio-economic system in China.

Oladapo (2006) evaluated the impact of ICTs on professional practices in the Nigerian construction industry. This was done by surveying the current state of ICTs in architectural, engineering and quantity surveying practices in the South-Western construction industry. Findings revealed that while core functions have largely been computerised, data and documentation management is still done manually. Ashaolu (2011) examined the environmental benefits and challenges of ICTs in Lagos. A questionnaire surveyed business office users across different occupations and the results were analysed on a 5-point Likert scale. The results showed that among other benefits ICTs facilitated commuting and work habits among other benefits. The study investigated the use of different ICT media and its propensity to 'telework' by taking advantage of different ICT facilities.

Esben (2012) assessed the factors hindering ICT usage in the construction industry in Ghana. A survey-based questionnaire was used to elicit data from 51 contractors. The result revealed that there is a reasonable level of awareness among the contractors about the potential benefits of ICTs. However, current ICT usage in most Ghanaian firms was found to be unsophisticated and more advanced applications were lacking. Gitau (2014) carried out a study to examine the impact of information technology and the extent of applications and implementation within real estate firms in Kenya. The study further examined the variations in firms' responses, and how increasing use of ICTs impact on firms' operational activities. Primary data was collected using a questionnaire survey conducted on 153 firms randomly selected from office buildings located in the Central Business District (CBD) of Nairobi and other key submarkets on the fringe of the CBD. Findings revealed that ICTs have a significant, positive impact on the way real estate firms carry out their activities.

Adeyemo et al. (2015) explored the motivating factors influencing the use of ICTs in real estate practice in Minna, Nigeria. Survey data was collected to examine the relationship that existed between internal and external motivating factors. The study categorised the motivating factors into external and internal categories and used a sample of 15 estate firms, which are limiting barriers to the effective use of factor analysis. The result indicated an increased productivity of staff, enhanced quality of customer services, knowledge sharing, information accessibility, improved decision-making, and time-saving as internal motivating factors. The external motivating factors which influence firms, alongside competitors' pressure, also depend on the availability of ICT infrastructure, management, business size and overall cost. The study also revealed that there is a negative correlation between internal and external motivating factors.

Empirical studies on ICT adoption have yielded ambiguous results. While some studies found a positive relationship between firm size and the adoption of ICTs (Arduin, Nascia & Zanfei, 2010; BenYoussef, Hadhri & M'Henni, 2010; Gallego et al., 2011), other studies have shown an insignificant or a negative correlation between them (Bayo-Moriones & Lera-Lopez, 2007; Bocquet & Brossard, 2007; Bocquet Brossard & Sabatier, 2007). Furthermore, Hollestein (2004) maintains that the relationship is non-linear by asserting that firm size has a positive impact on the adoption and use of ICTs. Despite these studies, no logical conclusion has been reached as to the inherent factors that have motivated the use of ICTs in the Nigerian real estate sector. The findings of most research on ICT usage and its application have not identified the major factors that can be said to influence the adoption of ICTs in real estate practice in Nigeria and particularly the study area, Lagos. This gap in the literature is therefore the basis for this study.

The factors utilised for investigation were extracted from the literature review. The need to increase productivity, to make staff responsibilities easier, time saving and management, and to enhance decisio-making were adopted and modified from Sawyer and Crowston (1999). Increasing competition level among practitioners, size of firm, attracting more clients, and changing trends in technology were taken from Oladapo (2006). Factors such as the need to improve the firm's quality of services, to increase the firm's rate of turnover, to create more opportunities, and to portray the firm's image were modified and sourced from Asgarkhani and Young (2010). The need to eliminate distance barriers, ease of information transfer, and affordability of computer software and hardware were selected from Spanos, Prastacos, and Poulymenakou (2002).

3. Methodology

The study set out to investigate the factors responsible for the use of ICTs in real estate practice in the Nigerian economy. The practice of real estate in Nigeria thrives in Lagos, Port-Harcourt and Abuja. Since the entire Nigerian property market cannot be explored due to limiting factors, the scope of this study is limited to the Lagos metropole. This is because the vast majority of Nigeria's real estate profession pools here. Lagos, being the commercial centre, as well as the former federal capital of Nigeria, is the fastest growing urban area in Africa (Onwuanyi & Oyetunji, 2015). Due to its prominence as the foremost property market in Nigeria, over 50% of Nigerian real estate professionals practice within the state (Olaleye, 2004; Babawale, 2008). Amidu, Aluko and Hansz (2008) report that more than half of the real estate consultancy firms in Nigeria locate their offices within the metropolis. The NIESV directory also suggests that 52% of the practitioners' firms are based in the Lagos metropolis (NIESV, 2002).

There are several CBD's in the Lagos metropolis due to the commercial-intensive nature of the city. This gives opportunities for most real estate firms to concentrate along the CBD routes. The study location was stratified according to the locational pattern stratification method employed by Ogunba (2004). Lagos, which comprises the Island and Mainland divisions, consists of five major business districts (Ogunba, 2004). They include Marina and Ikoyi/Victoria Island for the Lagos Island CBDs, and Yaba/Ebute Meta, Apapa/Ijora and Ikeja for the Lagos Mainland CBDs. This method, therefore, assisted in pinpointing the most concentrated areas of real estate professionals in the various CBDs.

The population for the study is estate surveying and valuation firms with either head or branch office in Lagos. The rationale for the adoption of ESVs lies in the fact that they are the professionals created by law to carry out real estate duties, with stamp and seal, for execution of property valuation jobs. They are members of Estate Surveying and Valuation Registration Board of Nigeria (ESVARBON) who possess the required skills and undergo the necessary

training that qualifies them to practice. The list of registered practising estate surveying and valuation firms in 2017 was obtained from the directory of NIESV. This list helped determine the sample frame of the population. Having stratified the study area into five zones namely: Marina, also known as Lagos Island, Victoria Island/Ikoyi, Apapa/Ijora, Yaba/Ebute Metta and Ikeja business districts. 50% of the estate firms were purposefully selected to represent the sample size of the respondents. Table 1 shows the sample of the target population.

Table 1: The Population Sample

S/N	Stratum	Sample frame	Sample size
1	Marina	94	47
2	Ikoyi/Victoria Island	52	26
3	Yaba/Ebute Meta	38	19
4	Apapa/Ijora	26	13
5	Ikeja	134	67
	Total	**344**	**172**

The questionnaire, as well as personal interviews, were used as instruments of data collection from the respondents. The questionnaire survey was employed to elicit information from the respondents due to the geographical settings of the study area. The questionnaire was structured with Likert responses. The data collected was then analysed using the factor analytical test. Factor analysis was carried out on the predictor variables to reduce them to a subset of uncorrelated factors. This technique is ideal for identifying clusters of related variables and helps reduce the variables into a more easily understood framework (Norusis, 2000). Tabachnick and Fidell (2007) suggest that the sample size of a study should be from 150 - 300 for factor analysis to be considered. However, Pallant (2005) states that there has been little agreement amongst authors concerning the size of a sample for factor analysis but recommend the use of a larger sample.

The sample size of 172 was used for this study is well within the range suggested by Tabachnick and Fidell. Regarding the number of variables, Hair et al. (1998) suggests that factor analysis is suitable for 20–50 variables, as the extraction of common factors becomes inaccurate if the number of variables exceeds this range. However, studies have shown that fewer variables can be used if the sample size can be significantly investigated (Ahadzie, Proverbs & Olomolaiye, 2008). Hence the twenty variables used in this study can be considered adequate for the factor analysis.

To determine if the items in the questionnaire were internally consistent, a reliability test was run, and the result produced a Cronbach's alpha (α) value of 0.677. Oppenheim (1992) states that the degree of reliability of a research instrument is more perfect as they tend towards 1.00. Therefore, the reliability

test executed to investigate the factors necessitating the deployment of ICT in Nigeria's real estate practice shows that the variables in the questionnaires are consistent and the scales are internally reliable.

4. Results and Discussion

According to the literature, identified factors that necessitated the use of ICTs in Lagos' real estate practice were subjected to principal component analysis (PCA) with varimax rotation. Kaiser–Meyer–Olkin's (KMO) measure of sampling adequacy and Bartlett's Test of Sphericity were employed to test the factorability of the data gathered using the Statistical Package for Social Sciences (SPSS) version 23.0. KMO is a measure of homogeneity of variables used in testing whether the partial correlations among variables are small (Sharma, 1996). The KMO index ranges from 0 to 1, with 0.6 suggested as the minimum value for a good factor analysis (Eiselen, Uys & Potgieter, 2007; Tabachnick & Fidell, 2007). Also, Bartlett's Test of Sphericity shows whether the correlation matrix is an identity matrix. According to George and Mallery (2003), a $p<0.05$ indicates that the data does not produce an identity matrix and are thus acceptable for factor analysis. Pallant (2005) suggests that Bartlett's Test of Sphericity should be significant ($p<0.05$) for the factor analysis to be considered appropriate. The KMO obtained for this study is 0.722 at a significant level of 0.000. This result coupled with the 0.677 obtained from the reliability test, shows that the use of factor analysis for the data gathered is appropriate.

Table 2: Factors Influencing the Deployment of ICT in Nigerian Real Estate Practice

Factors	**Commonalities**	**Factor groupings**	**Cluster components matrix**		
Changing trends in technology	.685		0.811		
The need to reduce personnel costs	.671		0.580		
Firm's affordability of computer software and hardware	.787		0.849		
To ease information transfer	.812	Technology Infrastructure	0.818		
To eliminate distance barrier	.477		0.674		
To help in document and record keeping	.525		0.787		
To aid data presentation	.825		0.772		
To create more opportunities	.912		0.849		
The need to improve the firm quality of services	.754			0.807	
The need to increase the firm rate of turnover	.680	Service Delivery Efficiency Enhancement		0.822	
To make complex task easier	.896			0.706	
Size of firm/organisation	.791			0.867	
Enhance accuracy	.777			0.868	
To enhance and speed up decision-making	.610			0.528	
To increase competition level among practitioners	.852				0.862
The need to increase productivity	.687				0.704
Attract more clients	.863	Productivity			0.896
Time-saving and management	.868	Branding			0.840
To portray the firm image	.770				0.797
To make staff responsibilities easier	.796				0.886
Eigen Values			**11.052**	**3.822**	**1.056**
% of Variance			**48.707**	**7.497**	**5.366**

Source: Field Survey, 2017.

Table 2 shows the factors influencing the use of ICTs, the commonalities, the component matrix, and the associated factor groupings. The Kaiser's criterion was used in retaining factors with Eigen values greater than 1.0. The factor analysis results in three factors with Eigen values exceeding 1.0. The first cluster of factors accounted for 48.707% of the total importance of factors that necessitated the use of ICTs in real estate practice. In the same vein, the second cluster factors accounted for 7.497%, and the third cluster accounted for 5.366%. These three clusters of factors together have a total cumulative percentage of 61.570% of the total importance and significance of the factors.

Factor 1 – Technological Infrastructure Factors

Eight items are included for Factor 1. All the items relate to the acquisition of technological factors needed to achieve success in the use of ICTs in real estate practice. These factors are:

- changing trends in technology
- the need to reduce personnel costs
- firm's affordability of computer software and hardware
- to ease information transfer
- to eliminate distance barrier
- to help in document and record keeping
- to create more opportunities' and 'to aid data presentation

Thus, they were labelled 'technological infrastructure factors' and had a total variance of 48.707%.

The suitability of technology to every sector in an economy cannot be overemphasised. A good technological image is essential to improve the competitive edge of organisations in an increasingly complex and technologically conscious industry. Han and Lim (2001) confirm that some property management company's computer applications were lagging in the advancement of computer hardware and software. This could be a result of them dealing with a small portion of properties through the computer and the internet. Secondly, property management involves many personal touches, where the exclusive use of computers might not be helpful. Lastly, the available software packages cannot meet the requirement of some special property management tasks.

Due to an economic recession in Nigeria, some clients cannot afford to acquire properties nor pay for the services of real estate consultants because of the high costs involved. Hence, only wealthy members of society can engage the services of real estate consultants with good reputations. For this reason, some estate firms cannot afford to invest in ICTs, but would rather spend on essential office needs. This is corroborated by Kelly (1993) who suggests that the high cost of computers and software pose as a severe impediment to the accessibility of IT in Africa. Therefore, funding was a major obstacle to ICT investment, especially for small firms. Technology has gone beyond the use of traditional methods of keeping records such as

cabinet filing systems, therefore, for organisations to remain in business and develop, they must keep in touch with emerging technological advancements within the profession.

Factor 2 – Service Delivery Efficiency Enhancement Factors

Factor 2 has six components. They include:

- the need to improve the firm quality of services
- the need to increase the firm rate of turnover
- to make complex tasks easier
- size of firm/organisation
- enhance accuracy
- to enhance and speed up decision-making

These factors were labelled 'service delivery efficiency enhancement factors' with a variance of 7.497%.

Customers' satisfaction is the focus of every organisation since they are the reason for its existence. Many organisations have gone out of business as a result of not meeting the need of their customers. Kowtha and Choon (2001) believe that the adoption of such technology allows for firms to take a competitive advantage by reducing their costs and improving their reactivity to market changes and customer needs.

Due to the nature and complexity of the property market, there is a need for the presence of property experts who can assist clients in the market. Activities such as developing, buying, letting and disposing of property assets are some of the core business activities of real estate that require professional advice. Usually, property valuers are recognised as people who have the expertise in this area and can give advice to clients on a broad spectrum of property services (property valuation, real estate brokerage, conducting market studies and feasibility studies) (Ahmad Shazrinet, et al., 2014). The nature of these services often depends heavily on market knowledge to ensure that they can deliver the best services to the client. It is therefore likely that ICT will continue to create shifts and transformations in subtle ways. These developments will further change the needs and preferences of owners, occupiers and their customers (Dixon, 2005).

Factor 3 – Productivity Branding Factors

Six factors are included in Factor 3. They are:

- to increase competition level among practitioners
- the need to increase productivity
- attract more clients
- time-saving and management
- to portray the firm image
- to make staff responsibilities easier

This factor was labelled, ‘productivity branding factors'. It accounts for 5.366% of the variance.

Every product needs branding for it to be marketable. Most customers look out for the brand name before purchasing their goods. In real estate services, the goods traded therein involve the interest that subsist in the property. Therefore, most clients do not want to patronise non-professionals so as not to lose their investments. As a result, most firms need to be well-equipped to succeed in the competitive market by making their marketable products stand out. The success of an organisation in meeting its objectives depends on sound information management principles. Developments in technology have aided firms and organisations in sound management of their information for effective decision-making. ICTs have been shown to be a vital tool in assisting the real estate industry to cope with the increasing complexity of its products as well as the increasing demands of its clients and regulators (Liston, Fischer & Kunz, 2000).

5. Conclusion and Recommendations

This research has examined the factors influencing the deployment of ICTs in contemporary real estate practice in Nigeria. Twenty factors were highlighted from the literature. These factors were assessed by respondents in relation to their influence on the use of ICT in Nigerian real estate practice and subsequent organisational efficiency. The factor analysis results clustered these variables into three factors, namely: technological infrastructure, service delivery efficiency enhancement, and productivity branding factors. The findings in this study agreed with that of Alam and Moh'd Kamal (2007) and Adeyemo et al. (2015). Both suggest that the increased productivity of staff, enhanced quality of customer services, knowledge sharing factor and information accessibility, improved decision-making, and time-saving are the most highly motivating factors influencing the use of ICTs in real estate practice. The findings are also in tandem with that of Hamdi (2013), who notes that technology will continue to improve various aspects of the construction industry including the services provided, the enhancement of efficiency, performance and consequently the productivity of the firms involved. Hence, the results also support the view of Peansupap and Walker (2005), who state that new technologies have resulted in cost reduction of communications through computerisation. The implication of the findings to the Nigerian real estate practice will appreciate the role of ICTs as a tool of enhancement for their mode of operation. Furthermore, it highlights the inherent benefits that arise with maximum utilisation of ICTs in this national sector. This will help in building Nigerian real estate databases and clients’ satisfaction.

This study, therefore, recommends that the bodies shouldered with the responsibilities of regulating the profession should formulate necessary policies and guidelines that will ensure that practitioners and real estate firms benefit from ICT in real estate services. The government should also provide incentives to real estate firms to equip themselves with the latest technologies. This could be done with the help of NIESV by establishing

special grants to ensure that the real estate industry positions itself to take up the challenge. Furthermore, there is a need for practitioners and real estate firms to follow recent trends and emerging concepts in technological advancement in their quest for survival, both in local and international markets.

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Assessing a Ghanaian University's Real Estate Teaching and Learning

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Abstract

Just as curriculums and teaching styles vary, the experiences of students are varied and complex. This study aims to understand how students rate the undergraduate programmes at the Department of Land Economy (DoLE) within the Kwame Nkrumah University of Science and Technology (KNUST) Kumasi, Ghana. It studies the quality of education received alongside the expectations of students. To assess these variables, this study adopts and modifies the Student Engagement Questionnaire (SEQ) developed by Kember and Leung (2009). As part of this methodology, 312 students in their third and final year of DoLE's BSc in Land Economy and BSc in Real Estate participated in this assessment. Their responses were measured using a five-point Likert scale which consisted of 18 different scales. The scales were checked for reliability using Cronbach alpha values. Using this methodology, the study was able to conclude that more than 50% of respondents agreed that the quality of the programme met their expectations. Furthermore, students generally realised an improvement of their critical thinking and problem-solving capabilities. In contrast to this, students also emphasised a lack of feedback and an overwhelmed system of educational resources. It is worth noting that the SEQ, as a diagnostic tool, should be treated as being indicative, rather than absolute. Therefore, this study looks at the state of education from a Ghanaian student perspective. It highlights where there is room for improvement and ways in which future research can look at this issue from a broader industry standpoint. Education and learning must continuously evolve to meet the needs of students and be reflective of the times.

Keywords: Assessment; Teaching and Learning; Real Estate; Student Engagement Questionnaire; Ghana

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1. Introduction

Real estate education in Ghana is run by five public universities: Kwame Nkrumah University of Science and Technology (KNUST); University for Development Studies (UDS); Kumasi Technical University (KTU); Ghana Institute of Management and Public Administration (GIMPA); and University for Professional Studies, Accra (UPSA). KNUST is revered as the pioneering institution with regards to real estate education. The Department of Land Economy (DoLE), established in the 1966/67 academic year, was one of the first departments at KNUST with the mission to train world-class land economy and real estate professionals capable of finding solutions to the contemporary issues in Ghana's Real Estate sector.

From the outset, the department ran an undergraduate programme in Land Economy (4-year BSc) and a Land Management postgraduate (MSc and PhD) programme. The programmes aimed to incrementally address current issues as well as fundamental analysis of the real estate sector with each year of study. Both programmes focused attention on the role of policymakers in establishing regulatory frameworks within which land and its related markets operate. As well as the role of the private sector in owning, managing and developing physical and financial assets within those markets. This dual role analysis offers the department and its courses a better opportunity to address issues of concern in real estate and related sectors with time. While these programmes continue, there have been several changes in the education system at the university. Since the 2009/10 academic year, the DoLE has added another undergraduate programme in real estate to its academic offerings. Earlier in 2005, the university began to reorganise its departments, faculties and colleges. The goal was to make its departments more centred and interconnected. In doing so, the university introduced the collegiate system. This meant that similar programmes were grouped together in a college within the university. Trigwell (2005) mentions the collegiate system encompasses a set of interactions with students within their field of study but also from other disciplines. Thus, the collegiate system at KNUST began to foster multidisciplinary collaboration among faculty members and students, improved teaching, learning, and research opportunities. Over the years the DoLE has produced thousands of graduates serving many sectors of the economy, not limited to the real estate industry and its related sectors.

The current state of the university's programmes mirrors the times as well as the needs of the industry and government. In a globalised world, competition from other tertiary institutions in Ghana and abroad keep increasing. In the face of a rapid increase in numbers from students of diverse backgrounds, the department's approach to teaching and learning is pressured to meet world-class standards. In this international climate, many studies have therefore explored the relationship between course assessment and programme improvement (de Weert, 1990; Gray, 2002; Booth, 2006; Combs et al., 2008; Newell et al., 2010; Newell, 2013; Poon, 2015). Typical course evaluations do not provide sufficient information about the quality of programmes. To receive the right kind of feedback helps to improve quality of education as per industry expectations. Without a better understanding of the problems of

the department, it is difficult to know whether the quality of teaching and learning is meeting student needs as well as the needs of the job market.

It is not known how students, lecturers, and other supporting staff generally rate the level of teaching and learning in the DoLE at KNUST. In this time of change, it becomes essential to ask questions of self-regulation: How frequently are reviews and assessments done to facilitate or improve teaching and learning experiences? What are the strategic niche of departments and the relevance of teaching and research departments to the industry? The need for these kinds of periodic reviews will help put teaching and research departments at a level where continuous improvement in course content is readily achieved.

There is a perceived gap between the skills and competencies needed by students and what the DoLE offers regarding teaching standards. With this context in mind, this study aims to review teaching and learning activities of the DoLE so that the department can consistently promote quality education. Consequently, its overarching objective is to recommend new and innovative approaches that suit a real estate department and industry needs. There is a need for the quality of teaching and learning to be assessed, as it is vital to competitiveness in an increasingly globalised knowledge society (Van der Wende, 2003, Materu, 2007).

1.1 The Need for an Improved Assessment

The DoLE, like other departments at KNUST, is faced with pressing issues that hamper teaching and learning. Concerns from graduate employers seem to suggest that what students are taught does not match the requirements of the job market. An assessment is done every year to evaluate courses and lecturers. Over the years it has been observed that students' participation in regular KNUST university-wide course evaluations has dwindled. Furthermore, the results from such assessments are not diagnostic enough to bring out and improve quality issues.

There is the need for an assessment of teaching and learning at the department to evaluate its quality to meet market demands and review obsolete theoretical methods against current practices. This calls for a review of the department's curriculum to bring on board analytical courses to meet market concerns. More so, a good learning environment/infrastructure must be in place. Students come to class and are made to stand through lectures. Large class sizes do not encourage effective one-to-one interaction with students. Assignments are seldom given, and the mode of assessing students' knowledge of the course is reduced to mid-semester and end of term examinations. Quality assurance is crucial in addressing these challenges (Salmi, 2003). There are increasing calls for accountability, both on the part of students and staff alike, as a means to improve educational outcomes at the university (Materu, 2007). The need for improving teaching and learning has been previously underscored (Adams, 1993, Hanushek and Woessmann, 2007). This research, therefore, seeks to examine ways to measure the quality

of education at a programme level to improve and suggest new and innovative ways of tackling the issues.

1.2 Research Objectives

This study aims to review the teaching and learning activities of the DoLE at KNUST and thus its ability to promote quality education. To operationalise the aim, objectives and research questions have been formulated of which specific answers need to be obtained. Table 1 shows the research objectives with the specific research questions to address them.

Table 1: Research Objectives and Questions

No.	Research objectives	Research questions
i	To examine the current state of teaching and learning at the department.	What is the current state of teaching and learning in the department?
ii	To examine the major problems that inhibit quality teaching and learning experience at the department.	What is quality teaching and learning? What are the major problems inhibiting quality teaching and learning experience? What are the driving forces that make the problems persist?
iii	To examine best practices of teaching and learning and how they can be adapted to suit department's needs	What best practices exist elsewhere in terms of teaching and learning? Can they be adapted to suit the Department's needs?
iv	To develop an assessment criteria to measure teaching and learning at the department.	Which assessment criteria already exist? How can it be streamlined to suit department's needs?

1.3 Teaching and Learning Assessments

Ensuring quality of teaching and learning in universities is a significant concern (Biggs, 2001; Biggs & Tang, 2003; 2007; Biggs, 2011). The current standard practice of international tertiary institutions is that there needs to be quality assessments of what is taught in the classroom. This is very important as it serves as a means to improve the performance of students based on feedback from course evaluations and assessments. Kember and Leung (2009) highlight that evaluation at the level of instructor or course is almost universal. The university, as an institution, has specified various procedures for awarding degrees and outlined what students ought to do to pass examinations and graduate. It is therefore, a self-regulating body with the ability to set in motion processes for transformation. The entity itself needs assessment as well as the various parts it consists of.

Fraser (1998) mentions that: "*A 'learning environment' refers to the social, psychological and pedagogical contexts in which learning occurs and which affect student achievement and attitudes*" (Fraser, 1998: p.3). This is a very

broad definition which is more student-focused at the same time teacher-centred. One common form of evaluating this kind of learning environment is to focus on the experience of students throughout their course of study to gain a better understanding of their perception of quality to improve course delivery. Numerous surveys have been developed to assess how students view a range of campus experiences which help them in their social and academic integration. Common surveys used in universities include the College Student Experience Questionnaire (Pace & Kuh, 2007) and the Course Experience Questionnaire (CEQ; Ramsden, 1991; Newell et al., 2010). Ramsden's (1991) questionnaire was aimed at assessing teaching effectiveness at the level of the whole degree programme. The CEQ has many versions, with scales for *Good Teaching*, *Generic Skill*, *Clear Goal and Standard*, *Appropriate Workload*, and *Appropriate Assessment*. One of the limitations of the CEQ is that the construct is restricted to a five-point Likert scale; thus, feedback is restricted to five variables. Teaching is seen to be multidimensional, and therefore a well-designed teaching evaluation instrument should have multiple scales (Marsh, 1987). Moreover, social and psychological aspects as mentioned in Fraser's (1998) definition are missing in the CEQ. The DoLE currently uses an assessment construct that leans towards the CEQ but not in its entirety.

2. Methodology

To ensure the broadest possible data and opinion coverage, the study employed both qualitative and quantitative research designs (i.e. a mixed-method approach). This methodology was selected to fulfil the different objectives discussed earlier. It included both formal and informal discussions and the administration of questionnaires to students. Also, a literature survey was used to gather information on the current trends to obtain meaningful insights to this phenomenon.

Sourcing of data was done using both primary and secondary sources. Primary sources included the use of structured questionnaires and interviews. The sampling procedure used was purposive sampling of students. Secondary sources of data included journals, reports, and internet publications. These aided in reviewing the literature on the existing situation to better appreciate the topic.

The first part of this research design was to develop and formulate an appropriate assessment criterion which meets the department’s current needs. Thereafter, students were selected to partake in the assessment. The final step of the design was to analyse the results derived from these assessments. This design was challenging especially in the development of the assessment criteria as many similar assessments already exist in the literature to the extent that selection and justification were challenging.

Development of an Improved Questionnaire

KNUST periodically performs an assessment of lecturers and the course (teaching evaluation). Students partake in this assignment and necessary feedback goes to select lecturers. Over the years it has been understood that

most of the students do not take these assessments seriously due to assessment fatigue (Adams & Umbach, 2012). Furthermore, they do not see how their inputs are incorporated into a better course design and therefore feel discouraged. Also, the participation of third and final year students was noted to be diminished because of the students' perceived non-incorporation of their contributions.

Considering this background, through an examination of literature and guided by principles as mentioned by Kember and Leung (2009), the author opined that the design of new assessment criteria should incorporate the following:

1. The assessment needs to be diagnostic enough to identify strengths and weaknesses so that the feedback would lead to an action plan for improvement.
2. The assessment needs to be consistent with research into teaching and learning environments.

These two guiding principles mean that there should be a range of scales to satisfy various aspects of teaching, learning and environment. At the same time, it has also been understood that students are reluctant to answer a questionnaire which they consider too lengthy.

Considering these conclusions, the author has adopted the Student Engagement Questionnaire (SEQ) for the following reasons:

1. The questionnaire is outcome based;
2. It can be used across disciplines
3. It is more holistic (to embrace Fraser's (1998) definition).

A set of initial tests were run to ascertain the usefulness of this questionnaire. Helpful feedback was gained for future improvement (see Kember & Leung, 2005). There are two main parts of the questionnaire;

1. A section seeking feedback on students' perceptions of their academic development during their degree programme based on a set of generic capabilities.
2. A section seeking feedback on perceptions of the quality of elements of the teaching and learning environment.

The questionnaire had nine scales to measure the teaching environment. Three higher orders are captured under this item. The first one, *Teaching,* is measured by the criteria of active learning, teaching for understanding, assessment, and coherence of curriculum. The second, *Teacher-Student Relationship,* measures the relationship between lecturers and students, and feedback to assist learning. Lastly, under *Student-Student Relationship,* there are the two items including the relationship with other students and cooperative learning. This concept of measuring and assessing the learning environment closely resembles the definition given by Fraser (1998).

The list of all 18 scales used in this research work (adapted from Kember & Leung, 2009) are provided in the appendix. In line with the methodology, the study did not include the two open-ended questions as in the original questionnaire. This decision was made so that unclear student responses would be minimised so that evaluation would be more consistent. Furthermore, preference was given to closed-ended questionnaires rather than open-ended questionnaires so as not to obtain varied answers. The two questions that were omitted from Kember and Leung's questionnaire were:

1. What are the best aspects of your programme?
2. Which aspects are most in need of improvement?

In place of these, the study added one more item for overall satisfaction of the course. This was found to be missing in the original questionnaire. This item was added to allow students to rate the overall course quality. The reason close-ended questions were used instead of open-ended questions is because of the disadvantages of using open-ended questionnaires in surveys. These disadvantages include the fact that open-ended questionnaires require extensive coding, there is a larger non-response rate, and they produce more missing data (Geer, 1998; Reja et al., 2003).

The questionnaire used a five-point Likert scale with the responses ranging from Strongly Disagree (1) to Strongly Agree (5).

1 – Strongly Disagree
2 – Disagree
3 – Only to be Used if a Definite Answer is not Possible
4 – Agree
5 – Strongly Agree

In all, the modified criteria used in the study consist of 18 distinct criteria to measure the quality of teaching and learning (see appendix).

Table 2 shows the number of students from the various classes whose responses were included in the final analysis of this research work. Third and fourth (final) year students studying BSc Land Economy and BSc Real Estate programmes were the only classes used for the research. They were understood to be those who could give more conclusive feedback about the performance of teaching and learning when compared to their colleagues in first and second years who have had limited exposure to the programme.

The questionnaires were administered at the end of the second semester of the 2012/2013 academic year when students had completed all their semester examinations. This was to avoid any premature answers and guesswork. The overall response rate was 93%. Per class, the response rate was 82%, 96%, 99% and a 100% for Land Economy Year 3 (LE3), LE4, RE3, and Real Estate Year 4 respectively.

Table 2: Number of Respondents from Each Class

Description	**Number of respondents**
BSc Land Economy Year 3	81
BSc Land Economy Year 4	118
BSc Real Estate Year 3	69
BSc Real Estate Year 4	44
Total	**312**

3. Results

Quantitative data was collected and analysed to present the issues discussed under broad themes.

3.1 Reliability of the Questionnaire

Validity and reliability are two fundamental elements in the evaluation of a measurement instrument (Kember & Leung, 2009). The reliability of the scales was checked using Cronbach alpha values (Table 3). The Cronbach alpha is a coefficient of internal consistency. It is the most widely used objective measure of reliability expressed as a number ranging from 0 to 1 (Tavakol & Dennick, 2011)

Table 3: Cronbach Alpha Coefficient for Scales in the Questionnaire

Scale	No. of items	Alpha
Capability		
Critical thinking	2	0.71
Creative thinking	2	0.72
Self-managed learning	2	0.48
Adaptability	2	0.56
Problem-solving	2	0.71
Communication skills	2	0.72
Interpersonal skills and group work	2	0.61
Computer literacy	2	0.80
Teaching and Learning Environment		
Active learning	2	0.49
Teaching for understanding	2	0.46
Feedback to assist learning	2	0.39
Assessment	3	0.63
Relationship between teachers and students	2	0.63
Workload	2	0.66
Relationship with other students	2	0.70
Cooperative learning	2	0.73
Coherence of curriculum	2	0.74

The formula is given as:

$$\alpha = K/ (K - 1) [1 - (\sum \sigma^2 / \sigma_{total}^2] \quad (1)$$

Where *K* is the number of items, ($\sum\sigma^2$ is the sum of the K item score variances, and σ_{total}^2 is the variance of scores on the total measurement. The formula is interpreted as:

*(Number of items/ Number of items – 1) * [1 – (sum of variance/ standard deviation ^2)*] (2)

Reliability estimates show the amount of measurement error in a test (See Tavakol & Dennick, 2011 for further explanation). Higher values of alpha are preferable. However, the general rule suggests that an alpha of ≥0.70 is more desirable. If items are correlated to each other, alpha values will increase and vice versa (Tavakol & Dennick, 2011). From Table 3, one can conclude that eight of the measured criteria fall within acceptable alpha values of above 0.70. However, items that do not fall within this range should not be dismissed in the interpretation given the reasons above as they may add qualitative value to the study.

3.2 Diagnostic Power

For an instrument to improve the quality of teaching and learning, it must be designed in such a way that it can identify strengths and weaknesses (Kember & Leung, 2009). The next phase of the analysis focused on some of the results to identify how diagnostic feedback from the evaluation could help improve teaching and learning at the DoLE at KNUST. The next section details some of the results and how they are indicative of the department's performance. Four out of 18 criteria are discussed subsequently. This is to limit the discussion to critical elements that are of concern to students, faculty and employers. Thematic areas for further discussion are Critical Thinking, Feedback from staff, Problem-solving capabilities and career prospects, and Overall quality of the Bachelor's programme.

(i) *Critical Thinking*

Figure 1 shows a descriptive analysis of the Critical Thinking criteria. Students in various classes were asked to rate two criteria relating to their development in critical thinking using a Likert scale (See questions 1 and 2 of Appendix). They rated themselves high. From the graph, many of students believe they have developed themselves in critical thinking abilities.

Students agreed that this area of their academic life had improved. Only a few students (less than 5%) do not agree with that assertion. This criterion is very crucial as students were asked to rate themselves to determine whether they were up to the task of critically examining dissenting and opposing views.

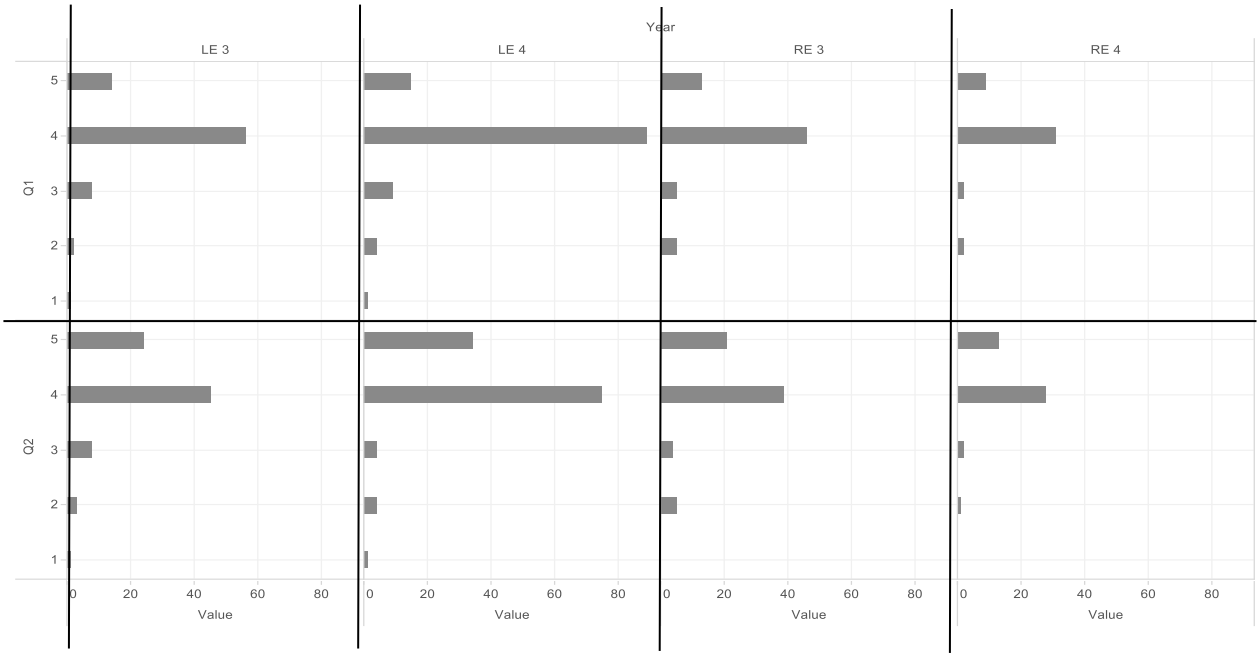

Figure 1: Score for Critical Thinking Criteria

(ii) *Feedback from Staff*

One of the criteria which did not have a strong internal coherency was the criterion that measured feedback students receive from staff. It had a Cronbach alpha value of 0.39, the lowest of all the criteria measured. This result was to be expected as some of the students perceived that they do not receive useful feedback from teaching staff to enable them to know what is expected of them. Students were asked to rank questions 21 and 22 using the Likert scale 1 to 5.

Q21. *When I have difficulty with learning materials, I find the explanations provided by the teaching staff useful.*

Q22. *There is sufficient feedback on activities and assignments to ensure that we learn from the work we do.*

From Figure 2, it becomes apparent that a majority of the students (more than 45% in each class) do not agree to the assertion that they receive sufficient feedback on activities and assignments (question 22). The reason may be attributed to students' numbers increasing over the years. As a result, class assignments and short tests, which used to be administered, have either been stopped or continued but without adequate assessment or feedback to the students. It should also be noted that the university has subscribed to various e-journals that, should be accessed online. However, there has been difficulty in students getting access to learning materials both hard copies and e-copies.

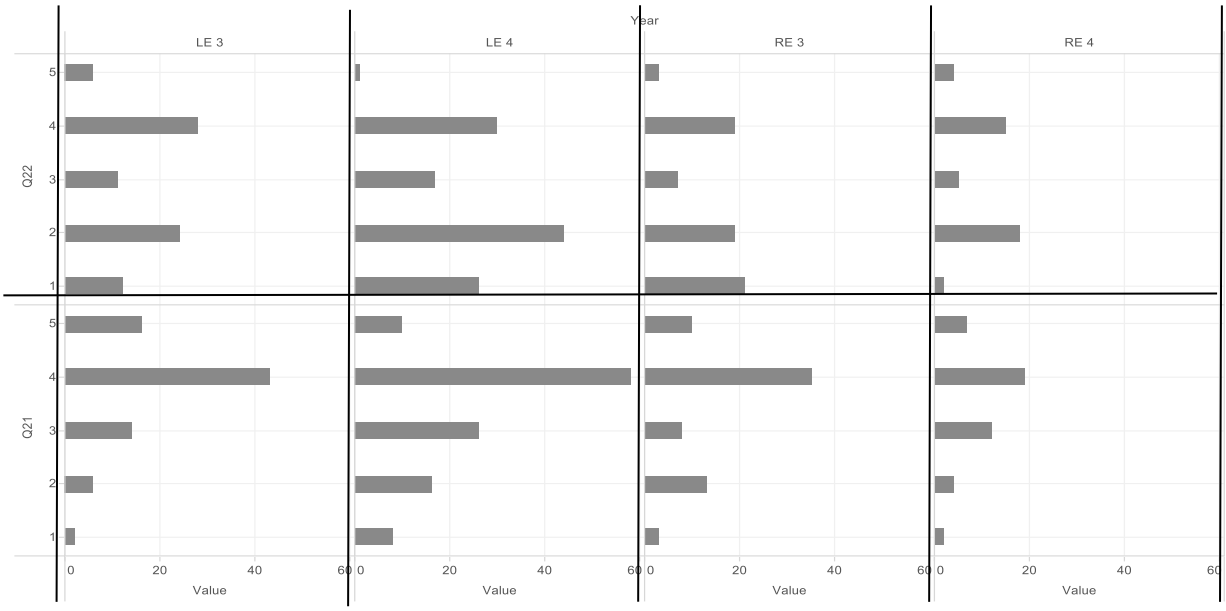

Figure 2: Feedback from Staff (questions 22 and 21)

A different trend emerges when the same students were asked if they had difficulty in getting learning materials (question 21). Majority of the students were of the view that explanations provided by teaching staff were useful. This response is at variance with the previous question

Table 4 shows the same results as in Figure 2 but in percentages to better appreciate the issues. The percentage of each score over the total score for each question was computed for the four different classes. In response to question 22, as many as 35% of students in LE3 agreed that there is sufficient feedback on activities and assignments. However, 37% and 41% in LE4 and RE4 respectively disagreed with that assertion. The interesting thing noted is that 30% of students in RE3 strongly disagreed with the same statement. The highest percentages in the table are highlighted for quick identification.

Table 4: Percentage Scores of Criteria Feedback from Staff

Score	Year			
Q.22	**LE3**	**LE4**	**RE3**	**RE4**
5	*7*	*1*	*4*	*9*
4	*35*	*25*	*28*	*34*
3	*14*	*14*	*10*	*11*
2	*30*	*37*	*28*	*41*
1	*15*	*22*	*30*	*5*

Q.21	**LE3**	**LE4**	**RE3**	**RE4**
5	*20*	*8*	*14*	*16*
4	*53*	*49*	*51*	*43*
3	*17*	*22*	*12*	*27*

2	*7*	*14*	*19*	*9*
1	*2*	*7*	*4*	*5*

A different trend emerges as shown in Table 4; the students generally agreed that when they have difficulty with learning materials, and explanations from teaching staff are useful. On the one hand, teaching staff are helpful, and on the other, they do not give sufficient feedback, according to the students rating. The results indicate a contradiction. This contradiction may stem from the fact that teaching staff deliver lectures to the best of their abilities during contact hours in class. At the same time, due to increasing student numbers, few assignments are given to ensure that teaching staff can mark and grade students accordingly.

(iii) *Problem-Solving Capabilities and Career Preparation*

One of the key criteria for assessing the quality of a teaching and learning environment is students' problem-solving capabilities. To answer this, students were asked to rate two statements (questions 9 and 10 of the questionnaire) namely:

Q9. *I have improved my ability to use knowledge to solve problems in my field of study.*

Q10. *I am able to bring information and different ideas together to solve problems.*

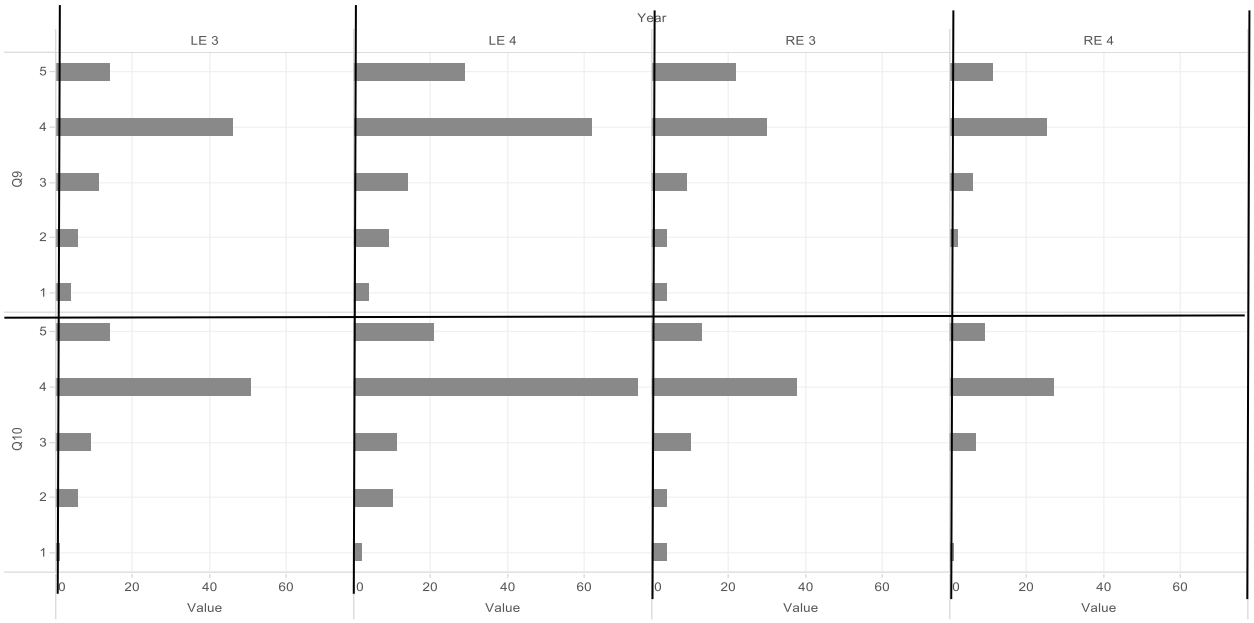

Figure 3: Problem-Solving Abilities (questions 9 and 10)

The results suggest that in terms of problem-solving abilities, the majority of the students (more than 70% in each class) agreed with the statement that they had improved on this aspect and could solve problems on their own (Figure 3). University education, especially at the bachelor's level prepares students generally to work in any field and to think on their feet (Brooks, 2011). These

responses attest to the fact that students know this aspect as very critical and thus learn to improve upon themselves.

(iv) *Overall Quality*

The last criterion considered in this research was to measure the overall quality of the programme (see Figure 4). This response was significant as it gives the students' impression of the quality they expect and see from the department. Students are key stakeholders in education. Anecdotal evidence suggests some academics are of the view that students cannot rank the quality of an educational programme because they do not know what they should learn until they are taught. The reason could be that students may be thought to be ill-informed concerning teaching expectations and thus need to be guided on what to do every step of the way. This view is short-sighted in today's context given that university education is shifting from teacher-focused to student-centred learning (Ramsden, 1991; Biggs, 2001; Gray, 2002; Biggs, 2011). Moreover, information received from student ratings can be used by individual instructors to improve the course in future years and to identify areas of strength and weakness by making comparisons with other departments (Van der Wende, 2003; Kember & Leung, 2009). Such data accumulated over the years can enable detection of patterns of teaching development in the department. From the overall ranking of the quality of the programme, it was realised that more than 50% of students from all the classes sampled agreed that the quality of the programme is good.

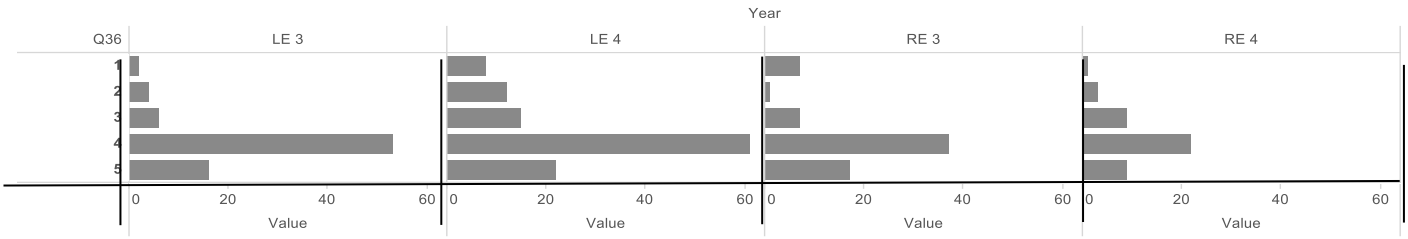

Figure 4: Overall Quality Of Programme (both Bsc Land Economy and Real Estate Students)

4. Conclusion

There are several questionnaires for assessing teaching courses, but one that assesses both teachings and learning is relatively scarce (Kember & Leung, 2009). A significant influence on the achievement of learning outcomes is the teaching and learning environment, which is incorporated in the Student Engagement Questionnaire (SEQ) (Kember & Leung, 2009).

The methodology and use of the SEQ provided criteria to measure the learning environment at the Department of Land Economy of KNUST. The questionnaire had nine scales to measure the teaching environment. Three higher orders are captured under this item: *Teaching; Teacher-Student Relationship and Student-Student Relationship.* This concept of measuring and assessing the learning environment closely resembles the definition given by Fraser (1998).

The reliabilities of the scales used in this research work were established using the Cronbach alpha (α) coefficient. The construction of the various scales of measurement was adapted from Kember and Leung (2009) to suit the needs of the study. In deciding on the validity of the questionnaires, consultation was sourced from other lecturers in the department with the requisite expertise. Based on Cronbach alpha scores, areas which need further attention (based on Table 3) at the department include: (1) Self-managed learning; (2) Requisite feedback from staff to assist studies; (3) Teaching for understanding so students understand course design, course material and course content; and (4) Active learning that encourages student participation.

In conclusion, one of the advantages of this questionnaire instrument is its ability to identify the strengths and weaknesses based on students' responses. This is a diagnostic tool that should be treated as being indicative, rather than absolute. In that sense, responses gathered can be used to improve teaching and learning at the programme level. If this questionnaire instrument is adopted at other tertiary education institutions, college data averages could be compared with the department's (within the same college) to assess how the department performs in relation to others. Results could then be compared among departments to know critical areas to consider improving.

This research work is beneficial for various reasons. It offers stakeholders (which includes KNUST, DoLE, industry players, real estate practitioners in Ghana and students) an in-depth insight into the teaching and learning at the DoLE. Furthermore, it provides information to stakeholders about challenges of the department, which may assist them with identifying and prioritising needs for quality improvement purposes. Finally, it can be a basis for further comprehensive assessment of the performance of the department in terms of teaching and learning.

Students generally ranked themselves high concerning 'critical thinking' and '*general improvement in problem-solving capabilities*'. However, findings also suggest that students lack adequate feedback from staff, which is partly attributable to increasing student numbers over the years (while academic staff numbers have remained constant). Moving forward, the department needs to ensure that there is an effective use of technology, less focus only on examinations, but also more report writing and presentation opportunities to improve students' self-confidence. Additionally, there is the need to liaise, coordinate and share ideas with other real estate departments (at other universities) to improve the quality of learning experience for students. This will go a long way to increase the quality of the teaching and learning. Moreover, it will also ensure that the standard that the department is striving to achieve meets internationally acceptable benchmarks.

This paper, therefore, proposes that future research should focus on rating the perceptions of industry players, real estate practitioners and teaching staff of the DoLE, on course content and quality. The perceptions can then be measured against the outcomes of this research, which could help the ensuing

debate to strengthen the curriculum of DoLE and meet world standards in real estate education.

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Appendix

The Student Engagement Questionnaire

Instructions
In answering this questionnaire, please think about the course as a whole rather than identifying individual subjects, topics or lecturers. The questions relate to general issues about your course, based on comments that students have often made about their experiences of university teaching and studying. Your responses are strictly confidential.

Please indicate your level of agreement with the statements below. Please choose the one most appropriate response to each question.
1 — Strongly Disagree
2 — Disagree
3 — Only to be Used if a Definite Answer is not Possible
4 — Agree
5 — Strongly Agree

1. Critical thinking
1.1. I have developed my ability to make judgments about alternative perspectives.
1.2. I have become more willing to consider different points of view.

2. Creative thinking
2.1. I have been encouraged to use my own initiative.
2.2. I have been challenged to come up with new ideas.

3. Self-managed learning
3.1. I feel that I can take responsibility for my own learning.
3.2. I have become more confident in my ability to pursue further learning.

4. Adaptability
4.1. During my time at university, I have learnt how to be more adaptable.
4.2. I have become more willing to change my views and accept new ideas.

5. Problem-solving
5.1. I have improved my ability to use knowledge to solve problems in my field of study.
5.2. I am able to bring information and different ideas together to solve problems.

6. Communication skills
6.1. I have developed my ability to communicate effectively with others.
6.2. In my time at university, I have improved my ability to convey ideas.

7. Interpersonal skills and group work
7.1 I have learnt to become an effective team or group member.
7.2 I feel confident in dealing with a wide range of people.

8. Computer literacy
8.1. I feel confident in using computer applications when necessary.
8.2. I have learnt more about using computers for presenting information.

9. Active learning
9.1. Our teaching staff use a variety of teaching methods.
9.2. Students are given a chance to participate in classes.

10. Teaching for understanding
10.1. The teaching staff try hard to help us understand the course material.
10.2. The course design helps students understand the course content.

11. Feedback to assist learning
11.1. When I have difficulty with learning materials, I find the explanations provided by the teaching staff useful.
11.2. There is sufficient feedback on activities and assignments to ensure that we learn from the work we do.

12. Assessment
12.1. The program uses a variety of assessment methods.
12.2. To do well in assessment in this program you need to have good analytical skills.
12.3. The assessment tested our understanding of key concepts in this program.

13. Relationship between teachers and students
13.1. The communication between teaching staff and students is good.
13.2. I find teaching staff helpful when asked questions.

14. Workload
14.1. I manage to complete the requirements of the program without feeling unduly stressed.
1.2. The amount of work we are expected to do is quite reasonable.

15. Relationship with other students
15.1. I feel a strong sense of belonging to my class group.
15.2. I frequently work together with others in my classes.

16. Cooperative learning
16.1. I have frequently discussed ideas from courses with other students out-of-class.
16.2. I have found that discussing course material with other students outside classes has helped me to reach a better understanding of the material.

17. Coherence of curriculum
17.1. I can see how courses fitted together to make a coherent program of study for my major.
17.2. The program of study for my major was well integrated.
… … … … … … … …
18. Course quality
18.1. Overall, I am satisfied with the quality of the course.

Thank you

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A Performance Assessment of Local Authorities in Managing Public Housing in Ghana

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Abstract

The level of maintenance and the condition of public housing has been a significant concern for tenants and housing researchers alike. The state of public housing is often a reflection of its local authority managers and the policy that surrounds it. This paper assesses the performance of local authorities in the management of public housing in Ghana. Data was collected through interviews with local authority housing officers and tenants as well as a small sample survey of tenants. The performance of the authorities mentioned above was measured by three factors; adequacy (house types and quantity), decency (maintenance and satisfaction with maintenance), and affordability (rent levels). The paper concludes that the current state of Ghanaian public housing, when measured against its mandate to provide adequate, decent and affordable housing to beneficiary government workers is substandard due to underperforming local authorities (LAs). The paper suggests that rent policy should be reviewed to empower LAs to self-determine and collect rent. Rents in the public housing sector should be reviewed to realistic levels so that they may generate funds for maintenance. Housing policy should institute internal and external mechanisms to monitor the performance of LAs in the management of public housing.

Keywords: Performance Assessment; Local Authorities; Management; Public Housing; Ghana

1. Introduction

Global policy on housing has shifted from direct state-led housing production to the enablement approach whereby the state assumes the role of facilitator. These changes were initiated in a bid to provide adequate and decent housing

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to an increasing global population. Furthermore, these changes were influenced by the United Nations' (1948) declaration which states that the right to decent housing is a human right (United Nations, 1948). In line with these global trends, Ghana has had a history of significant investment in housing production by the state. For instance, the colonial government in Ghana built houses for civil servants (Yankson & Gough, 2014); and veteran soldiers of the Second World War (Arku, 2006; Arku, 2009). In addition, the first and subsequent governments since Ghana's independence in 1957 have built houses through state agencies such as the State Housing Corporation (SHC) and the Tema Development Corporation (TDC). However, after a change to the enablement approach, most of the houses were sold to individuals and institutions. The remainder were transferred to local authorities (LAs) to manage. Nevertheless, public housing remains significant as it facilitates labour mobility, especially for the civil servants it targets. It also serves as a form of social support in an economy where wages are said to be low (Arku, 2009).

Local Authority Managing Public Houses in Ghana

Local authority (LA) housing, that is; public housing managed by the district or municipal assemblies, can be found across the country in varied forms and scale (Ginsburg, 2005). The number of housing units in an estate range from 25 to 100 or more. The housing stock in a district can vary between 100 and 500 or more units. They are mostly located on prime land in an urban area. The housing types include single or two-bedroom detached or semi-detached houses, terraced houses, two-or-more-bedroom multi-storey apartments, and detached bungalows (Tipple et al., 2004). However, it should be noted that not all the types of houses can be found in all municipalities. Following the expansion of the responsibilities of LAs as part of the decentralisation of governance, and pursuant to the Local Government Act 1993, Act 462 (replaced by Local Governance Act 2016, Act 936), the Local Government Instrument 2009, Legislative Instrument (LI) 1961 establishes the Department of Works with a responsibility to:

- Encourage and facilitate maintenance of public buildings and facilities in the district;
- assist in the maintenance of public buildings made up of offices, residential accommodations, and ancillary structures; and
- facilitate the registration and maintenance of data on public buildings.

In practice, an officer is responsible for managing publicly owned houses, and an allocation committee assists him. Despite the clear responsibility of LAs, many authors (Tipple, 1999; Tufuor, 2004; Asabere, 2007) have been concerned about the quality of public housing because of their poor maintenance. These buildings are not well maintained, and consequently, their state causes agitation for some tenants (Benson, 2014). Poor public housing conditions have implications on the economy and society, including loss of investment return, shortening of the economic lifespan of the houses, and negative impact on the productivity of occupants (Tipple, 1999; Asabere, 2007). The problem of poor maintenance and the consequences on the quality

of housing in Ghana have often been blamed on poor management (Obeng-Odoom, 2011b). However, many of the studies (Konadu-Agyemang, 2001; Tufuor, 2004; Obeng-Odoom, 2011b, Obeng-Odoom & Amedzro, 2011) that have considered housing in Ghana have not assessed the performance of LAs in the management of public housing. Furthermore, studies that have assessed the performance of housing management have primarily done so from a tenant-satisfaction assessment perspective (Baiden et al., 2010; Ilesanmi, 2010; Olawore et al., 2011) or in relation to housing features or project location (Eyiah-Botwe, 2015). Not many authors have focused on assessing housing management performance from the viewpoint of both tenants and managers in relation to identified goals of management.

Therefore, this paper aims to assess the performance of LAs as managers of public housing in Ghana. By assessing the performance of local authority management against the goals of public housing, targeted interventions can be suggested for improvement. Also, the outcome of performance assessment may give legitimacy and affirm the mandate of LAs to manage and maintain public housing (De Bruijn, 2002a). This paper presents a performance assessment of housing management primarily based on qualitative data derived from the perspective of managers and tenants. To achieve its aim, the paper answers the following questions: What is the goal of public housing in Ghana? To what extent is the goal of public housing being achieved? Moreover, what can be done to improve the performance of LAs as housing managers?

The first section of this paper introduces local authority managed public housing in Ghana. The second section reviews the literature on performance assessment and concludes with the performance indicators used in this paper. The methods and approach to the study are presented in section three. The findings are presented in section four, while section five discusses the implications of the findings. The conclusion of the paper is presented in section six.

2. Literature Review

Research into public housing is ubiquitous in academic literature. Various researchers have evaluated conditions and tenant satisfaction in public housing (Kaitilla, 1993; Komu, 2010; Ibem & Aduwo, 2013; Ibem & Amole, 2013); or have focused on transformations in public housing (Tipple, 1999; Tipple et al., 2004). Others have examined policy in public housing (Arku, 2006; Arku, 2009; Huchzermeyer, 2014), or discussed housing management (Obeng-Odoom, 2011b). Some authors have evaluated performance in public housing (Walker & Murie, 2004). While adequate research has been conducted in various aspects of housing, very little research has been conducted on the performance of housing management in a developing country context such as Ghana. Available literature on performance assessment largely relates to a developed country context (Boyne, 1997; Arimah, 2000; Boyne, 2002; Koopman et al., 2008). For instance, Walker and Boyne (2006) have assessed the impact of public sector reform on the performance of LAs in the United Kingdom. They collected information on

outputs, efficiency, effectiveness, value for money and consumer satisfaction. The systems approach was used by (Straub et al., 2010) to measure performance in Dutch housing associations by identifying indicators related to inputs, throughputs, outputs and outcomes. These studies underscore the importance of performance assessment in housing and show varied purposes, subjects and indicators of performance assessment.

2.1 Performance Assessment in Public Housing

Performance assessment is a widely used method of assessing the performance of public organisations against set objectives (Walker, 1994). Performance information may be compared with "price" and "quality" information in the private sector (Johnsen, 2005). Performance assessment is a New Public Management (NPM) tool introduced for clarifying the output of non-monetary services such as housing in the public sector (Kemp, 1995; Walker & van der Zon, 2000; Askim, 2009). Public housing provision is driven by social goals (Boyne, 2002). Therefore, performance assessment in public housing enables us to assess whether public housing managers are achieving social goals.

(a) What to Measure in Assessing Public Housing Management

The widely used criteria that have dominated the literature on public sector performance measurement are famously known as the four "*Es*" –efficiency, effectiveness, economy and equity (Smith, 1995; Kendall & Knapp, 2000; Bouckaert & van Dooren, 2009). However, it has been argued that performance measurement should not be limited to these measurable aspects but should include quality of service (Jacobs & Manzi, 2000). Some argue that it should incorporate social, economic and environmental inputs and impacts (van Bortel & Gruis, 2011). Indeed, some authors (Kemp, 1995; Walker & Murie, 2004; Bouckaert & van Dooren, 2009) have argued that easy to collect indicators may not necessarily present an accurate reflection of housing management. Even though data about the quality of service indicators may be difficult to collect, they are critical in communicating the correct level of performance. Therefore, the question "what to measure" seems to be answered by a combination of measurable indicators where available (outputs), with other quality of life information (outcomes) to assess public housing performance.

(b) Indicators of Performance Assessment in Public Housing

Indicators are facts which help assess the achievement of targets and objectives (Smith & Walker, 1994). They give information that describes non-financial inputs, throughputs, outputs and outcomes (Askim, 2009). Therefore, indicators must be "smart measures" and should match the mission, goals and objectives of the organisation (De Bruijn, 2002b; Anheier, 2005; Terence, 2008). In public housing, the objectives may be derived from policy documents or legislation (Bouckaert & van Dooren, 2009). For example, the goal of public housing in Ghana may be discerned from policy documents regarding the accommodation of civil servants (UN-HABITAT, 2011). Therefore, indicators to assess housing performance must reflect the

interest of policymakers, and importantly, the concerns of its beneficiaries (Symon & Walker, 1995; Walker, 2001; Walker & Murie, 2004; Terence, 2008). The alternative is to seek the views of beneficiaries about housing management services directly. Finally, in choosing indicators of performance, one must be guided by the availability and ease of obtaining information. In light of the above, it is necessary to consider what measures and indicators are appropriate to measure public housing performance in Ghana.

2.2 Indicators of Performance Assessment in Public Housing in Ghana

The starting point for performance assessment of local authority managed public housing in Ghana is to identify the goal of public housing. Ghana has no specific policy on the matter as the National Housing Policy (2015) does not outline specific goals for public housing. However, it may be inferred from National Policy. The National Housing Policy of Ghana (2015) outlines four primary goals:

- To provide adequate, decent and affordable housing that is accessible to satisfy the needs of all people living in Ghana
- To ensure that housing is designed and built to sustainable building principles leading to the creation of green communities
- To ensure that there is the participation of all stakeholders in decision-making on housing development and allocation in their localities; and
- To ensure adequate and sustainable funding for the supply of diverse mix of housing in all localities. (Government of Ghana, 2015)

For the purpose of this paper, the first goal of the National Housing Policy is adapted for public housing. Thus, the goal of public housing in Ghana may be said to be: *to provide adequate, decent and affordable housing that satisfies the need of beneficiary groups* [government employees].

Adequacy describes housing availability in sufficient number and type that allows beneficiaries to choose, thereby enhancing mobility (Olawore et al., 2011).

Decent describes dwellings meeting acceptable physical standards (Stone, 2006; Olawore et al., 2011). That is freedom from repair and maintenance (Stone & Hartman, 1983; van Mossel, 2008).

Affordability defined for this study is the ability of a household to spend no more than 30% of its income on housing (Gabriel et al., 2005; Baker et al., 2015; Cai & Lu, 2015). This definition of affordability is based on the "ratio approach", which is more appropriate for the context of this study (Cai & Lu, 2015). The literature (Smith, 1995; Walker & van der Zon, 2000; Straub et al., 2010) is replete with indicators relating to these measures. Table 1 presents selected indicators of the measures used in this paper.

Table 1: Measures and Indicators of Public Housing Assessment

Measure	Indicators
Adequacy	• Number of houses constructed per annum • Number of allocations (lettings) per annum • Type of houses • Satisfaction with the type of house
Decency	• Physical condition of dwellings (main components) • Number of dwellings maintained per annum • Response to requests for repairs • Satisfaction with housing condition • Satisfaction with maintenance
Affordability	• Amount of monthly income spent on rent

3. Methods

A mixed methods approach within the context of the definition by Creswell and Plano Clark (2011) was applied in the study to triangulate and complement the responses (Bryman, 2006). It involved collecting both numeric and textual data represented in both quantitative and qualitative forms. Nonetheless, the study was predominantly qualitative, employing structured interviews to collect data from district housing officers and tenants, and complemented by a quantitative aspect consisting of a small sample survey of tenants in three districts in two regions. The survey assessed tenants' perception of the condition of the houses and measured their satisfaction with housing conditions.

Local Authorities (Districts) and Tenants

Three LAs, Tamale, Bolgatanga and Kassena-Nankana (see Table 2) were purposefully selected to represent the three categories of districts in Ghana. LAs are categorised into metropolitan and municipal districts, depending on the size and population of the area (Parliament of Ghana, 2016). The Tamale metropolitan district is one of four metropolises in the country. It hosts the Northern regional capital and is cosmopolitan in character. The metropolis hosts the headquarters of many private and non-governmental organisations. The only tertiary hospital that serves the three northern regions of Ghana is found in Tamale. Furthermore, Tamale has a relatively large public housing sector. Like Tamale, Bolgatanga municipality houses the capital of the Upper East region. It is similarly cosmopolitan given that the regional offices of many state agencies and private organisations are located there. Even though exact figures for the housing stock were not available, the housing officer estimated the stock size to be in the medium range. Therefore, Bolgatanga was chosen to represent that category of housing. The Kassena-Nankana municipality is relatively less cosmopolitan and has a small population of public houses. It was selected because of the public housing stock size. Other factors that influenced the choice of the three districts were the convenience in terms of time, availability and access to housing officers. Because of the qualitative nature of the study, and the objective of achieving depth rather than breadth in the assessment, the sample of LAs were purposefully selected.

The study interviewed three housing officers in each district and the coordinating director for Kassena-Nankana municipal.

Housing Officers

Housing officers loosely refer to the officers responsible for managing the housing stock in the districts; they are not necessarily trained estate officers. For instance, two of the officers are administrative assistants who have assumed additional responsibility for managing the houses. Their primary role is to coordinate allocations and repairs. The interviews with housing officers related to the goal of public housing, number and composition of the stock, quality of housing, and repair and maintenance.

Tenants

The number of tenants interviewed from each house type is presented in Table 2. Based on the focus of the study, which relates to depth rather than scale, the study sampled 20 tenants from each district to interview. However, only 4 tenants participated in the Kassena-Nankana district. Most tenants declined to participate either because they could not make time or because they are not happy with their conditions. The interviews with tenants related to their perception of the goal of public housing, housing affordability, repair and maintenance. The interviews with both housing officers and tenants were semi-structured and face-to-face.

The same sample of tenants formed the sample for the survey. The small sample of 44 tenants was chosen due to the resistance of most tenants to participate. Notwithstanding the limitation of the sample size, the study considered it adequate to present an overview of tenants' perception of the condition of housing and their satisfaction. Moreover, the main purpose of the survey was to complement the responses from the interviews. For these reasons, the survey did not seek to achieve statistical representativeness in its sample selection but rather variety in its respondents' background including department and house type. It should be noted that some districts do not have some house types.

Table 2: Basic Information About Local Authorities and Sample

Region/ District	Type of houses						Total	Sample
	Single Unit detached		Semi-detached		Flat			
	Total	Sample	Total	Sample	Total	Sample		
Northern region								
Tamale	246	4	251	12	17	4	514	20
Upper East region								
Bolgatanga	-	2	-	13	-	5	-	20
Kassena-Nankana	9	-	60	4	-	-	69	4
Total	**255**	**6**	**311**	**29**	**17**	**9**	**583**	**44**

Source: Tamale metropolitan, Bolgatanga, and Kassena-Nankana municipal districts, 2015.

A convenience sampling method was used to select tenants. This was based on their willingness to be interviewed. It must be emphasised most tenants declined to participate in the study largely because they were upset with the conditions of the houses. The respondent tenants who participated in the study and their respective departments are presented in Table 3.
The gender split was 27 males and 17 females. The range was 2-8 persons per household, and the average household size of the 37 tenants who responded was 5 people. This is higher than the national average of 4.4 but lower than the averages of the two regions – 5.5 and 7.7 for Upper East and Northern regions respectively (GSS, 2013). The modal household size was 4, and the duration of stay ranged from 3 months to 20 years; the average duration of stay was 1.8 years. The relatively short duration of stay may be because of the transfer of government employees across districts and regions. Nearly half (21) of the tenants had not lived in the houses for more than 5 years.

Table 3: Departments of Tenant Respondents

S. NO	Department/agency	Frequency
1	Ghana Education Service	11
2	Regional Coordinating Council	5
3	Ghana Health Service	4
18	State Transport Company	4
5	Lands Commission	2
7	National Youth Council	2
10	Ghana Police Service	2
11	Ghana Fire Service	2
12	Town and Country Planning	2
15	Local Government Service	2
4	National Health Insurance Scheme	1
6	Department of Agriculture	1
8	Commission for Human Rights and Administrative Justice	1
9	National Service Scheme	1
13	Environmental Sanitation Department	1
14	Audit Service	1
16	Centre for National Culture	1
17	Ghana Revenue Authority	1
Total		**44**

Condition and Satisfaction Assessments

The survey was conducted to measure tenants' perceptions of the condition of houses, and their satisfaction with housing conditions. To measure the perception of the condition of houses, tenants were required to indicate their assessment (good, fair, poor) of the conditions of 10 physical elements of a house. These include internal walls, external walls, windows and frames, doors, floor, roof (cover), paintwork, plumbing, and electrical installations (van Mossel and Jansen, 2010; Ibem et al., 2013). As stated earlier, this is an assessment by non-professionals which is meant to complement interview responses. To assess the satisfaction with housing conditions, they were required to indicate their satisfaction (satisfied, indifferent, and dissatisfied) with the same ten elements of the house, the type of house, and level or

repairs. The outcome of the survey was then presented to supplement the qualitative responses concerning housing conditions and maintenance.

Abductive methods were used to analyse the data. Themes were developed based on the goals of public housing to guide the data collection. The audio-recorded interviews were transcribed and coded according to themes with the aid of the *Atlas.ti* software. The data was then analysed for issues according to the themes. Where applicable, the issues in a theme were compared with the survey data and inferences were drawn. The survey data was presented in simple descriptive statistics such as frequencies and percentages to correlate with the qualitative responses of tenants.

4. Findings

4.1 Perception of the Goal of Public Housing

As a starting point, the study wanted to know the respondents' view of the goal of public housing in comparison with the goal adopted for the study. Three main goals emerged from tenant respondents and housing officers. First, public housing is meant to provide adequate, affordable housing for government workers. "Adequacy", according to the respondents refers to both "adequacy" and "decency" as defined in this study. The second relates to productivity; by housing workers close to their workplaces, access to work is easy and convenient and may enhance productivity. The third goal of public housing according to respondents is to provide comfort and security to public sector workers. Some answers of respondents to the question include:

> "*…most of those living there are public sector workers. My opinion is that it is to help public servants especially those who face challenges because they are not natives*"
>
> (Tenant interview, October 2015).

> *"…to be able to accommodate government workers for convenience, because it can affect productivity*"
>
> (Tenant interview, October 2015).

> *"...sometimes some of them [tenants] cannot meet the advance payment requested by private landlords, or they will like to have their privacy, so they fall on the RCC [local authority] …to do them a favour on the part of giving them decent accommodation, whereby they will have sound mind to be efficient with their officially assigned duties."*
>
> (Housing officer, Tamale, October 2015).

This understanding of the goal of public housing is in line with that adopted for this study.

4.2 Performance of Local Authorities

(a) Adequacy

Four indicators of adequacy were examined: number of houses constructed per annum, number of allocations per annum, type of houses and satisfaction with the type of houses. According to the housing officers, there have not been large-scale new constructions or conversions of buildings into residential units. They estimate that in a year only one or two residential properties may be constructed or none (Housing officers, Tamale Bolgatanga and Kassena-Nankana, October 2015). Therefore, the total stock has remained the same or barely increased. With regards to housing allocations, all the housing officers stated that the number of allocations in a year is low. A housing officer said:

> *"...I can say that about 10 houses become available for allocation to new tenants…in a year, we can receive about 15 or 20* [applications]. *In a week, I have received about 8 applications"* (Housing officer, Tamale, October 2015).

The main types of houses and relative numbers in the study districts are presented in Table 2. Variation in house type should allow for housing applicants to choose their preferred living arrangement. However, according to all three housing officers, tenants do not have the opportunity to choose their preferred house type. A housing officer said,

> *"Tenants do not have a choice. Allocations are according to rank. So, junior staff applies for junior staff quarters* [mostly semi-detached dwellings]*, and senior staff apply for bungalows* [mostly detached single unit houses]"
>
> (Housing officer, Bolgatanga, October 2015).

Even though applicants may specify their preferred house type, practically, it does not affect the allocation process. The dominant criterion is the rank of the applicant, which entitles one to a single room, two bedroom or multiple room house. The responses of tenants supported this situation about the choice of house type.

> *"The rooms are not enough for the tenants"; "the houses are not ok for us in number for government workers"; "... but it may not be achieving much because of the limited number of dwellings"*
>
> (Tenant interviews, October 2015).

On the question of tenants' satisfaction with house type, the responses show that they are generally satisfied. 55% of respondents indicated that they were satisfied with the type of houses available.

(b) Decency

To assess decency in public housing, the study examined the physical conditions of the houses, the number of dwellings maintained per annum, responses of housing officers to requests for repairs and maintenance, satisfaction with maintenance, and satisfaction with the condition of dwellings.

Condition of Houses

Tenants indicated their assessment of 10 physical components of their dwellings. It may be argued that the responses may not be objective. However, it is hoped that by aggregating the responses, the effect of individual bias will be reduced. Even though it is an assessment by non-professionals, the responses suffice to paint a general picture of the condition of the houses. The condition assessment by tenants is presented in Table 4 below.

Table 4: Condition Assessment of Components of Dwellings by Tenants (*N*=44)

Component	Good		Fair		Poor		Non-response		Total
	No	%	No	%	No	%	No	%	
Internal walls	15	34	15	34	14	32	-	-	44
External walls	11	25	11	25	20	45	2	5	44
Windows and frames	6	1	16	36	20	45	2	5	44
Doors	5	11	16	36	21	48	2	5	44
Floor	15	34	12	27	16	36	1	2	44
Ceiling	8	18	9	20	26	59	1	2	44
Roof (cover)	8	18	16	36	16	36	4	9	44
Paintwork	4	9	19	43	20	45	1	2	44
Plumbing	22	50	5	11	13	30	4	9	44
Electrical Installations	20	45	10	23	10	23	4	9	44
Overall assessment	6	14	15	34	12	27	11	25	44

Source: Field study, October 2015.

The assessment results show that where the majority assess the condition of a component to be poor, many more tenants are likely to share the same view as compared to where a majority assess the condition of a component to be good. Some remarks that support the assessment by respondents include:

> *"...most of the various facets of the entire structure are completely failing"; "the building needs more attention on its structural elements"; "some parts of the wood is rotten"; "most sockets do not function well"*
>
> (Tenant interviews, October 2015).

Maintenance by Local Authorities

To gain an understanding of the maintenance practices in the three districts, housing officers were asked about responsive repairs, that is, repair requests made by tenants, and the number of dwellings maintained per annum. All the housing officers said the districts do not carry out responsive repairs.

> *"No, we don't do any maintenance because they* [government] *should have been sending us funds or materials for the maintenance to be taken care of"*
>
> (Housing officer, Tamale, October 2015).

> *"We do not do any maintenance. We do it on our* [referring to himself a tenant] *own, I had to paint my place myself. The money* [rent] *is paid into the consolidated fund…we do not receive funds for maintenance. It used to be PWD that would receive the money and who was in charge of maintaining the dwellings, but that has ceased"* (Housing officer, Bolgatanga, October 2015).

According to the officers, in the past materials were procured by central government and maintenance was carried out by the Public Works Department (PWD). However, housing officers could not provide data on houses maintained per year. This practice of government-led maintenance has since stopped due to a lack of funding to LAs. Thus, tenants have to fund repairs by themselves, including significant works, and the cost may be set off against rent payable over time. Housing officers are quoted as saying:

> *"...when we are allocating; we ask them to do the maintenance and submit receipts to be offset with the rent"*
> (Housing officer, Bolgantanga, October 2015).

> *"... you have to write to us, and if we don't have money to do it* [the repairs] *we will let our engineer make the estimates, and if you are in the position, you do it, and we use it to offset your rent"*
> (Housing officer, Kassena-Nankana, October 2015).

Consequently, tenants were asked where they make requests for repairs, what the responses were to their requests, and the kind of repairs tenants funded themselves. Most tenants said they make requests for repairs to the maintenance unit (Works Department) of the district. However, their requests are often not addressed. They said;

> *"I don't request for repairs because they won't do it"; "I do not make a request to anyone because they never mind us"; "I have not made any request. I had to renovate it* [the house] *myself" I have reported to the authorities, but to no avail, so then, I pay eventually for all the damages ever since I lived in this residence"*
> (Tenant interviews, October 2015).

According to some tenant respondents, the cost of tenant self-financed repairs may be set off against rents, confirming the statements of various housing officers.

> *"You write a letter and make estimates to them; if you decide to do it yourself, and they will give you the go-ahead to do it, and it is set off against your rent"* (Tenant interview, October 2015).

The kind of repairs reportedly carried out by tenants themselves include painting and mending cracks on internal and external walls and repairing windows and frames. Furthermore, tenants undertook the changing and repair of locks, doors, ceiling, roofs as well as minor works on plumbing, electrical fitting and installations (Table 5, column 6). Table 5, columns 4 and 5, presents the frequency of reported repairs of the house components and ranking.

Table 5: Comparing Condition Assessment and Reported Repairs by Tenants

Component	Condition assessment		Reported repairs		Reported repairs funded by tenants
	Fair	Poor	Freq.	Rank	
Paintwork		X	20	1st	Painting inside and outside walls
Windows and frames		X	18	2nd	Changing frames, insect and burglar proofing, and louver blades
Plumbing	X		12	3rd	Changing old water closets, showers, pipes
Internal walls	X		12	3rd	Mending cracks, rendering and painting
Ceiling		X	10	4th	Replaced ceiling
External walls		X	8	5th	Mending cracks and painting
Electrical Installations	X		8	5th	Changing wiring and electrical sockets
Doors		X	8	5th	Changing door locks
Roof (cover)		X	5	6th	Mending leaks in roof
Floor		X	4	7th	Mending cracks in walls, laying tiles

Source: Field data, October 2015.

The study compared the condition assessment by tenants and reported repairs conducted by tenants on individual house components (Table 5). It can be observed that, generally, where respondents assessed the condition of components to be fair, the same components recorded fewer instances of reported repairs, whereas components assessed to be in poor condition also recorded most repairs by tenants.

Satisfaction with housing conditions and maintenance

Tenants were asked to indicate their satisfaction with the condition of; the overall condition of their dwellings, the dwelling type, and the number of rooms (Table 6). The maintenance issues that tenants indicated their satisfaction on included; the medium of contact with LAs, the response of LAs to maintenance requests, and quality of repairs (Table 6).

Table 6: Satisfaction with House Components, Characteristics, and Maintenance

Component	Level of satisfaction						No response		Total
	Satisfied		Indifferent		Dissatisfied				
	Freq.	(%)	Freq.	(%)	Freq.	(%)	Freq.	(%)	
Paintwork	9	20	17	39	17	39	1	2	44
Windows and frames	9	20	15	34	17	39	3	7	44
Plumbing	17	39	8	18	14	32	5	11	44
Internal walls	23	52	7	16	14	32	-	-	44
Ceiling	9	20	9	20	24	55	2	5	44
External walls	15	34	7	16	22	50	-	-	44
Electrical Installations	22	50	12	27	10	23	-	-	44
Doors	10	23	15	34	19	43	-	-	44
Roof (cover)	9	20	9	20	22	50	4	9	44
Floor	13	30	13	30	15	34	3	7	44
Overall condition	11	25	10	22	21	48	2	5	44

Dwelling characteristics									
Type	24	55	7	16	9	20	4	9	44
Number of rooms	20	45	10	23	13	30	1	2	44
Maintenance									
Medium of contact with landlord	3	7	13	30	13	30	15	34	44
Response to maintenance request	1	2	9	20	18	41	16	64	44
Quality of repairs	-	-	8	18	20	45	16	36	44

Source: Tenant survey, October 2015.

Aside from internal walls and electrical installations, there was a greater degree of consensus among respondents regarding components that caused dissatisfaction (see "*Roof (cover)"* in Table 6). There was a lesser degree of consensus regarding components that the majority of respondents deemed to be satisfactory (see "*Plumbing"* in Table 6). This observation is in line with the satisfaction of the overall condition of dwellings.

The satisfaction scores for maintenance services show that the majority were dissatisfied with the quality of repairs and response to repairs requests. As stated earlier by some tenants, LAs do not carry out maintenance. Therefore, tenants' responses to the quality of repairs may have been construed to refer to tenant self-financed repairs. Furthermore, nearly half of tenants did not indicate their satisfaction in this category. Considered on the whole, it may be argued that the scores reinforce the absence of maintenance as found earlier.

Comparing the condition and satisfaction assessments, it is observed that where a majority of tenants assess a component to be poor, a similar number were dissatisfied with the condition of the component. Again, this suggests that there is less consensus among respondents regarding satisfactory components. Furthermore, while a number of respondents assessed the overall condition of dwellings to be fair, an even greater majority were not satisfied with the overall conditions. It may be concluded that both, at the component level, and considered holistically, the condition and satisfaction assessments reinforce each other. That is, generally, the conditions of dwellings are poor, and consequently, tenants are not satisfied.

(c) Affordability

The leading indicator of affordability is the cost of housing or housing expenditure in relation to income (Cai & Lu, 2015). The study could not independently obtain data on incomes and rents paid by tenants as this is not available to LAs. Furthermore, as some respondents declined to disclose their incomes, estimates were determined by reference to their departments, house type (an indication of rank) and the average income in the department. Tenants pay 10% (determined by the central government) of basic salary as rent. Therefore, the stated salary and percentage of rent were used to compute average rent payable for instances where respondents did not provide data. The noted limitation with this approach is that, while the study relied on the income of one member of a household, there could be more than one income

earner in a household or income streams of a respondent. The average monthly income of tenants in the sample was GH¢1,321.59[1]. This compares closely with the national average monthly income of GH¢1,387.00 (Ghana Statistical Service, 2014). Therefore, the computed housing affordability index for the three districts is 9.9%. It may be said that public housing is affordable because average monthly housing expenditure (rent) is less than the 30% of average income.

In addition to the computed index, tenants were asked if they consider the rents low, and whether they would be willing to pay higher rents for maintenance. All the respondents said that rents are low. However, 86% of the respondents were willing to pay higher rents for better maintenance while 14% did not support higher rents. Their objection to rent increases was premised on the condition of the houses.

> *"No, because nothing like repairs and maintenance has been done; there is no better service delivery; there has not been maintenance since the occupation, yet monthly rent is paid"*
> (Tenants interview, October 2015).

The study also asked the opinions of housing officers about the affordability of rent to compare with the computed finding. As managers, housing officers will have a fair idea of how rents in public housing compare with private sector rents. Basing their conclusions on a comparison of rent levels in public and private housing, and additional facilities (such as private toilets, baths, kitchen, and storeroom) available in public housing, the housing officers were unanimous that rents are affordable. In some private rented housing, tenants share facilities such as kitchens[2], bathrooms, and toilets, whereas this is not the case in public housing.

> *"Well with the private, why this [public housing] is cheaper is that one, you have privacy, and second, where you are, there is everything [referring to kitchens, tap water, storage areas, etc.]. You have, for instance, two bedrooms. For instance, in the private houses, people rent single rooms for GH¢50, so two rooms is GH¢100. In the public house, you may have two rooms, hall kitchen and bath and toilet to yourself. However, in a privately rented house, you have to share some of the facilities such as toilet and bath and kitchen. So, single room rented at GH¢50 and three rooms being rented at GHc100, you see that the public houses are cheaper. That's where the affordability comes."*
> (Housing officer, October 2015).

The findings show that generally, rents in public housing are affordable. However, the houses are not being maintained because LAs do not receive rents which are collected by central government. As a result, tenants largely finance repairs, especially those that are necessary. The impact of the lack of

[1] Average exchange rate, May 2016: €1.00 = GH¢4.302

[2]. Some compound houses do not have kitchens. So tenants use parts of their lobbies as cooking areas UN-HABITAT 2011. *Ghana Housing Profile,* Nairobi, United Nations Human Settlements Programme.

maintenance is that respondents are not satisfied with the condition of the houses. Juxtaposing these findings against the goal of public housing – *to provide affordable accommodation to government employees to make them comfortable, so that it may lead to increase in productivity* - it may be said that LAs are not performing well in public housing management.

5. Discussion

For the goals of public housing to remain relevant, it is imperative to assess the performance of housing management regularly. For example, Dutch housing associations have a system of both internal and external assessment to ensure that they remain focused on their core goals (van Overmeeren et al., 2010; Aziabah, 2018). There is adequate evidence (Awotona, 1990; Asabere, 2007; Komu, 2010) to show that inadequate attention to public housing has led to undesirable conditions that have often triggered the sale of public housing. Regular performance assessment and monitoring is necessary to ensure adequate housing (Ouwehand & van Daalen, 2002; Newton & Tunstall, 2012; Aziabah, 2018). Going forward, tenants should be involved in performance assessment and in management to emphasise the collective responsibility of stakeholders to achieve adequate maintenance (Lee et al., 1998; Yusof et al., 2014).

Tenants generally seem satisfied with the house types they were assigned however there remains an apparent situation of inadequate quantity from which applicants may choose. Furthermore, public housing has stagnated - either grown marginally or remained relatively the same. This is not surprising as changes in Ghana's housing policy have favoured an enablement strategy and thus the government has not built large-scale public housing (see Tipple, 1999; Arku, 2009). However, in light of the failure of the private sector to meet housing needs, there have been recent arguments for the state to be involved in providing rental housing (Field & Ofori, 1989; Obeng-Odoom, 2011a; Acquah, 2015). The inability of the state to increase the quantity of housing can also be blamed on low rents, which some (for example Konadu-Agyemang, 2001) have argued is not adequate to carry out effective maintenance. Perhaps developing countries like Ghana need to re-examine public sector rents within the context of the broader housing sector and the realities of maintenance, especially if the government is to heed the call to participate in rental housing provision.

In addition to the fact that rents are low, LAs are unable to carry out maintenance because they do not collect rents. In Ghana, a central government agency, the Controller and Account General's Department (CAGD), collects rent as per policy agreement. This arrangement may have been introduced because the central government used to finance state agencies (for example the State Housing Corporation) to maintain houses. The current situation could be likened to what Kadiri Kabir (2004) refers to as lack of decentralisation of power. This rent collection arrangement needs to change to allow LAs to determine and collect rents. The central government could exercise oversight in housing management by formulating guidelines for districts, rather than directly assuming some management

responsibility. For example, housing associations in the Netherlands determine rents within a government rent policy which is reviewed annually (AEDES, 2016; Aziabah, 2018).

The study also found that rents in Ghanaian public housing are affordable. However, some tenants argued against rent increases because they bear the cost of some repairs that would typically be the landlord's responsibility. Therefore, one may argue that the real rents could be higher. That being said, it is still unlikely that rents will be closer to 30% of tenant households' income. This situation highlights the need for LAs to maintain the houses to an acceptable standard to justify rent increases. What remains to be seen is whether to increase rents to maintain the houses, or maintain the houses to justify any rent increases. If the latter option were to be taken, the question would be how to fund major repairs required. It is also vital for LAs to define their maintenance responsibilities and those of the tenants in rental agreements.

By far the primary indicator of the performance of LAs is the condition of the dwellings. After all, the construction of a house is legitimated when adequate maintenance of its condition continues (van Wyk, 2006). Unfortunately, the findings of this study confirms those of other authors who have written about public housing in Ghana (UN-HABITAT, 2011; Yankson & Gough, 2014), and other African countries (fTipple et al., 2004, Komu, 2010, Otieno, 2014). For instance, Asabere (2007), states that the rents of public housing in Ghana was inadequate to cover the maintenance, and therefore it was one of the reasons that triggered the sale of the public houses to existing tenants. Also, Tipple et al. (2004), have found that most Sub-Saharan African government-built houses are in poor physical conditions or do not meet the expectations of occupants. The suggestion earlier to change the current policy of rent determination and collection in Ghana may go a long way to make funds available for maintenance. However, as Field and Ofori (1989) have pointed out in the case of Singapore, the commitment of central government and LAs is necessary in this regard.

This paper has combined qualitative and quantitative data to assess the performance of public housing management in Ghana. This technique offers the first step in benchmarking standards. Housing researchers may apply or adapt this approach to assess performance in similar contexts; in doing so, models of performance assessment in housing management may be developed for developing country context.

6. Conclusion

This paper assesses the performance of LAs in the management of public housing in Ghana. This is done to contextualise the problem of poor maintenance and conditions in its public housing sector. The paper collected mainly qualitative and quantitative data through interviews with housing professionals and tenants in the Tamale metropolitan, and Bolgatanga and Kassena-Nankana municipalities. The paper assessed the adequacy, decency and affordability of public housing. It found that there is adequate variety in

house types but limited quantity mainly because there has not been an expansion of the stock. Regarding decency, the paper found that the conditions of housing are poor due mainly to inadequate maintenance by LAs. As a result, tenants are not satisfied with their houses. Furthermore, public housing is affordable as rents averagely account for only about 9% of household incomes. The paper, therefore, concludes that housing management is not achieving the aim of providing adequate, and decent housing to government workers.

Based on the conclusions of this paper, LAs may consider a number of actions to improve performance. First, rent determination and collection should be wholly carried out by LAs to make rents available for maintenance. District assemblies must consider reviewing rents upwards to raise funds for maintenance, and in the long-term expand the housing stock. Finally, there is a need for policy to clearly define the goals of public housing, define performance indicators to measure progress towards achieving these goals, and institute both internal and external monitoring and evaluation mechanisms to track progress towards achieving the goals of public housing.

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An Investigation into the Relatively Low Uptake of Residential Stock within South African Real Estate Investment Trusts

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Abstract

Since the establishment of the first South African Real Estate Investment Trust (REIT) in 2013, the listed property sector has seen significant growth with a current market capitalisation of R400 billion in comparison to 1998 where the market capitalisation was R5 billion. However, South African REITs invest less in the residential sector when compared to the global REIT market. The purpose of this research was to determine the factors that have attributed to this low uptake of residential stock. This was achieved using a qualitative survey consisting of semi-structured interviews with listed property fund managers and upper management from four REITs listed on the South African stock exchange. The findings indicated a number of factors that have influenced the low uptake of residential stock. These have been identified as the financial performance of residential real estate in South Africa, the nature of residential real estate, and the maturity of the REITs sector in South Africa. These findings make a valuable contribution to the very limited literature on REITs in South Africa. Furthermore, understanding these factors is crucial in further developing the REITs sector in South Africa which has the potential to catalyse broader developments for housing and the economy.

Keywords: Real Estate Investment Trusts (REITs); Residential Property; Listed Property; South Africa

1. Introduction

Since the formal introduction of REITs in 2013, the South African listed property sector has consistently performed well in terms of international standards (Anderson & Cloete, 2016). South Africa's listed property market has traditionally invested in the office, retail and industrial sectors. Unlike many developed and developing property markets, there has been very little

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investment in the residential property sector by the South African listed property sector (Anderson & Cloete, 2016). This is possibly due to certain barriers that are unique to the South African residential sector which are not experienced by the other three traditional property sectors. Furthermore, the South African REIT market is relatively young, and therefore relatively little research has been conducted in this area in comparison to more mature REIT markets. International REITs have a larger proportion of residential stock (14%) in their portfolios compared to that of South Africa (3%) (Indluplace, 2017a; NAREIT, 2017a). This is a significant difference. Residential property requires equal attention to that of the other main property sectors. This is due to the residential sector playing a role in underpinning the performance of office, retail and industrial property. For example, the location of residential nodes can potentially create demand for other property types, and vice versa. While it is clear that REITs tend to focus more on commercial real estate, their role in the residential sector is essential and provides a significant amount of housing and residential stock. Nevertheless, the significance and performance of residential REITs have received limited attention particularly in emerging markets (Newell & Fischer, 2009). Evidence suggests that residential property can play a substantial role in less developed markets (Anderson & Cloete, 2016). Furthermore, residential property in other emerging market REITs typically makes up 15% of the total stock (Broll, 2014). This is comparable with more developed REITs markets of the Global North where residential stock comprises 14% of the REITs sector.

South Africa is currently in the grips of a severe housing crises and the estimated deficit for formal housing is between 2-3 million (CAHF, 2017a). Considering this housing shortage, coupled with the challenges that national and local government face in addressing this vast backlog, there is a need to leverage private sector resources to address issues of housing provision and affordability. It is argued that it is vital to understand the factors that have attributed to REITs' relatively low level of investment in South Africa's residential real estate. Thus, the rationale behind this research is driven by the belief that defining the factors which limit the investment of REITs in residential real estate can help build an understanding of what is needed to grow this dimension of REITs. On a broader level, this rationale and subsequent research aims to help address the significant housing shortage that exists in most South African cities. Presently, there is very little academic literature on residential REITs in South Africa, this also includes the listed sector as a whole.

Findings were based on series of survey interviews with experts in the REIT sector in South Africa. The interviews provided key insights into the challenges relating to residential property investment in South Africa. Participants were questioned on their opinions and experiences with regards to the financial performance of residential property, the nature of residential property with a specific focus on management and lease structure, status/maturity of the South African REIT sector, and the affordable housing rental market.

The findings highlight key aspects of the South African REIT sector that attribute to the low uptake of residential stock in REITs' portfolios. The qualitative data retrieved from the interviews was organised thematically into the following key themes: the nature of residential real estate in South Africa; the financial performance of residential real estate in South Africa; and the maturity of South African REIT sector. Understanding these areas of concern is likely to play a significant role in unlocking the potential of the REITs sector, increasing local and international investment, while also helping to address some of the challenges relating to housing South Africa.

The structure of the paper provides a brief discussion on the history of REITs both from a global and South African perspective. Thereafter, further discussion is provided on the South African residential property sector. An explanation of the methodology follows this before the presentation of the findings. The subsequent discussion section provides insight into the findings. The paper concludes with a summary including recommendations for future research.

2. Background to the Study

2.1 Real Estate Investment Trusts (REITs)

The standard REIT model was established in the USA in 1960 through the Real Estate Investment Trust Act and has since become a standard model for REITs around the world (Brounen & de Koning, 2013). The model has been adopted in more than 35 countries (NAREIT, 2017c).

A REIT can be defined as a company that owns or finances income-producing real estate (Arizona State University, 2017; NAREIT, 2017a). REITs provide investors with regular income streams, diversification of a portfolio and long-term capital appreciation (NAREIT, 2017c). The REITs structure was established to allow individuals to participate in the remunerations available to large institutional investors that own or finance commercial real estate (Packer et al., 2014). The main benefit that a REIT offers is that it allows investors to trade stocks rather than a physical asset. This creates greater exposure to immovable property without having to invest relatively large amounts of money (JSE-Limited, 2010). REITs also allows private investors to diversify across multiple property sectors at a fraction of the cost, which in turn minimises risk (SA REIT, 2014; SA REIT, 2018). REITs are also exempt from corporate tax provided they distribute all taxable income to shareholders (NAREIT, 2017c). The shareholders, however, will pay income taxes at their marginal rate on the dividends received unless they are held in a tax-deferred account (NAREIT, 2017c).

To qualify as a REIT in the USA (country of origin), a company must meet the dividend distribution requirement of paying a minimum of 90% of its taxable income in the form of dividends to shareholders each year. The operational requirements state that a REIT must invest at least 75% of its total assets in real estate. Furthermore, a REIT must derive at least 75% of its gross income from rental income of real property, interest on mortgages financing

real property and from the sale of real estate. However, these requirements differ depending on the country (Block, 2012).

As of July 2016, NAREIT global real estate index reported that the global REITs sector comprised of 482 listed property fund companies on various stock exchanges across 38 different countries (NAREIT, 2017c). These companies make up a consolidated market capitalisation of $1.6 trillion (NAREIT, 2017b). On a global scale, REITs rank sixth in market capitalisation out of all the listed industries.

2.2 South African REITs Sector

REITs in South Africa are defined as a company that owns and operates income-producing immovable property (JSE-Limited, 2010; Cliffe Dekker Hofmeyr, 2017). REIT stocks are traded publicly on the JSE (SA REIT, 2017). REITs on the JSE have a diverse investment portfolio that has a range of assets such as shopping centres, office buildings, hospitals, hotels, residential properties and a range of others, with a minority having a specialised portfolio in only one sector (SA REIT, 2014). Prior to the establishment of REITs in 2013, the only two forms of publicly traded property investment entities were property loan stocks (PLS) and property unit trusts (PUT) (Ntuli & Akinsomi, 2017; Ramjee, 2017).
The introduction of Section 25BB of the South African Income Tax Act in 2012 saw the introduction of legislation that enabled companies to list as REITs. The conversion to the REIT structure aimed to ensure consistency with foreign listed property markets in order to attract cross-border transactions between local and international investors. As a result, South African REITs can invest offshore (Ntuli & Akinsomi, 2017; SA REIT, 2017). This has allowed local investors exposure to mature property investment markets while benefiting from a currency hedge and favourable investment parameters, such as low interest rates compared to initial yields (SA REIT, 2017). Recent data has shown that 40% of earnings from South African REITs are being generated from offshore portfolios (SA REIT, 2017). South African REITs also enjoy similar tax dispensations to that of other international REIT markets, where individual shareholders are taxed at their marginal rate with regards to REIT distributions (Miller, 2014; Ntuli & Akinsomi, 2017).

The South African the listed property market at the time of this study comprised four types of property entities listed on the Johannesburg Stock Exchange (JSE). These were; PUT, Property Holding and Development Companies, REITs and PLS (JSE-Limited, 2010). Over the past decade, the South African listed property sector has seen significant growth (De Klerk, 2013). The South African REITs market is the 9th largest market of its type globally (Ntuli & Akinsomi, 2017).

As of 2017, there were 36 REIT members listed on the JSE (www.reits.co.za, 2017). There is currently one South African REIT that solely focuses on residential property. Over three quarters (78%) of properties owned by South African REITs comprise of retail and office sectors, with the remainder

including industrial, hotel and residential (3%), as shown in Figure 1. Figure 2 shows that the residential rental sector comprises only a sixth (17%) of the total South African property market.

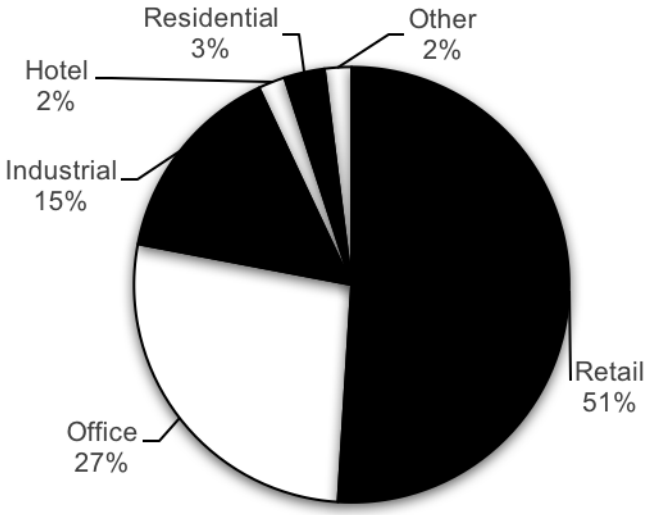

Figure 1: South African REIT Sectorial Segmentation (Growthpoint, 2016:6)

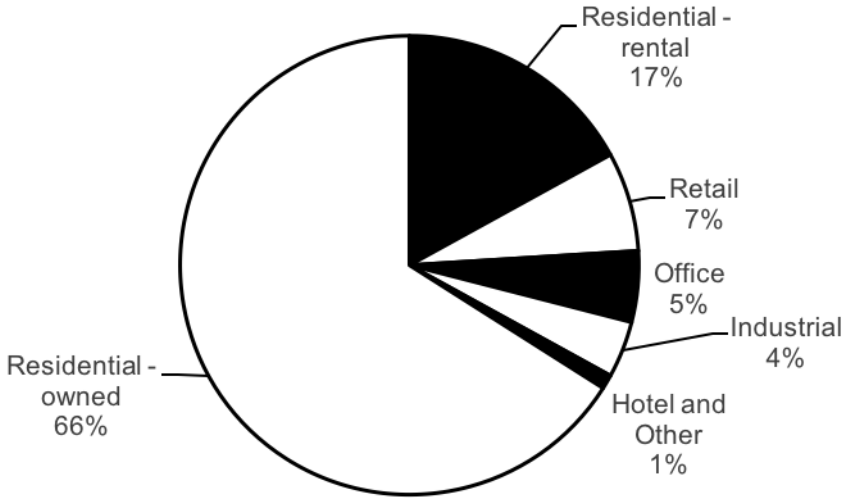

Figure 2: South African Property Market Sectorial Segmentation (Coronation, 2017:21)

The attractiveness of the REIT structure has resulted in some South African REITs considering the South African residential property sector as a potential investment opportunity, as the majority (83%) of South African property is classified as residential. There have been recent opportunities for residential investment by South African REITs, which are underpinned by increasing urbanisation - its resultant growth in the rental market and increased rental prices. Additionally, an increase in the demand for residential rental space has

been due to a reduction in available finance for residential acquisitions (CAHF, 2017b). The result of this, is an increase in demand for rental accommodation which both public and private sector are yet to respond to adequately. Consequently, the residential sector needs to be unpacked further in order to identify drivers and barriers as it only comprises 3% of South African REITs.

3. The South African Residential Property Sector

South Africa has experienced tough economic conditions and socio-political challenges that have affected the residential property market (Golding, 2016). Nationally there has been a slow decline of GDP growth from 5.6% in 2006 to 1.3% in 2016 (World Bank, 2017). South Africa's residential property market is the largest sector of the South African property market (CAHF, 2015). In 2013, the deeds registry accounted for 6.7 million registered properties, and of these, approximately 86% are considered residential accommodation. This includes estates, government-sponsored housing, sectional title and freehold properties (CAHF, 2017a).

The residential property market can be split into four segments. These are values under R300,000 (44%), R300,000 - R600,000 (19%), R600,000 - R1,200,000 (22%) over R1,200,000 (15%) of the residential property market (CAHF, 2017b). The most rapid growth in these sectors is in the R300,000 or under range due to the impact of governments subsidised housing programmes in South Africa (CAHF, 2017b). Low-cost housing is viewed by some as an untapped market due to a housing shortage in South Africa as a result of the legacy of Apartheid. Government housing programs have not managed to adequately address the demand for housing, thus its potential opportunity for the private sector. Rapid urbanisation has created an ever-increasing housing backlog which has led to a demand for residential housing that far outstrips current attempts to supply housing, by both the public sector and private sector. Anderson and Cloete (2016) also highlight the massive room for growth that the affordable housing sector offers investors.

On average the South African residential housing price grew by 5.5% in 2015 to 5.7% in 2016 (Golding, 2016), due to the rand weakening and escalating food prices. The Consumer Price Index (CPI) has averaged 6.2% during this period (Bloomberg, 2016). This suggests that real housing prices have fallen by 0.5% from 2015 (Golding, 2016). This data can be misleading as certain urban nodes, suburbs and types of property have excelled despite the external challenges facing the residential market (Golding, 2016). For example, the Western Cape has seen housing prices increase by 10.3%, 4% in real terms (Golding, 2016). The high demand in the Western Cape has been caused by growing foreign investment and an influx of buyers relocating from other parts of the country (Smith, 2016). As stated above, the growing demand for residential real estate has resulted in the increase in housing prices in Cape Town. The Northern Coast of Kwa-Zulu Natal has seen similar trends to the Western Cape (Golding, 2016). The Kwa-Zulu Natal commercial sector is expanding at a rapid rate, with an emphasis being placed on office space (Seftleben, 2016). This has caused a growing demand for residential space in

the area, and many apartment blocks have been developed to cater to working professionals (Seftleben, 2016). This case supports the modern notion of professionals wanting to work close to where they live (Hamm, 2013). Residential flats in Umhlanga have had a nominal increase of 31% growth since 2013, averaging at 10% growth per year for the last three years (Property24, 2017). Note that the above discussion relates primarily to urban residential real estate.

The residential market has seen a shift from freehold homes towards sectional title schemes and gated communities (Golding, 2016). In Johannesburg, the number of freestanding homes purchased has decreased by 25% since 2013, and the number of flats purchased has increased by 5% (Property24, 2017). Major gated communities such as Steyn City in Gauteng have been developed in South Africa. Both gated communities and sectional title schemes promote safe living conditions which are a main concern when purchasing residential accommodation (Golding, 2016). The aforementioned residential property types are seen to be attractive investments for REITs such as Indluplace and Redefine Properties, given that they feature residential property in their portfolios.

The above highlights that there is indeed a great deal of potential for investors within the residential sector in urban South Africa. This sentiment is beginning to be recognised by REITs. To exploit this opportunity a greater understanding of the conditions that facilitate the introduction of residential REITs is required (Anderson & Cloete, 2016). To this end, it is suggested that defining the factors that have resulted in the low investment in residential stock will enable a deeper understanding of what needs to be done to exploit the opportunities that exist in the residential property sector in South Africa.

4. Research Method

The overarching research methodology for this study was a qualitative survey. Through a set of semi-structured interviews, resultant qualitative data was captured and analysed. A qualitative research methodology is used to investigate and attain a greater understanding of phenomenon within real-life settings (Patton, 1990; Yin, 2006). Therefore, in order to conduct thorough qualitative surveys, a unit of analysis must be defined. This unit of analysis should be pitched in the form of a research question (Dul & Hak, 2007; Yin, 2013), which for this research is: *Why is there relatively low uptake of residential stock within South African REITs?* Therefore, the unit of analysis is South African REITs.

Both purposive and convenience sampling were implemented in order to acquire the required data. The main sample comprised of four South African REITs in addition to an organisation that invests in REITs on the JSE on behalf of other investors. The latter was chosen as a participant organisation as it provides a holistic view of the REITs sector without indicating any bias towards any particular REIT or portfolio strategy.

In terms of the REITs that participated in this research, three invested in a combination of office, retail and industrial property, with no exposure to residential stock. These three were chosen as they represent the current investment sentiment of South African REITs (to invest in diversified portfolios). The remaining REIT specialised exclusively in residential real estate, the only one of its kind in South Africa. This REIT was chosen to participate in this study as it represented a contrasting investment strategy and will likely add valuable insights into the challenges and opportunities of investing in residential real estate on the listed sector.

With the research question and sampling methodology in mind, the approach therefore centred on semi-structured interviews with property professionals working in the South African listed property sector. Interview participants were asked a range of questions which were defined by the initial review of literature that was conducted prior to data collection. These questions inquired about participant's perceptions around residential real estate investment, the general state of the South African REITs sector, and the residential market in South Africa as a whole.

Table 1: A Breakdown of the Respondents and their Roles within their Organisations.

Participant Code	Participant Role	Company
1A	Chief Executive Officer	Company A
2A	Fund Manager	Company A
3B	Non-executive Director	Company B
4C	Executive Management	Company C
5C	Executive Management	Company C
6C	Executive Management	Company C
7D	Regional Head	Company D
8E	Chief Executive Officer	Company E

Company A

Company A is an organisation that managers investors' funds. More specifically, they are fund managers that invest in listed property companies on the JSE. They do not operate in the same capacity as the other participating organisations that are purely REITs, and thus do not make decisions in the same manner as the other participating organisations. The purpose of selecting this organisation in the study is that they are experts in the REIT sector but also offer an objective opinion on the sector as they do not have a vested interest in a particular REIT portfolio or strategy.

Company B

Company B implemented the REIT structure in 2014 and has pursued exposure in the international market. The fund has a market capitalisation of R5.8 billion and holds a majority (70%) of its stock in retail property. The

other 30% is diversified amongst office and industrial property. Company B's portfolio has a Gross Lettable Area (GLA) of 520,226m^2.

Company C

Company C is the first, and only REIT listed on the JSE that specialises solely in residential property. It has a market capitalisation of R3.1 billion and its portfolio comprises of 7,000 residential units. Company C is one of a few specialised REITs operating out of South Africa.

Company D

With a market capitalisation of R82.8 billion, Company D is the biggest REIT in South Africa. The company features on the JSE top 40 index. The portfolio is made up of a combination of retail, office and industrial property with a total GLA of 6.73 million m^2. While Company D does own residential stock, it represents such a small percentage of its portfolio that they do not disclose it in their report to shareholders.

Company E

Company E was listed on the JSE in 1998 and subsequently converted to a REIT structure. Their specialisation is in retail property, with a focus on non-metropolitan nodes servicing low LSM brackets in the form of convenience, community and regional shopping centres, which are located close to transport nodes. Company E has a market capitalisation of R2.2 billion and owns 43 properties with a GLA of 229,175m^2.

Thematic analysis was the chosen method of analysis. This involves identifying the prominent themes that emerge from the data in order to link them back to the literature, which forms the analysis. The raw data (interview transcripts) were processed by using a qualitative software package, Nvivo. The software helped to establish a coding system that encapsulated common words or phrases, which resulted in deriving the central themes (Miles & Huberman, 1994; Saldaña, 2015). Each respondent was analysed in isolation according to the themes that emerged from the data. A cross-respondent analysis followed this in order to conclude the similarities and differences between the respondents. This is discussed in the findings chapter.

5. Findings and Data Analysis

The findings have been presented thematically based on the analysis of data collected from the survey interviews. Findings have been categorised into three main themes which are presented below.

5.1 Financial Performance of Residential Real Estate in South Africa

The majority of research participants believed that residential real estate does not perform as well financially as other property classes. Correspondingly, 7D stated that most of the leading South African REITs portfolios comprise

of office, retail and industrial property, and these three sectors dominate the investment property market. 1A highlighted that these property sectors have shown superior returns when compared to the residential sector and stated that the office sector could achieve yields of up to 12%, while the residential sector would only achieve approximately 7%. 1A went on to state that there are very few South African REITs that contain a residential portion.

1A mentioned that the National Credit Act (NCA) hinders competitive returns in the residential sector. This is because the NCA prevents above inflationary increases for loan repayments for residential property. Since the loan repayment (income to the property owner) is capped, so too is the capital appreciation, as property values within an investment context are a function of income. 1A continues to state that if there is no capital appreciation, then this makes residential property a less attractive investment option, especially from an institutional investment perspective. Furthermore, as pointed out by 1A, rent control, residential lease structures and other benefits are offered to lessees in Europe, which results in increasing demand, thus making the residential sector an attractive investment option in foreign markets.

There have been times in the South African residential market when investors were getting excellent capital appreciation; however the income yield was still comparatively low. This, according to 1A is one of the main reasons why there has been an aversion to residential stock in the listed property sector. This is confirmed by 3B who believes that returns in residential sector have been historically good; however the yields have not been competitive. 4C explains that although the residential sector is unable to achieve required returns, the sector is still outperforming the commercial sector. Moreover, 3B stated that in 2016 the total return (capital growth and income return) for some residential nodes in South Africa was 13.5%.

While the respondents all agreed that the residential sector offers good capital returns, many felt that the income returns are not as favourable as other property classes. Additionally, 8E stated that because of the additional risks associated with residential property, funds would need to achieve yields of between 9% and 10% to compete with retail, industrial and office sectors. However, 3B highlighted that these returns could be achieved in the residential sector. He stated that the affordable housing[1] sub-sector of the residential market is achieving yields of approximately 9-9.5%, which is competitive with other main property classes. Furthermore, the participants from Company C, a specialised residential REIT, stated that they were able to maintain their yield objectives. Thus, the findings suggest that the perception of the residential sector as being unable to compete with other sectors is, to some extent, inaccurate. This suggests that while this perception may influence the low uptake of residential stock in REITs, it is not the sole responsible factor.

5.1.1 Offshore Investment

[1] For the purposes of this paper affordable housing is characterised broadly by properties that are valued at less than R 1 200 000 ($ 87 500 USD based on exchange rate of R1= $0.0729).

A significant trend developing in the South African REIT sector is an increasing exposure to offshore investments. Out of the four listed companies that formed part of this study, all except Company C (the residential REIT) have international investments, most notably in Central and Eastern Europe. It is argued that this investment has been driven by low economic growth, the high cost of financing debt, and the weakened Rand in South Africa. Furthermore, 4C suggests that the South African property market is currently unstable. Essentially, these factors have stunted the further development of the domestic REIT sector. Invariably, this has meant that opportunities in the residential sector, and indeed other property sectors, are unexploited in favour of the attractive risk-reward profile available offshore. This is believed to also impact the uptake of residential stock in South African REITs. This brings up another important point, being that performance of various REITs is representative of the broader economy. Thus, for investment to be concentrated in the domestic market, the economy needs to be performing in a manner that offers opportunities for investment. The absence of which will lead investors to look for foreign alternatives.

5.2 The Nature of Residential Real Estate in South Africa

All of the respondents involved in this investigation agreed that the residential sector presents complex challenges regarding management intensity. 7D highlighted that these complexities act as barriers to the residential market. 1A and 2A similarly argue that management issues relating to both the nature of managing and maintaining residential property as well as rent leasing, renewals and terminations have meant that most investors do not have the appetite for residential real estate.

5.2.1 Property Management Issues

Most of the participants agreed that the management complexities of residential stock are a barrier to entering the residential market. 4C, 5C and 7D highlighted how the daily management issues are very different and are more personal, as you are managing someone's home. According to 8E, the management intensity in the residential sector is far more complicated than the commercial sector.

5.2.2 Leasing, Renewals and Eviction

All participants spoke extensively about the challenges with leasing and terminating residential property leases. 3B stated that residential property is perceived to be riskier as vacancy rates tend to be relatively high, as result of short lease durations. 1A and 2A stated that in South Africa a residential lease is normally one year. Moreover, they noted that a major risk was the ability to get a secure tenant at a good escalation. This confirms the findings of a similar study where the inability to continuously escalate residential rentals was found to limit investment in this sector (Anderson & Cloete, 2016). Therefore, ensuring that vacancy levels are kept at an acceptable standard while simultaneously maintaining other operational and financial needs provides a set of challenges that are unique to residential property. In addition

to this, the sheer volume of leases that a REIT owning residential stock has to manage proves to be a laborious task.

Most participants commented on the number of leases involved in residential property. 4C stated that Company C owns 7,000 residential units, which means they have 7,000 leases in place, and month end reconciliations are an intensive procedure. Similarly, 8E also acknowledged that a residential portfolio would have more leases in place than a commercial portfolio. 7D suggested that with more leases comes an increase in costs of the management processes. As a result, 7D stated that higher volumes are required in order for residential property to become a financially viable option. This was alluded to in Anderson and Cloete's (2016) study which suggested that the scale required to list a residential REIT is limited by the availability of stock. Another aspect associated with leases was highlighted by 3B who explained that in a commercial lease the lessee is often a juristic person, while in most residential leases, the lessee is a natural person. This can create potential complications both managerially and socially.

Society recognises termination and eviction of lessees in a commercial environment as business as usual, however evicting a family from their home generally receives negative press. Respondents highlighted how this is a deterrent for listed property funds as they are public companies and thus their share price can be influenced by investor sentiment, which in turn is linked to society's perception of the company. Moreover, 8E states that the legal process of evicting a residential tenant is more prolonged compared to other property types. Eviction must be conducted in accordance with Prevention of Illegal Eviction (PIE) Act. 4C notes that this Act favours of the tenant however, this can act as a barrier from an asset management and potential acquisition perspective.

The above findings were also found in a similar study conducted by Anderson and Cloete (2016). However, it is argued that more developed markets in Europe and the US face the same, or similar, issues as mentioned above, yet their uptake of residential stock in REITs is much higher. While these issues may present additional concerns in South Africa in terms of the legislative environment, it is argued that they do not suffice to explain the vastly different weighting of residential stock in the listed sector when compared to other markets. The authors argue that there currently is not enough knowledge of these challenges and how to manage them. This is supported by 3B who suggested that there is a lack of skills by practitioners that operate in the residential property sector in South Africa, and specialised residential expertise is required in order to extract attractive returns. Correspondingly, both 1A and 2A stated that it can be challenging to understand where and how the value in the residential sector is generated. The vast majority of participants admitted they do not have the required expertise to invest in residential property. This suggests that there is perhaps a lack of maturity in this aspect of the market. Most participants also recognised that the REITs sector in South Africa is far less mature than in developed markets such as Europe and the US. This will be discussed in detail in the next section.

5.2.3 Affordable Housing and Rentals in South Africa

Housing affordability is a significant concern in South Africa. 3B stated that there was a lack of affordable residential stock in the range of R500,000 and R1,200,000. Addressing this deficit is a complex issue and developing affordable space in well-located nodes across the country is an increasingly difficult task for developers. The rising costs associated with developments have also encouraged developers to maximise their yields by providing high-end residential units rather than affordable units. Some respondents commented on how REITs that invest in residential property are typically interested in high-end residential. Additionally, all respondents commented how there is a lack of supply of affordable housing in South Africa. However, 8E suggested that residential funds are beginning to target this bracket, in addition to the student housing market. Indeed, Company C, the only REIT specialising in residential real estate, primarily let their properties to lower income earners and students (Muller, 2015). The respondents from this organisation also reported low vacancy rates, though they did not specify an amount.

Perceptions of renting versus owning were also brought up by a few participants. 8E compares the attitude towards renting in Europe to renting in South Africa. This is corroborated by 6C who noted there is more emotion to owning a house in South Africa compared to European markets. In Europe, it is considered socially acceptable for the middle class to rent property, while in South Africa most people strive to own property even if renting is the better financial option. Thus, those who can afford to rent high-end property would prefer to buy/build their own property.

Despite the above, it is argued that while affordability is a prevalent issue in South Africa, this issue is present globally, even in the most developed economies. This suggests that the affordability alone is not a dominant factor preventing the uptake of residential stock in South African listed funds.

5.3 Maturity of the REIT Sector in South Africa

All of the participants acknowledged that the REIT sector in South Africa is still in its infancy. A function of this immaturity is attributed to the diversified nature of listed funds, and minimal specialisation. Indeed, there is evidence that suggests that mixed-asset portfolios in emerging markets tend to perform better than that of developed markets (Georgia et al., 2007). 8E explains that the largest listed property funds on the JSE are general funds, with a combination of industrial, office and retail property. A typical South African REIT is diversified, and the concept of a specialised fund is relatively new. 1A believes that there is a lack of specialised funds due to the relative infancy of the South African REIT market. However, the commercial, retail and industrial sectors of the South African REIT market appear to be reaching maturity (Anderson & Cloete, 2016).

Despite this, funds in the listed sector have only managed to find meaningful institutional interest and scale to develop focused REITs as recently as 2015. Thus, funds have applied a more risk-averse attitude towards specialisation

and typically have not strayed from diversifying their portfolios. This is confirmed by 6C who explains that investors typically require a track record of three to five years to feel comfortable when making large capital investments. 4C supported this statement by saying that as specialised REITs gain traction in the South African market, so they will be considered by investors to be competitive with the diversified REITs. Therefore, as the REIT sector matures, it is likely that more specialised REITs (1A and 2A) will emerge. Several studies on REITs from more developed markets conclude that specialised REITs out-perform diversified REITs and that monetary gains made by diversified REITs are largely offset by increased costs (Boer et al., 2005; Brounen and de Koning, 2012; Chong et al., 2012). The issue, however, is that specialisation requires a concentration of skills and expertise, and the nature of residential real estate makes it hard to acquire these skills at the scale required for a REIT. This is because knowledge regarding residential real estate tends to be very localised (Turnbull & Dombrow, 2007), and decisions made by potential buyers/tenants involves a multitude of complex factors.

Nevertheless, with this specialisation will come a greater uptake of residential stock in South African REITs (3B). 8E confirms this sentiment when stating that in the future the market may tend towards a more residentially focused REITs. This will require that residential yields build up a strong track record to prove to investors and property practitioners that the listed property sector can handle residentially focused funds.

However, to date, there has not been a record of success when listing a focused REITs and recorded listings were relatively unsuccessful (1A). Respondent 1A goes on to mention that a residential property fund tried to list in the early 2000s. The listing was a failure at the time since the fund was too small, and the residential listing was too low. 3B felt that currently, the listed sector is too small to support many specialised REITs. There are currently four specialised REITs operating in the South African listed sector.

Despite the conflicting opinions, it was almost unanimously acknowledged that the sector will specialise and become more innovative like markets in the US and Europe, as the South African REITs market matures. Furthermore, participants called for greater specialisation in the sector. This corresponds with Anderson and Cloete's (2016) findings that highlighted that investors in the REITs sector would prefer to invest in residential stock through specialised residential REITs. This highlights the recognition of, and interest in, specialised and residential REITs.

6. **Discussion**

The findings section highlighted various key aspects that influence the uptake of residential stock in South African REITs. The majority of these issues are experienced in other parts of the world, notably in developed markets, where the portion of residential stock in the listed sector is significantly higher. It is likely that a combination of these factors have attributed to the low uptake of residential stock in South African REITs, however, these issues are

exacerbated by the lack of requisite skills needed to make complex investment decisions relating to residential real estate. It is worthy to note that that many of the barriers cited by the interview respondents in this study were identified approximately twenty years ago in the UK (see Mansfield, 1999). According to Mansfield, UK property practitioners were apprehensive about compiling residential property portfolios due to a lack of data, high risk/low return profile, highly management intensive from both the physical asset and vacancy perspectives. The above suggests that the lack of maturity is a significant factor limiting the uptake of residential stock in South African REITs.

The perceived financial performance of residential property in South Africa, which is considered to be a key cause of the low uptake of residential stock, is inaccurate. Many participants highlighted that residential property could outperform other property sectors, which was supported by research conducted in Australia and the UK that revealed residential property could deliver high risk-adjusted returns and add value within a multi-sector portfolio (Montezuma, 2004; Lee, 2008). This suggests that the expertise regarding residential property investment, even amongst the upper management of listed funds, is lacking. The specialised nature of residential property means that investment can be risky if the right skills are not available to make investment decisions. This was pointed out by a couple of respondents. Ultimately, this lack of key expertise is related to the lack of maturity of the REITs sector in South Africa. It is argued that fostering this expertise will accelerate the development of the listed sector in South Africa. In turn, this is likely to lead to an increase in the uptake of residential stock in the listed sector.

Current under-development means that there is limited information on, and an unclear understanding of, the risks and opportunities exhibited by the residential property in the listed sector (Anderson & Cloete, 2016). As a result, the dominant South African REITs do not invest in the residential sector. However, more specialised REITs are starting to gain traction. A similar study by Anderson and Cloete (2016) found that there was growing interest by REITs to invest in residential property, and that listed funds are starting to diversify their portfolios to include residential. However, they highlighted that a challenge to introducing more specialised residential REITs was the ability to generate the required scale of residential property to list on the JSE, which is perceived to be in excess of R 2 billion (Anderson & Cloete, 2016).

Despite this, both studies indicate that residential stock is likely to become more prominent as asset managers acquire the necessary skills to extract the full value of this sector. Furthermore, most respondents stated their expectation; that with the development of these skills there will be a greater emergence of specialised residential REITs. Both the authors and respondents believe that this will primarily take place in the affordable housing bracket as this sector offers significant opportunities for investment, particularly in South Africa where there is a distinct lack of supply of affordable rental accommodation. This forecast is backed by a recent study where South

Africa's affordable-housing market has exhibited attractive returns within the 8-10% range compared to the prime residential market of 5-5.5% (Suttner, 2018).

7. Conclusion

The South African listed property sector is diversified in nature, with a majority of the funds holding a combination of office, retail and industrial property. Despite the relative maturity of these asset classes in REITs, residential stock still lags far behind other asset classes on the listed sector. Moreover, the investment in residential stock is a new concept in South Africa, in comparison to other developed listed property markets. The purpose of this research was to determine what has influenced the low uptake of residential property within South African REITs. Thus, the research question is: *Why is there relatively low uptake of residential stock within South African REITs?*

This was answered through a qualitative survey comprising of semi-structured interviews with key stakeholders involved in REITs and investing in the listed sector in South Africa. The study found that multiple reasons have attributed to the limited investment in residential property by REITs. These include the financial performance of residential real estate in South Africa; the nature of residential real estate in South Africa; and the maturity of South African REIT sector.

The most pertinent factor relating to the relatively low uptake of residential stock was identified as the maturity of the REITs sector in South Africa as this affects many of the other factors identified in this study. Furthermore, this has meant that there is a dearth of the requisite knowledge and understanding of residential real estate to facilitate greater uptake of this asset class. Thus, it is argued that fostering the skills and experience required to make informed investment decisions regarding residential property will help unlock the vast potential of residential real estate in South African REITs. Furthermore, it can help address issues associated with the housing backlog in South Africa by leveraging the resources of institutional investors and catalyse both domestic and international investment.

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Towards Improved Performance in Marketing: The Use of Property-based websites by Estate Surveyors and Valuers in Lagos, Nigeria

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Abstract:

The increase in globalisation has changed marketing strategies available to professionals within the built environment. This study investigated the marketing methods most used in Lagos' metropolis. It assessed the extent to which estate surveyors and valuers in Nigeria have adopted property-based websites for the marketing of their real estate services. A random sampling method was used to obtain data from 82 estate surveyors and valuers within Lagos' metropolis. The data were analysed with *SPSS V24* (statistical software), using Friedman's Test and One-Way Analysis of Variance *(ANOVA)*. The study concluded that conventional/traditional methods of marketing dominate the marketing activities of estate surveyors and valuers, weakening agency practice in Nigeria in relation to the current global context.

Keywords: Agency; Estate Surveyors and Valuers; Marketing; Property-based Websites; Real Estate

I. Introduction

Agboola et al. (2010) affirmed that real estate agency is one of the most multi-faceted aspects of the estate surveying and valuation profession in Nigeria. Marketing could be simply defined as the activities or processes involved in promoting, selling and distributing a good or service (Skitmore & Smyth, 2006; Yankah & Dadzie 2015). Therefore, in order to thrive in real estate agency, the role of marketing cannot be underestimated (as could be the case of any other product), as marketing plays a major role in reaching out to prospective customers or clients and the eventual consummation of the real estate transaction.

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In today's business world, the success of any business organisation depends largely on how best the organisation can reach and satisfy its customers. This places tremendous responsibility on any firm or organisation intending to excel by way of marketing (Ayedun et al., 2014). Previously, marketers had depended on broadcast or print media as well as press releases. These methods have since been found to be expensive with minimal success (Scott, 2013). This created the need for a change in the marketing platforms of business activities. The World Wide Web provides a tremendous opportunity to marketers to reach buyers directly with targeted information at a fraction of their previous marketing budget (McDonagh, 2006). Kotler and Armstrong (2012) noted that much of the world's marketing activity is therefore currently carried out over digital networks which connect people and companies.

As a result of globalisation and the world becoming a global village, the conventional methods of communication with clients and customers have changed significantly. The emergence of the World Wide Web has increased use of the internet and websites amongst several professionals and industries (Ley, 2015; Rogers & Koh, 2017). Today, professionals are utilising/optimising different electronic platforms to reach out to their targeted clients, thus increasing awareness of their services. In line with this current trend, there are several property-based websites which are available for the estate surveyors and valuers (ESVs). These platforms allow professionals to market real estate and reach out to numerous potential clients (Agboola et al., 2010). Unfortunately, Oni and Adebayo (2012) and Oni (2013) observed that ESVs who are expected to adopt the use of information technology have not yet done so, as many of the property-based websites require token payments before they could be used. Access to only a limited number of these websites is free.

In Nigeria, the Estate Surveyors and Valuers Board of Nigeria (ESVARBON) Decree No 24 of 1975, prohibits estate surveyors and valuers from advertising their services in print media (e.g. dailies), except with the approval of, and in line with the guidance set by, the ESVARBON. In accordance with the stipulations, various strategies or methods for the use of ESVs for the marketing of real estate include regulations regarding: boards (*To Let/For Sale*), property bulletin/handout, event marketing, personal contacts and property magazines. This has hindered the marketing of real estate services within the country, preventing Nigerian-based companies from competing effectively within the globalised world (Olukolajo, et al*.,* 2015).

Moreover, one crucial aspect of the estate surveying and valuation profession which has continued to attract considerable attention in Nigeria is the practice of real estate. On this premise, researchers like Araloyin and Ojo (2011); Iroham et al. (2012); Oni and Adebayo (2012) and Oni (2013), amongst others, have investigated issues relating to this practice particularly within metropolitan Lagos. If real estate agency in Nigeria is to be stimulated and sustained, the extent to which ESVs have responded to the use of property-based websites thus far demands further research attention (Olukolajo, et al*.,* 2015).

Currently, there have been relatively few studies which have addressed the use of property-based websites for marketing amongst ESVs in Nigeria. This research study attempted to address this research gap through investigating the following research questions: Which of the traditional methods for marketing real estate are still predominantly used by ESVs with Lagos' metropolis? How conscious are Lagos' metropolitan ESVs regarding property-based websites for the marketing of real estate? Which of the property-based websites for marketing real estate is most widely used amongst ESVs, if any?

2. Literature Review

Agency Practice in Real Estate Market

The real estate market is the mechanism through which potential buyers and sellers of real estate meet to exchange real estate related information and purchases (Bond et al., 2000). Due to the intrinsic characteristics of real estate, there is no specific location for this exchange. Kvedaraviciene (2009) avowed that the major activities of the real estate market include development/construction, financing, valuation, agency/brokerage, property acquisition, sale, letting and property management. Ayedun et al. (2014) affirmed that among all the activities occurring in the real estate market, agency is the most practised as it guarantees high return on invested capital, is less risky and integrates participants to achieve a common goal.

Agency practice entails bringing together parties of divergent interests to achieve specific goals (Iroham et al., 2012). The goal varies among parties with the parties' relationship with the agent controlled by different regulatory framework (Agboola et al., 2010). Olukolajo et al. (2015) uphold that the weak regulatory framework for agency practice has allowed other professionals in the built environment to assume this duty.

Marketing: Steps in a Real Estate Agency Transaction Process

Information is the key to success in real estate business. In support of this assertion, James et al. (2000) affirmed that agents connect buyers to sellers, or lessors to lessees, through the control and dissemination of information provided to them by both parties. Crowston and Wigand (1999) opined that real estate surveyors and valuers are pure market intermediaries who form this connection. These individuals are valued for the information and skills they bring to make both listings and sales possible. According to Crowston and Wigand (1999), the real estate transaction process is divided into five distinct stages, which are: Enlisting, Searching, Evaluating, Negotiating and Execution. However, literature such as; Skitmore and Smyth (2006); McDonagh (2006); Kvedaraviciene (2009) and Ley (2015) uphold that these marketing steps vary depending on the nature of the market and the economy. Below is an overview of the stages in the process in the context of the current Nigerian real estate market.

Stage 1: Enlisting

Firstly, potential sellers or lessors of real estate liaise with ESVs to help put real estate in the market. ESVs by virtue of their training are charged with the responsibility of determining how to position the property (e.g. which features to emphasise or if some repairs should be made, and how to price it) (Araloyin & Olatoye, 2011). Real estate properties are then advertised for sale or lease. For the purpose of sales, listing usually requires the seller to pay the appointed estate surveyor and valuer a commission once the house is sold. Since ESVs control the listing and dissemination of this information, this seems to resemble a monopolistic or cartel-like structure in terms of information ownership.

Stage 2: Searching

Ley (2015) reported that majority of potential buyers or lessees review houses through their agent to find those that might be suitable (in location, size, price, features, etc.). Information on available houses comes from many sources, where buyers/lessees could look in property magazines or inquire through *To Let/For Sale* boards erected outside properties in the areas they are interested in. Due to the evolution of property-based websites, a buyer/lessee could first conduct an independent search for property and thereafter seek the professional advice of an estate surveyor and valuer regarding which features are important or which neighbourhoods to consider (Schulte et al., 2005).

Stage 3: Evaluation

At this stage, the most promising real estate is further appraised. Typically, this evaluation is done in person during a walk-through inspection of the property by the would-be buyer or lessee. Baldi (2013) emphasised that the importance of this stage is the key difference between real estate and most other goods. This is because the prospective buyer or lease is usually given the opportunity to view and feel the product before purchase or lease.

Stage 4: Negotiation

After a desirable house is identified, the potential buyer or lessee makes an offer to purchase or rent the house at a price. This price is usually contingent on various of factors, such as available finances, having the house inspected, neighbourhood infrastructure and many others. Often, a buyer or lessee is advised on the price to offer or on other points of negotiating strategies by the estate surveyor and valuer. The seller or lessor's agent may receive a significant number of offers or make a counter-offer to the potential buyers/lessees. For purchase, and in some instances lease, a title search is done by the buyer to ascertain that the interest which exists in the subject property is genuine (Yankah & Dadzie, 2015). Thereafter the buyer and seller, or lessor and lessee, will agree to a binding contract, either for a sale or lease in any given case. At this point, the services of a lawyer might be required to address/amend the contingencies within the contract according to the buyer/seller or lessor/lessee agreement.

Stage 5: Execution

Ley (2015) suggested that this is the last stage of marketing characterised by the resolving of contractual issues between potential buyer and valuer. Iroham et al. (2012) and Bobenko (2013) affirmed that professional malpractice, on the part of the estate surveyor and valuer during payment, often characterises this stage.

The Shift in Real Estate Marketing

The consistent growth of commerce on the internet has attracted substantial interest (Bobenko, 2013). Since the internet is a public network and increasingly ubiquitous, it conveniently addresses the problem of connectivity between potential trading partners and extends even to the general consumer (Crowston & Wigand, 1999). The internet can attract the attention of the global population and has impacted the way business is being conducted today. In light of this, real estate marketing is gradually moving away from the conventional methods of advertising (such as *To Let/For Sale* boards, property bulletins or handouts, personal contacts, property magazines) to the use of the World Wide Web via property-based websites (Rogers & Koh, 2017). This has helped the facilitation and dissemination of available information to millions of people at the same time. Benjamin and Chinloy (1995) concluded that sellers who adopt this technology would achieve higher sales in shorter time periods. Thrall (1998) also predicted that prospective home buyers would be able to search properties using filters such as style, features and amenities. Furthermore, it allows users to obtain location information for the targeted property and surrounding community online. James et al. (2000) categorised the two types of information gathered from the internet as; information related to property brokers or companies themselves, and information regarding the specific properties available for purchase or lease.

Baen and Guttery (1997) and Bond et al. (2000) have shown that the quality and quantity of information available online is steadily increasing, much of it due to the advances of technology that make it easier to gather and upload data. Brokers have affordable means of promoting themselves and their listings. The internet allows buyers to search at their convenience and pace, learning a great deal before they begin any actual negotiations. Sellers can now more easily see other homes in the area and can be better informed. Bond et al. (2000) argued that brokerage firms who operate without listing their properties on a website and attempt to remain current with developments in the future do so at significant economic risk. Bobenko (2013), in an article on a comprehensive approach to selling real estate, reported that the internet has had a significant influence on the real estate industry in America as buyers can go online to research listings and related information and are well informed by the time they contact a real estate agent. The following universal internet Real Estate Statistics have been highlighted;

a) Over 90% of buyers use the internet at some point during the home buying process.

b) 75% of buyers first saw the property they eventually purchased online.

c) Real estate related Google searches are up by 253% over the past four years.

d) Online advertising is 20 times more likely to sell a property than print advertising.

e) Internet buyers only look at an average of seven properties on their first tour of the physical properties of interest (Cherif, 2013).

In the same vein, a survey conducted by the California Association of Realtors (2013) on home buyers in California revealed that almost all home buyers used the internet in the process of home buying; and despite the fact that home searches through agents increased in 2013, the percentage of home searchers through online platforms doubled from the initial 16% in 2012 to 37% in 2013. Unfortunately, there is currently no database within the Nigerian context showing the impact of these platforms on real estate marketing, which further informed the need for this current study.

3. Methodology

Lagos' metropolis was identified as the study area. Lagos State was conceived as the most suitable area for the study for diverse reasons. It has remained the heart of commercial and industrial activities and has absorbed a diverse national population over the years (Ajayi et al., 2016). This has continually prompted the need for Estate Surveying and Valuation services in the state. Babawale (2011) asserted that despite the shift in base of the Federal Government in Nigeria from Lagos to Abuja, Lagos' metropolis has continued to be the centre of the country's most active property market. Thus, registered firms of ESVs located within Lagos metropolis were identified as the study and sample area.

The respondents within the identified population were selected through random sampling. The study adopted random sampling as it allows one to generate a smaller sample size from a larger population with the intention of generalising about the larger group (Kumar, 2011). Creswell (2009) reported that random sampling works on the concept of obtaining a comprehensive list of a larger population and randomly selecting individuals to be adopted for the sample. The concept behind random sampling makes it suitable for this study due to the large number of estate firms in Lagos, totalling 400 (NIESV, 2009), of which about 270 of them are in Lagos' metropolis (Iroham et al., 2014). Therefore, 100 ESVs known for agency practice in the proximity of the research were randomly selected. Out of the selected professionals, 82 responded satisfactorily, showing consistency in their response.
The study adopted a quantitative research methodology as it enables one to gather, assemble and analyse data in a numerical format using mathematical methods. Additionally, this methodology generalises the findings across a larger group of specific people (Blaikie, 2010). The quantitative data was analysed by adopting the Statistical Package for Social Science (SPSS) version 24 using descriptive statistics such as mean item score and frequencies. This was supported with ANOVA (One Way Analysis of

Variance) to test whether a significant difference is present between the adoption of contemporary and conventional modes of marketing.

4. Results and Discussion

Characteristics of Respondents

Table 1 presents the general characteristics of the respondents. Table 1 reveals that more than half (56.1%) of the respondents were male and 43.9% were female, which could imply that estate surveying and valuating is a male dominated field within the Lagos metropolitan area.

Table 1: Characteristics of Respondents

Characteristics	Frequency	Percentage (%)
Gender		
Male	46	56.1
Female	36	43.9
Total	**82**	**100**
Age group		
18-25	25	30.5
26-35	38	46.3
35-45	12	14.6
46 above	7	8.5
Total	**82**	**100**
Academic qualification		
ND	6	7.3
BSc/HND	51	62.2
MSc	25	30.5
Total	**82**	**100**
Professional qualification		
Graduate member	14	17.5
Probationer member	12	14.6
Associate member	48	58.5
Fellow	8	9.8
Total	**50**	**100**
Working Experience		
1-5	16	19.5
6-10	49	59.8
11-15	15	18.3
16 above	2	2.4
Total	**82**	**100**

Table 1 shows that, at the time of this study, 62.2% of the respondents were either Bachelor of Science (BSc) or Higher National Diploma (HND) holders, 30.5% had studied up to Master in Science (MSc) level and 7.3% were National Diploma (HND) holders. It could be inferred that BSc and HND's comprised the majority of respondents' qualifications. Professional qualifications with NIESV/ESVARBON shows that 17.1% were graduate members, 58.5% were associate members, 14.6% were probationers and 9.8% were fellows. This suggests that all the respondents had different professional membership statuses in accordance with the stipulations of the NIESV and ESVARBON at the time of this study. Table 1 also depicts that

all the respondents had gained sufficient work experience; 59.8% had worked between 6-10 years, 19.5% within 1-5 years, 18.3% between 11-15 years and the rest (2.4%) had worked for 16 years or more.

Area of Specialization of Respondents

Table 2 presents the area of specialisation of the respondents. It was found that the majority of respondents specialised in estate agency, property management, property valuation and appraisal, with only 36.6% specializing in development. This implies that ESVs within the study area rarely specialise in property development, while a major concentration is seen in other areas of the estate surveying profession.

Table 2: Area of Specialization

Specialization	Specialized (%)	Not specialized (%)
Estate agency	82 (100%)	-
Property management	82 (100%)	-
Property valuation	82 (100%)	-
Development	30 (36.6%)	52 (63.4%)
Appraisal	82 (100%)	-

Conventional Ways of Marketing Real Estate

Table 3 presents the ranking of the use of conventional methods of marketing real estate. Respondents rated the frequency of usage on a 5-point Likert Scale from 1 to 5 where 1 denoted *not at all* and 5 represented *very often*.

Table 3: Conventional Methods of Marketing Real Estate

Conventional Methods	Mean Score	Rank
To Let/For Sale board	4.70	1
Referral	4.51	2
Personal contact	4.32	3
Property bulletin	4.05	4
Property magazine	3.91	5
Event marketing	2.90	6

Table 3 shows that *"To Let/For Sale"* board is the conventional method mostly used for marketing real estate (mean score is 4.70); followed by referrals and personal contact. Property bulletins, property magazines and events marketing were the three least used conventional marketing methods reported by respondents. Table 3 indicates a high mean score attributed to all the conventional methods for marketing, implying that the ESVs within the study area predominantly use conventional methods of marketing. The use of property bulletins is reportedly outdated but allows for the collaboration of firms in the area through joint marketing (Olukolajo et al., 2015). Scott (2013) asserted that marketers had previously depended on broadcast or print media as well as press releases, which are both expensive mediums with minimal assured success. Traditionally, Mangold and Faulds (2009) argued that methods such as sales promotions, public relations, personal selling and word

of mouth could still be used by marketing agents to convey their services. However current tools and strategies of communication with prospective clients or customers have changed significantly since the emergence of internet-based platforms.

Contemporary Methods of Marketing Real Estate

Table 4 presents the awareness of the respondents regarding property-based websites for marketing real estate. Table 5 shows that almost all (92.7%) of the respondents were aware of internet-based platforms, while the remainder of participants (7.3%) were not aware.

Table 4: Awareness of Property-based websites

Awareness	Frequency	Percentage
Yes	76	92.7
No	6	7.3
Total	82	100

Furthermore, respondents were asked to rate the use of property-based websites for marketing real estate on a 5-point Likert Scale with 5 representing *very often* and 1 *not at all*. The ranking is presented in Table 5. From the table, it was revealed that '*Nigerian Property Centre*' was the most used website by ESVs (ranked 1st). Followed by this were '*Lamudi*' and '*Private Property*'. The least (ranked 11th) was '*Mobo free*'.

Table 5: Use of Property-based websites

Property-based websites	Mean Score	Rank
www.nigeriaproperty.centre	3.87	1
www.lamudi.com.ng	3.44	2
www.privateproperty.com.ng	3.41	3
www.castles.com.ng	3.33	4
www.property24.com.ng	2.99	5
www.olx.com.ng	2.54	6
www.propertysearch.com.ng	2.51	7
www.rightmove.co.uk	2.27	8
www.propertyindex.com.ng	2.26	9
www.lekkirealestatesales.com	2.20	10
www.mobofree.com	1.95	11

It is pertinent to note that while '*Nigeria Property Centre*' ranked 1st in Table 5, the mean score of this finding (3.87) remains lower than that of the '*To Let/For Sale'* board which showed a mean score of 4.70 in Table 3. The low mean score values were similarly found with all other property-based websites investigated in this study. These low mean scores indicate that ESVs have not entirely embraced property-based websites for marketing real estate in Lagos. The findings from this study coincide with study done Bond et al. (2000). This study relates to the limited adoption of property-based websites to the cost incurred from using them. It also relates it to the absence of a

specific program set up by the NIESV/ESVARBON for training professionals on the use of the websites.

Difference between the Adoption of Traditional and Contemporary Methods of Marketing

An analysis was conducted to determine whether the established disparity in the use of traditional and contemporary methods of marketing amongst ESVs outlined above was statistically significant. The null hypothesis that 'there is no significant difference in the use of traditional and contemporary methods of marketing amongst ESVs in Lagos' metropolis, was formulated. To test the hypothesis, One Way Analysis of Variance (ANOVA) was adopted as presented in Table 6.

Table 6: ANOVA for the use of marketing methods

	Sum of square	**Df**	**Mean square**	**F**	**P value**	**Sig.**	**Decision**
Between groups	12.260	29	0.423	4.544	0.000	S	H_1 accepted
Within groups	4.838	52	0.093				
Total	17.098	81					

From Table 6, F Statistics equals 4.544 and the p value is 0.000. At 95% confidence level, the observed p value of $0.000 < 0.05$. This finding indicates the probability of the calculated F ratio resulting from chance is less than 0.05 ($p < 0.05$). This implies that the null hypothesis could be rejected in this study. The alternative hypothesis that a significant difference in the usage of traditional and contemporary methods of marketing amongst ESVs exists, was therefore supported. Based upon these findings, ESVs in Lagos' metropolis were found to still employ conventional methods of real estate marketing more widely than property-based websites.

5. Conclusion

Today, the ubiquitous use of the internet provides increased opportunities for business marketing activities to reach out to their prospective clients/customers. Estate surveyors and valuers in Nigeria are currently not permitted to advertise/market their services or real estate products in innovative manners as limited by ESVARBON/NIESV regulations. However, the emergence of property-based websites continues to change the environment for real estate marketing in the current global context. This study appraised the response of estate surveyors and valuers in adopting this new phenomenon in marketing real estate within the Lagos' metropolitan area. It was revealed that conventional methods of marketing are still widely used by estate surveyors and valuers. It was further revealed that the property-based websites have not been fully embraced by estate surveyors and valuers, resulting in the limited optimisation of these contemporary opportunities. The low acceptance and implementation of property-based websites by ESVs for marketing real estate weakens the practice of estate agency in Nigeria in

relation to today's globalised world. The outcomes of this study could assist in drawing the attention of Estate Surveying and Valuation Firms in Nigeria to the need to adopt property-based websites for improved performance in agency practice. In order to reach out to more prospective clients, it seems paramount that estate surveyors and valuers adopt a paradigm shift to the increased use of property-based websites for the marketing of real estate to better both agency practice and service delivery in firms. Also, a strategically structured and robust Mandatory Continuing Professional Development (MCPD) programmes targeted at educating Estate Surveyors and Valuers about the potentials of property-based websites in estate agency should be brought forward by NIESV/ESVARBON. This training will further increase their awareness, operations and benefits with the various forms of property-based websites.

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Management of Uncertainty in Real Estate Development Appraisals: A Literature Review

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Abstract

This paper provides an in-depth examination of various concepts related to the forms and sources of uncertainty, as well as the management of uncertainty in real estate development (RED). The study also examines factors influencing the adoption of Real Option Analysis (ROA) in RED given the need to improve the knowledge of stakeholders in RED appraisal, and to ensure best practices. Based on desktop analysis of past authors' perspectives, orientations and submissions regarding the management of uncertainty in RED appraisal, the findings reveal that while there are varying forms and sources of uncertainty in RED appraisals, there are also diverse methods used to manage the uncertainty of it. It is, however, noted that the methods employed are dependent on RED appraisers and other institutional factors. The consensus from previous studies favours ROA in managing uncertainty in RED. This paper adds to the debate for the need to embrace ROA in managing the effects of uncertainty in RED appraisal.

Keywords: Appraisal; Flexibility; Management; Real Estate Development; Real Option; Uncertainty

1. Introduction

The nature of investment in real estate by institutional and multinational investors over time has been concentrated largely on direct real estate assets; owing to the seeming prospects and benefits of huge returns (PricewaterhouseCoopers & the Urban Land Institute, 2013; Ekpenyong, 2015). While real estate investment is fixed both in time and space and involves significant capital outlay, its ability to provide investors with the expected return is subject to an array of sources from which uncertainty

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influences the expectation. Real Estate Development (RED) could thus be regarded as an entrepreneurial activity that involves some measure of risk and uncertainty. In other words, it could be said that risk and uncertainty are integral parts of investment decisions, and the success or failure of RED decisions depend on the assessment and management of the inherent risk and uncertainty. The problem of risk and uncertainty in RED is compounded by new developments in the real estate market which have increased the sophistication of the investors and that of the market itself (Olaleye, 2008). For example, real estate investments are now dominated by institutional investors, while globalisation and Information and Communication Technology (ICT) have improved accessibility to innovative decision tools for RED (PricewaterhouseCoopers, 2014). The investment appraiser must, therefore, manage uncertainty and incorporate it into the financial analysis. This will eventually form the basis of advice for the investor about the investment outlay.

Given this increasing sophistication of investors and the prevalence of risk and uncertainty in real estate markets, RED decisions are becoming more complicated than a *"Yes or No"* decision criteria. Investors now have the inherent ability to make new decisions at any time for the life of the investment in response to unfolding economic realities, which by their nature are uncertain. Evidence in previous studies has shown that the traditional methods, which have long been used in RED appraisal (Bowman & Moskowitz, 2001; Copeland, et al., 2010), have been of little practical importance due to the irreversible nature of RED, the presence of uncertainty, and imperfect information (see, for instance, Feinstein & Lander, 2002; Tomas & Višić, 2009; Sattarnusart, 2012). In addition, authors have maintained that traditional approaches do not always capture a realistic appraisal of REDs due to their static, accept or reject rule, and do not account for other potential opportunities that investment can generate in the future (Chance & Peterson, 2002).

Thus, the traditional approaches to RED appraisal are not adequate to serve as decision criteria under uncertain conditions, especially in emerging economies, which typically have greater uncertainty and market volatility. Thus, studies such as Carmichael et al. (2011), and Sattarnusart (2012) have advocated for the adoption of Real Options Analysis (ROA) as a method that incorporates management of uncertainty in RED appraisal. Meanwhile, it is not clear whether or not RED appraisers and other stakeholders (especially in emerging economies) have adequate knowledge of this method. Moreover, in developed markets where the appraisers appear to be aware of ROA, there is a low level of adoption (Andalib et al., 2016). This perhaps may still be the result of an inadequate level of knowledge regarding the inherent advantages of the ROA . With this in mind, this paper gives a global overview of the management of uncertainty in RED appraisal. It provides a comprehensive review of the concepts related to forms, sources, and management of uncertainty and the factors influencing the adoption of real option models in RED appraisal. This is against the backdrop of the need to improve the knowledge of stakeholders in RED appraisal practice and to ensure best practices.

The subsequent sections of the paper are structured into six sections. The first section focuses on the varying perspectives on risk and uncertainty. This is followed by forms and sources of uncertainty and the management of uncertainty in the second and third sections. The discussions in the fourth and fifth sections were directed towards the types of options and the real options models adopted in RED. The last section examines the factors influencing the adoption of ROA in RED.

2. Perspectives on Risk and Uncertainty

There is consensus among existing studies that there are varying perceptions of risk and uncertainty. These variations appear to be dependent on the context in which risk and uncertainty are discussed. Definitions and investigations of the two concepts are explored in different fields, such as: psychology, sociology and economics. This section examines the different definitions in these fields, and the subsequent section directs the conversation towards risk and uncertainty in the real estate sector.

The first perspective is psychological. Slovic and Peters (2006) noted that risk and uncertainty are integral parts of our daily life and are often analysed quickly and spontaneously based on feelings which are usually in the form of experiential thinking. For this perspective, the studies of Slovic et al. (2004) and Slovic and Peters (2006) submitted that risk could be viewed from two perspectives. First as feelings; that is fast, instinctive and intuitive perception of, and reaction to danger. Second, as an analytical process that encompasses logic, reason and scientific methods in the management of risk and decision-making processes. Another perspective to risk and uncertainty is the concept of risk as politics. The perception of risk as politics emphasises the influence of power, status, perceived government influence and socio-political factors, among others, in defining the level of risk perception and acceptance (see Slovic, 1999). Furthermore, from a psychological standpoint, Peters and Slovic (1996) and Peters, Burraston and Mertz (2004) argued that risk encompass two dimensions, these are: the *dread* and the *unknown risk.* While the first relates to the extent of apparent lack of control, feelings of dread, seeming potential for disaster, and the unequal distribution of risk and benefits, the latter relates to the level to which the hazard is adjudged undetected, new or delayed, resulting in unexpected consequences.

Another standpoint from which risk could be examined is from the perspective of consequentialism. According to Loewenstein et al. (2001), viewing risk from a consequentialist perspective means that decisions are made on the basis of an assessment of consequences of feasible alternatives. This notion of risk relates more to feelings and emotions experienced during the decision-making process. Thus, while the assessment of risk is cognitive, the reaction is emotional. Furthermore, Luhmann (1990: p.225) noted that risk, if measurable, is a counter-concept to security, which is immeasurable. The author defined risk as the "*possibility of future damage, exceeding all reasonable costs that are attributed to a decision*". Luhmann's study concluded that risk is an avoidable causal link between the time when the

decision is made and the time of damage, thereby having the prospect of post-decisional regret. It is important to note that risk is an attribute of a decision or indecision, which relates to the level to which probability could be attached to uncertainty about such decisions.

From the perspective of finance and economic literature, the work of Knight (1921) could be regarded as a pioneering study in differentiating between risk and uncertainty in economic theory. The study posited that uncertainty relates to the lack of knowledge about possible outcomes, while risk refers to situations with known alternative outcomes and the attached level of probability associated with each outcome. The study submitted that while risk can be measured numerically, the same cannot be said of uncertainty. Thus, the author concluded that risk could be regarded as measurable uncertainty. While it appears that this position was sufficient to clear the difference between these two terminologies, the study of Pandey (1999) noted that the distinction between risk and uncertainty as submitted by Knight (1921) was not generally recognised in most finance and economic literature; given that the two terms are often used synonymously. Hence, it could be argued that uncertainty is a complex concept with diverse perspectives across varying disciplines, professions and problem domains (Smithson, 2008; Saunders, Gale and Sherry, 2015). However, from a real estate appraisers' perspectives, and perhaps in line with Knight's (1921) position, the study of Byrne (1998) noted that uncertainty is the lack of knowledge about the outcome of a project at the time of making decision, while risk refers to the extent of loss, identified as a probable outcome of a decision.

Uncertainty can also be regarded as the inability to ascertain the exact state of a system (Haimes, 1998); which suggests that probability cannot be measured. Furthermore, Pender (2001) opined that risk applies to situations where there is a probability of repetition and replicability, while uncertainty connotes situations where no prior knowledge exists because replicability and future occurrence cannot be categorised based on past precedence. Thus, it might suffice to note that since each RED is unique and heterogeneous, it is expected that appraisal of REDs would largely involve uncertainty as opposed to risk. This is because each RED comes with its unique conditions and characteristics. It can then be submitted that total ignorance or fundamental uncertainty apply to RED, given that knowledge of future events in relation to the project and other underlying economic inputs are limited.

The study of Ward and Chapman (2003) posited that uncertainty connotes the lack of certainty and refers to the variability in relation to cost, time or quality. It could also be about ambiguity with respect to the lack of certainty due to the attitude of key project actors, lack of data, lack of details, lack of structure to examine issues, lack of sources of bias or ignorance. Uncertainty could also arise when details regarding a system cannot be identified, or, only known without precision (McManus and Hastings, 2005). Given this background, uncertainty could then be regarded as unquantifiable because the consequences are unpredictable (Blokpoel et al., 2005; Reymen et al., 2008). In a similar vein, Perminova et al. (2008) argued that uncertainty refers to a situation where it is impossible to calculate the risk inherent in an outlay.

Hence, risk has the ability to assume the probability of occurrence, and it is seen as less threatening to investment decisions as compared to uncertainty in which the probability of occurrence is unknown. A study by Loizou and French (2012) posited that where probability can be attached to the input variables, that is, the ability to determine a range of possible outcomes, such an output is thus a measure of risk. Risk can then be regarded as the deviation from the central tendency, for which the outcomes may or may not occur due to imperfect information about the future.

Employing the uncertainty spectrum framework of Hargitay and Yu (1993), the authors noted that uncertainty could be regarded as either partial or total. Total uncertainty arises where the alternatives cannot be identified, while partial uncertainty relates to situations where the alternatives can be identified, but not with predictability or probability. However, where there are identifiable alternatives with a measure of predictability and probability, such scenarios refer to risk.

Thus, it presupposes that uncertainty primarily arises due to lack of knowledge and imperfect information leading to inability to predict all variable inputs required for informed decision-making. Thus, uncertainty is a fact which all decision makers must contend with. It arises as a result of ignorance with respect to the state of knowledge, and/or lack of control (Kahneman & Tversky, 1982). It can be regarded as an unpredictable and/or uncontrollable risk.

3. Forms and Sources of Uncertainty in Real Estate Development

Economic, physical, and political environments, among others, all within which RED is situated, are subject to an array of influences that introduces uncertainty to the core of all RED activities. Stakeholders also play a role in influencing RED within these environments. Thus, uncertainty in RED can take on different forms and could arise from different sources. However, Kahneman and Tversky (1982) noted that while probability can be used to express forms of uncertainty, the laws of probability cannot be applied to all variants of uncertainty in equal proportion. The laws of probability are often satisfied based on intuitive judgement, especially when an external source of uncertainty is assessed in a distributional mode. An examination of these forms and sources is the focus of the subsequent subsections.

3.1 Forms of Uncertainty

Extant studies suggest that forms of uncertainty are broadly grouped into two categories. These are epistemic uncertainty and aleatoric uncertainty.

a. Epistemic Uncertainty

Epistemic uncertainty is derived from the Greek word *episteme* meaning knowledge. It arises from insufficient knowledge about possible outcomes, the nature of outcomes and the associated probabilities (Yeo, 2012). Epistemic uncertainty could be reduced in principle with the passage of time and the availability of more information. Thus, this kind of uncertainty arises

from incomplete theory and imperfect understanding of a system or limited data. Epistemic uncertainty could also be referred to as internal, imprecision, functional, subjective, reducible or a model form uncertainty (Hillson, 2004; Chalupnik et al., 2009; Yeo, 2012). As such, with regards to RED, epistemic uncertainty relates to instances such as dated, missing, vague or incomplete information, incorrect assumptions and unexpected changes in socioeconomic variables.

b. Aleatoric Uncertainty

Aleatoric uncertainty, from the Latin root, *aleator* – dice thrower; or *alea* - dice, refers to inherent variability, chance, randomness or unpredictability. It arises due to natural, unpredictable variation or randomness in the performance of a process (Yeo, 2012). It is irreducible. Obtaining more knowledge cannot eliminate inherent variability. Aleatoric uncertainty, sometimes associated with variability, could also be termed as natural variability, irreducible uncertainty, stochastic uncertainty and random uncertainty (Chalupnik et al., 2009; Yeo, 2012). Aleatoric uncertainty connotes the knowledge of a range of a possible set of outcomes and the probability attached to each can be measured. However, the precise outcome at any instance is unknown. Aleatoric uncertainty is often represented in stochastic terms and reasoned out using probability theory (Hillson, 2004; Aughenbaugh & Paredis, 2006). With recourse to RED, aleatoric uncertainty encompasses uncertainty arising from sources such as environmental, social complexity and change in physical environment.

Given that processes involving random behaviour exhibiting unpredictability are referred to as a stochastic process; the outcomes of such a process are dynamic from time to time and place to place, even when other basic elements are held constant. The RED process similarly exhibits such stochastic nature; however, its basic features are not constant. Thus, RED could be regarded as a more complex stochastic process whose features vary with time, place and variable inputs. This presupposes that when there is the inability to ascertain the validity of variable input in the RED, the resulting outcome of the appraisal might become uncertain leading to loss of capital or investment.
This presupposes that the two aforementioned forms of uncertainty are broader perspectives from which sources of uncertainty can be examined. An examination of these sources of uncertainty is discussed subsequently in order to show a detailed perspective as to how these two forms of uncertainty influence RED.

3.2 Sources of Uncertainty

Uncertainty lies at the root of all RED projects, and its sources are varied. Hillson (2004) noted that real estate projects are subject to uncertainty from a multiplicity of sources that can be either internal or external to the project, and these range from technical, to management, to operational and to commercial uncertainty. Internal sources relate to either the actual work to be done (such as changing work requirements/scope, wrong or flawed assumptions, and new technologies/methods), or stakeholders involved in the project (such as varying skills/productivity and performance of team

members). External sources encompass issues such as project environment, market condition, the action of competitors, change in exchange/inflation rates, weather conditions and influence of other stakeholders. From a related perspective, Reymen et al. (2008) posited that uncertainty in relation to RED could be addressed from two significant perspectives; these are *cause* and *consequence*. The *causes* relate to the unpredictability of input variables (data and values), while the *consequences* relate to uncontrollability of decisions made by the team members, especially the investor or project appraiser.

Corroborating previous discussions, Chalupnik et al. (2009) noted that two sources of uncertainty could be identified in the development process. The first is exogenous uncertainty, relating to unknown variables in the external environment of the RED. The second is endogenous uncertainty, which relates to the unknown internal factors embedded in the RED. Exogenous uncertainty explains the uncertainty whose source arises from the external project environment. This external uncertainty can arise because of change in organizational structure, volatility/unpredictability of economic variables, changes in user's taste, or due to the dynamism of political and cultural setup of the RED company. Endogenous uncertainty whose source is internal to the RED can further be examined from two perspectives. The first is the uncertainty associated with the technological novelty dimension, which could be because of product or process technological novelty. The second relates to the process complexity dimension. This pertains to the challenges that are unique to achieving the process objectives, the innovation of the objectives to the RED company and the level of interdependency among the product element.

Further, the study of Yeo (2012) posited that uncertainty results from two distinct sources: natural variability and knowledge uncertainty. The former, which relates to the macro level, arises due to decision-making in a dynamic and uncertain environment. The latter, which is at the micro-level, relates to particular scenarios with respect to knowledge, data and models used in the RED appraisal. Uncertainty at the macro-level impacts RED investment decisions through a continuously and swiftly changing social and economic environment, while micro level uncertainty concerns specific details in the project at the level of available knowledge. Akakandelwa (2014) argued that RED is prone to volatilities from varying sources, such as the demand for space for economic activities, to the influence of technology and the level of vibrancy of the space market.

Perhaps from what appears as a more detailed perspective, Saunder et al. (2015) noted that sources of uncertainty could be grouped into five (5) broad perspectives, namely: environmental, individual, complexity, information and temporal perspectives.

Sources of uncertainty from the environmental perspective include factors such as turbulence of the environment, institutional norms, the process of decision-making, competitor threats, external industry and market risks.

The individual sources encompass factors like internal state of understanding, uncertainty existing in the mind of the individual and the differing perception of varying psychological profiles towards uncertainty.

The complexity dimension emphasises factors such as choice of technology, process actors, diversity of process stakeholders and inherent project complexity.
For the latter two; information and temporal, the sources of uncertainty with respect to information perspective arises due to incomplete and imperfect information, lack of knowledge, incomplete understanding of cause and effect and inability to arrive at accurate project estimates. Temporal source involves the stage of project life cycle, project tempo and scale of project turbulence.

This presupposes that uncertainty is an integral part of the RED appraisal and can arise from either the project environment or from the economic environment wherein the RED situates. Uncertainty from the project environment includes instances such as the influence of project stakeholders, project scope, the level of technology required and varying psychological profiles, among others. Uncertainty from economic environments include, but not limited to: market data, market risk, volatility of economic variables, and incomplete information (Saunders et al*.,* 2015). This paper thus argues that in order to ensure that the investor's goal of profit maximisation is achieved, there is a need to adequately manage these sources of uncertainty.

4. Management of Uncertainty in RED

Studies have investigated the management of uncertainty in relation to general investment decisions and in particular to RED. Bannerman (1993) noted that results of appraisal in emerging countries, when compared to developed economies, are often difficult to rely on and justify. This owes to the fact that high fluctuations and volatility with respect to market data, and other input variables in most emerging markets have some overbearing influence on the reliability of the appraisal estimates and guarantee of investors profitability. Hence, the issue of managing uncertainty comes to the fore, especially in emerging markets. The management of uncertainty can be done in a number of ways; however, these are broadly divided into three categories. They include traditional, probabilistic and contemporary appraisal methods. An examination of these approaches is undertaken hereafter.

4.1 Traditional Appraisal Techniques

While there are varieties of traditional investment evaluation tools in the portfolio of an investment appraiser, traditional techniques could be broadly grouped into non-discounting and discounting appraisal methods. The non-discounting investment appraisal methods include techniques such as; payback period, accounting rate of return, and maximum cash exposure. The discounting methods encompass methods like Net Present Value (NPV), Internal Rate of Return (IRR) and profitability index among others. These are also regarded as variants of the Discounted Cash Flow (DCF) technique, and are commonly employed in determining future cash flows, and often serve as the basis for assessing investment values (Chance & Peterson, 2002).
Authors such as Trigeorgis (1993), Walters and Giles (2000) and Carmichael et al. (2011) have noted that the use of the traditional models in appraising irreversible investment such as RED do not consider the strategic importance

of an investor's flexibility in revising or altering decisions after the commencement of the project, and investment capital is seen as being passively held. Thus, the models cannot address the problem of uncertainty adequately in the RED appraisal. For instance, investment appraisers using the traditional models assume that once the project commences operation, it will continuously generate income without interruption until the RED is decommissioned (Slade, 2001; Yeo & Qiu, 2003). However, given the level of uncertainty in the future, this assumption is seldom possible.

In general, traditional investment models have not adequately emphasised the implications of the relationships between irreversibility, uncertainty and timing choice in investment decisions. Hence, with the resultant criticism highlighting that most investments are more sensitive to issues of volatility and uncertainty in the economic environment over a longer period of time, the adoption of traditional models in appraising RED might not be justified (Dixit & Pindyck, 1994). Mun (2006), while summarising the critique of the use of traditional investment appraisal methods, noted that the models undervalue assets that presently produce little or zero cash flow. Other critiques are the non-consistency of the average cost of capital or discount rate during the investment period, wrong estimates of an asset's economic life, forecast errors in calculating future cash flows, and inadequate test for reasonableness of the final value estimates.

Traditional theories of investment under uncertainty employ static decision rules on whether to invest or not. Where the project's expected NPV is positive, a higher IRR, or quicker payback period, the decision to invest is favourable. However, if these markers are not met, the decision to invest is not encouraged. This is tantamount to determining the present values of investment before they are received, and that the investment decision is all-or-nothing, '*yes-or-no*'. This leaves no allowance for an initial decision, followed by other subsequent decisions based on unfolding future events. However, in the face of realistic assumptions, an investment with a negative NPV, lower IRR or an extended payback period - based on current realities - might subsequently have a positive NPV, higher IRR or shorter payback period when economic parameters and other input variables are more favourable. This raises the problem of uncertainty and underscores the need for flexibility, to be incorporated in the traditional appraisal models.

Given that investment appraisal methods are expected to reflect flexibility and strategic value as important components that contribute substantially to the value of the project in an uncertain market environment, the traditional approach will not explicitly evaluate the value of flexibility embedded in an investment outlay (Chance & Peterson, 2002; Trigeorgis & Smith, 2004). The traditional models are often skewed and fail to give a thorough perspective of the investment value of the project, thus giving rise to the possibility of an undervalued investment (Block, 2007). It therefore, presupposes that the assumptions underlying the traditional models might lead to unreliability of the appraisal estimates, due to its static one-time decision.

As a consequence, traditional models might not be a sufficient basis to advise investors given the tendency for wrong investment decisions. This is due to the irreversible nature of most investments and the inherent ability to exercise a delay or postpone investment decisions, which lies at the discretion of the investor. Hence, the concept of irreversibility undermines the theoretical underpinnings of the neoclassical investment theories and invalidates the traditional decision rule. Thus, irreversibility makes investment sensitive to various forms of uncertainty over prospects which the traditional models fail to adequately incorporate (Pindyck, 1991).

However, it must be noted that the above is not underplaying the importance of the traditional-based approaches in evaluating safe assets and investment decisions in an environment of certainty and stability of input variables. If all uncertainties are cleared, and all options are known at the commencement of the project and can be accurately evaluated, traditional appraisal models can be used with precision, but this is rarely the case. Thus, the models usually fail to account adequately for uncertainty and pricing of flexibility entrenched in the valuation of risky investments (Slade, 2001; Mun, 2002). Arising from the inability of the traditional investment appraisal models to adequately value flexibility, probabilistic techniques were proposed as a means of enhancing the reliability of appraisal estimates obtained from the traditional models.

4.2 Probabilistic Appraisal Techniques

Probabilistic techniques appear to be somewhat of a departure from the conventional, traditional approaches employed in investment appraisal. These techniques, though do not provide a thorough evaluation of the various options available to the investor; afford some form of insights into likely options/pathways in making optimal investment decisions.

Probabilistic techniques encompass methods such as sensitivity analysis, simulation analysis, and decision trees analysis, among others. However, these probabilistic techniques do not recognise the inherent opportunity to modify investment outlays (Brealey et al., 2012). Also, while sensitivity and simulation analysis could be used in evaluating the available opportunities by clearly presenting possible outcomes of a decision, they do not provide optimal guidance concerning which course of action would guarantee the investors optimal returns. Thus, while sensitivity analysis allows for assessing the effects of changes in a factor on projects' estimated values, simulation analysis allows for multi-factor random variance. Both methods allow for some form of changes in factors but do not holistically capture the options that are embedded in an investment project (Chance & Peterson, 2002).

With respect to the decision tree, though it provides a mapping of alternative options, the use of a single discount rate negates the reality that the rates fluctuate over the life of the investment (Chance & Peterson, 2002). It also fails to capture the "*real*" values of the available options. Thus, traditional valuation models can be enhanced with the use of probabilistic techniques as

it incorporates some flexibility. However, this model tends to complicate the results and diminish their interpretive decision-making character (Chance & Peterson, 2002). Furthermore, caution needs to be applied if the variables are to be tested in combination during the sensitivity analysis (Raftery, 2003). Thus, though the probabilistic techniques appear to offer some form of assistance in managing uncertainty in RED; contemporary appraisal techniques, such as the option pricing framework, provides a more robust, real and comprehensive method of analysis.

4.3 Contemporary Appraisal Techniques

Several contemporary methods have been proposed in the literature to manage uncertainty in RED. In what appears to be a descriptive perspective, the study of Ward and Chapman (2003) advocated for the use of a holistic approach in handling uncertainty in projects. This approach takes into account a careful analysis of project design, base plans, nature of project stakeholders and their investment objectives. However, given that this approach lacks quantitative analysis, its adoption in managing uncertainty in RED appraisal might best be complemented with other contemporary quantitative methods. The study of Blokpoel et al. (2005) and Reyman et al. (2008) suggests the use of the scrum-based framework. The scrum-based process developed by Schwaber and Sutherland (Schwaber, 1996; Schwaber & Beedle, 2002) is an iterative, incremental framework used in project management. While the scrum process was initially developed for managing product development projects, it has been applied to other areas, such as the management of software development projects, software maintenance teams, and recently in project/program management (Cho, 2008; Lina & Dan, 2012).

Additionally, Ustinovičius et al. (2007) proposed the adoption of stochastic programming in minimising the effects of uncertainty at the various phases of the RED project. Furthermore, the study of Yeo and Qui (2003) argued for the need to adopt the real options framework as a means of managing uncertainty in RED. Corroborating this perspective, the study of Săcui and Dumitru (2012) argued that given the deficiency of traditional models to manage uncertainty in RED arising from the dynamic and uncertain business environment, real options approach has become dominant in valuing, selecting, and managing strategic investments under uncertainty. Other studies, such as Throupe et al. (2012), Morano et al. (2014), corroborated this assertion of the efficiency of the real options approaches as a means of managing uncertainty in RED projects. Hence, other contemporary methods can be employed to manage uncertainty in RED as suggested in the literature, the use of real option models has come to the fore. The focus of the next section is to discuss the various options available in RED. Table 1 provides a summary of the various techniques used in the management of uncertainty.

Table 1. Techniques for Management of Uncertainty in RED

Techniques	Methods	Benefits	Critiques
Traditional Appraisal Methods	1. Non-discounting (Payback period, Accounting rate of return, maximum cash exposure, etc.) 2. Discounting (NPV, IRR)	1. Useful in appraising safe assets 2. Simplicity in calculation and decision rules 3. Makes use of fewer data inputs	1. Does not adequately explore the implications of the relationship between irreversibility, uncertainty and timing choice. 2. Do not consider the strategic importance of investors flexibility after commencement of the project 3. Investment capital is regarded as being passively held 4. Non-consistency of the average cost of capital/discount rate
Probabilistic Appraisal Methods	1. Sensitivity Analysis 2. Simulation Analysis 3. Decision Tree Analysis, etc.	1. Afford some insights into likely options/ pathways	1. Does not recognize the inherent opportunity to modify investment outlays 2. Does not provide optimal guidance concerning which course of action will guarantee optimal returns 3. Use of single discount rate
Contemporary Appraisal Methods	1. Scrum based framework 2. Stochastic Programming 3. Real Options Analysis, etc.	1. Provide ability to introduce flexibility into the investment project, especially in unstable markets. 2. Explores the relationship among irreversibility, uncertainty and timing choice of the investor	1. Tendencies for miscalculations and/or misinterpretation of appraisal estimate 2. Susceptibility to model risk 3. Failure to meet assumptions such as lognormality, randomness, etc. 4. Might not be encouraged in markets where there are no sufficient input data.

5. Types of Options in Real Estate Development

Each real option type as discussed in the literature is aimed at mitigating losses and enhancing profitability of RED. However, note that not all RED has option value, and for those that do, each of the options must be carefully considered based on the context of the RED, with the understanding that each RED project is heterogeneous in nature. Săcui and Dumitru (2012) submitted that real options can be broadly differentiated into two groups namely, inherent and created options. While inherent options are also known as control options, they are characterised by the fact that they do not require special activities; they are only observed. Examples of such options include: deferring, waiting, abandoning and expansion of a project. A major characteristic of such options is the ability to identify and utilise the options. Created options refer to those options that require intentional and well thought out actions for their creation and maintenance. The investment appraiser takes

into consideration possible evolution of future events while creating such options.

The application of real options to RED takes on different perspectives in literature. Studies such as Sattarnusart (2012) and Smit and Trigeorgis (2003) noted that the option to defer investment applies more to RED than all other options, or perhaps to the exclusion of other options. Kumar (2016) noted that there are three main types of options particular to RED. These are: option to postpone or delay, the option to expand, and option to abandon. Further, Brandao and Dyer (2003) posited that typical RED options include, phasing, abandoning and waiting. While other studies such as Barman and Nash (2007), Guma (2008), Kim (2008), Pearson and Wittels (2008) and Cailao (2009) have investigated the application of an option or a multitude of options on RED. These include vertical expansion/phasing, switching, deferring and abandoning. Thus, it appears that the argument as to which of these options readily applies to RED might be well-situated in the context of the type, scale and scope of the RED project, and perhaps the national and regional regulatory environment. Thus, though different studies have suggested varying classifications/groupings of the types of real options applicable in RED projects, given the simplicity and robustness of Masunaga (2007) and Cailao (2009) in discussing the various types of options as applicable to RED decisions, this study adopted their classification of real options as described below.

5.1 Growth/Phasing Option

The growth/phasing option could also be referred to as the expansion option. It is one of the common types of options in use, especially in a growing and thriving economy (Chance & Peterson, 2002). Where there is good economic outlook and favourable market conditions, investors seek to increase possible profits. A phasing option arises when the developer builds an initial phase and waits to observe the performance of the market before commencing subsequent phases. If the first stage is viable and successful, the development is continued and expanded. The developer, being profit-driven, subsequently seeks to reduce the risk by dividing the project into separate phases by delaying or cancelling additional phases; if they do not guarantee commensurate returns on investment at a future date. When an investment has a growth option, it implies that the investor has the opportunity to add more funds and expand the project's scale. Trigeorgis and Smith (2004) posited that the higher the growth/expansion option, the higher the market value of the investment. However, this may appear excessive based on the standard DCF appraisal methods.

Hence, given the existence and value of growth options, an investor may choose to embark on the initial phase despite seemingly adverse outcomes. The unfolding success or failure of the initial phase determines if the subsequent phases would be embarked upon (Cailao, 2009; Săcui & Dumitru, 2012).

5.2 Deferment/Waiting Options

The case for deferral is made when considerable value can be gained by waiting to resolve some forms of uncertainty associated with the project or investment environment. The investor can choose to stay put or suspend investment due to doubt about future opportunities, or when there is uncertainty about major inputs in the investment decision. Thus, the investor might be buying time for the investment outlay in anticipation that the unfolding developments become favourable in the near future (Săcui & Dumitru 2012). This suggests that a period is allowed for analysing the market/investment environment and to grasp the unfolding market conditions better. Thus, some projects are not necessarily needed to be commenced or initiated now, given the prevailing market circumstances. Although it might be expected that waiting might give competitors some form of early lead in terms of market entry, it has the potential to expose previously unknown information about the market dynamics. For instance, an investor may wait for markets to recover from a downturn or wait for some amendment/changes in unfavourable government policies with respect to certain developments before embarking on the development in anticipation of favourable potential.

With respect to RED projects, an investor's decision to construct/develop might be deferred to wait and see if market rental values would justify construction/development (Yeo & Qiu, 2003; Cailao, 2009). According to Kandel and Pearson (2002), under uncertain conditions, investors are predisposed to wait rather than commit. Thus, under a more realistic scenario, the option to wait is a preferred alternative to investing or not investing, as opposed to the traditional decision to accept or reject. An argument in favour of the dynamism of investment timing, as opposed to static accept/reject rule, is that, due to the irreversible nature of RED projects, the more rational behaviour is withholding investment until much of the uncertainty is eliminated (Rodrik, 1991). Thus, it appears that uncertainty with RED naturally stimulates the value in waiting due to the huge financial investment and irreversible nature of real estate investments.

5.3 Exit/Abandonment Options

Where conditions in the market deteriorate severely during the economic life of a project, an investor can decide to abandon the project out-right by not investing any further in it. This option is aimed at cutting losses and it gives the investor the option to abandon the project midway, given that new information is unfavourable for continuing the project (Masunaga, 2007; Cailao, 2009). Some options to abandon give the investor the opportunity to dispose of the project and realise the salvage/resale value of previous capital investments made in the project. However, before the investor considers the option to exit, there might need to examine existing legal implications. Hence, the option to exit only becomes ideal in a RED when the reality of obvious risk becomes apparent and there is no legal implication for such default option. In the case of RED, the owner of vacant land exercises the exit option when he sells the land without building on it (Chance & Peterson, 2002; Săcui & Dumitru, 2012).

5.4 Learning Options

Learning options are akin to phasing and deferment options. However, in this instance, the investor might explore the suitability of the project by embarking on the development of the initial phase, perhaps, with low costs. Subsequently, the outcome can help the investor decide on whether to modify or abandon the other phases to minimise loss and maximise the total value of the project. Thus, the initial phase serves as a pilot study for the investor to understudy the market and other economic variables associated with the development (Masunaga, 2007; Cailao, 2009). Mun (2006) noted that learning models are a part of real options, as management makes superior strategic decisions with the passage of time and uncertainty is resolved.

5.5 Modify/Switching Options

Perhaps due to fluctuating economic variables leading to changes in market prices or consumer demand, the investor can decide to alter the output mix (product flexibility) or maintain the same output but different input (process flexibility) (Tamayo-Torres et al., 2010). This option is often embedded in the initial project design. Thus, with respect to RED projects, instances such as conversion, alteration or modification, are examples of switching options. It affords the investor the opportunity to modify existing project design to suit new uses arising from a change in market demand and preferences. For instance, the appraiser might advise the investor to switch from hotels to apartment houses or from residential to office building and vice versa, given the unfolding realities of the market (Masunaga, 2007; Cailao, 2009).

Other types of options within the ambit of the classification adopted for this study include the option to contract. Contracting options arise when the economic outlook appears less favourable than anticipated. The investor can decide to reduce the project's scale (contract), and on the extreme, the development may be halted temporarily and start up later (Chance & Peterson, 2002). This form of option is combined with the option to delay initial investment and reduce the scale of the project, which is a contrast to the growth option.

The aforementioned opportunities connote real options that allow the investor the opportunity to enhance the project's value. This value cannot be determined using traditional DCF models, instead it can be derived through ROA. The real options framework presents a similar flexible pathway for its holders to decide whether to wait, invest or defer, although the choice of exercising any of these options is dependent on prevailing market conditions and the stage of the RED. Thus, as noted by Barman and Nash (2007), the investor exercises flexibility when there is an adjustment/modification to the existing course of action, resulting from changes in the economy and/or project as long as there is no prior commitment or downside risk of exposure. However, it must be noted that real options as discussed above are related to each other, given that RED projects can feature more than one real option simultaneously.

6. Real Option Models

Current literature suggests different categorisations of modelling approaches used in ROA (see, for instance, Miller & Park, 2002; Guma, 2008; and Peter, 2012). However, this study adopted the categorization employed by Miller and Park (2002) owing to its simplicity and clarity.

Miller and Park (2002) noted that there are two broad approaches employed in the valuation of real options. They are the discrete time approach and the continuous time approach. While a variant of the discrete time approach includes multinomial lattices, models under the continuous time approach are the closed form equations, stochastic differential equations and the simulation models. A comparison of the advantages and disadvantages of each approach is shown in Figure 1, as adapted from Miller and Park (2002).

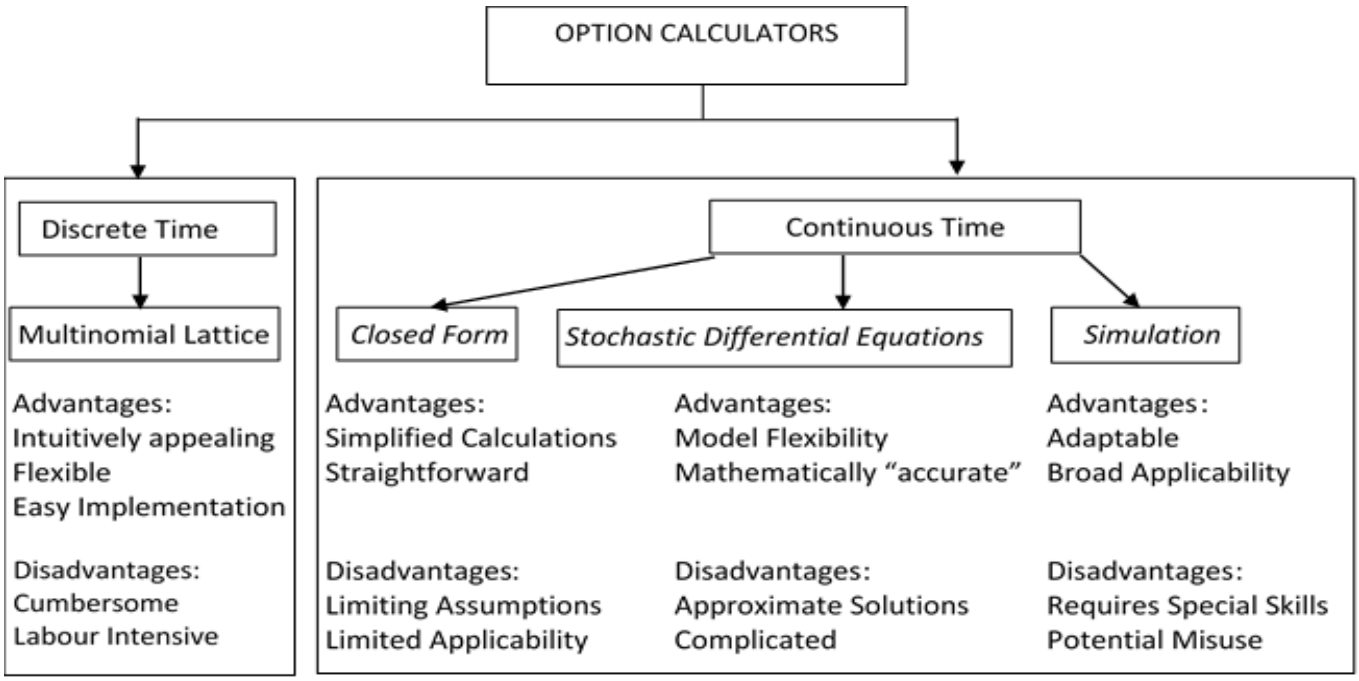

Figure 1: Flexibility Analysis Modelling Approaches (adapted from Miller and Park, 2002)

6.1 Multinomial Lattice Approach

The lattice approach is premised on the assumption that the underlying assets follow a discrete multinomial, multiplicative stochastic process all through time to develop a "tree". The binomial model; a variant of the multinomial lattice approach, was developed by Cox, Ross and Rubinstein (1979).

Masunaga (2007) noted that the assumptions underlying the binomial approach are: the existence of a perfect market, complete markets, rational behaviour, and Geometric Brownian motion. Under the binomial model, the lifespan of the option is broken down into multiple time steps, resulting in several up or down movements of the underlying assets; thus, creating a tree of likely possibilities for the underlying assets. The option value is then

obtained by working the tree backward from the end to the starting point. At each node, the option value is determined, while taking into consideration the state of the underlying assets and possible states one level ahead (Peter, 2012). Though the binomial approach appears similar to the framework being employed by the decision tree analysis, the binomial approach, however, does not require the knowledge of discount rates that reflect the risks or actual probabilities of outcomes as employed under the decision tree framework (Chance & Peterson, 2002).

Masunaga (2007) posited that the binomial model has several advantages over other option models, given that it illustrates midway decision-making process between the initial time and the unexpired time of the option. This enables the appraiser, to understand decision criteria at each point in time intuitively, and the tree structure supports delay, growth and contraction option (Miller & Park, 2002). Peter (2012) further noted that another advantage of the method lies in the use of probabilities to account for the riskiness of the payout structure and not the use of a discount rate. Thus, risk and time value of money are separated. However, a drawback of the model, according to Peter (2012), is its inability to draw meaningful conclusions because the results cannot be easily retraced in the model. Another critique according to Cailao (2009) is that the model constrains development timing to a finite span of time. As such, it cannot be used to value perpetual option of developing on a land with fee simple ownership. Thus, a major demerit of the approach is in its ability to value only finite-live options. The approach failed to consider time as a continuous component, rather as discrete steps.

6.2 The Closed Form Solutions

There are ranges of closed-form solutions such as the Black-Scholes (Black & Scholes, 1973) or Samuelson-McKean formula (Samuelson, 1965; McKean, 1965). Miller and Park (2002) noted that other closed form solutions used in ROA include Margrabe, Geske and Carr. The Margrabe model developed by Margrabe in 1978 was developed to value the option of exchanging one asset for another. Also, Geske in 1979 proposed an equation to value compound options having a deterministic exercise price. The model applies to sequential investment options, especially in research and development. Finally, Carr in 1988 developed a compound option equation with stochastic exercise prices. However, the Black-Scholes and the Samuelson-McKean formula have enjoyed wide acceptability. The Black-Scholes model is typically used in valuing stocks and other financial assets, while the Samuelson-McKean formula is best suited for real estate assets (Peter, 2012). Geltner and Miller (2001) noted that the Samuelson-McKean model is the Black-Scholes formula for calculating real option value of real estate assets.

a. Black-Scholes Model

The Black-Scholes model was developed by Fischer Black, Myron Scholes (Black & Scholes, 1973) and Robert Merton (Merton, 1973). It relates five factors in determining the option value of an asset. These are the underlying price of the asset, the exercise or strike price of the option, continuously

compounded risk-free rate, assets volatility, and time to expiration in years. The Black-Scholes model is one of the many models of the partial differential method. Masunaga (2007) noted that the model is a ground-breaking work due to its ability to use dynamic tracking approach under the no-arbitrage framework.

Masunaga (2007) highlights that a significant advantage of the model is its speed of computation which provides the foundation on which other recently developed techniques of real options valuation rely upon (Chance & Peterson, 2002). However, aside from the fact that it cannot be employed for options with dividend payment and compound options, it might not always be best suited to valuing options in real estate developments. This is owing to the fact that it may not always readily provide the option value and cannot give solutions to more complicated real options with infinite life, exercisable at any time (Chance & Peterson, 2002; Masunaga, 2007).

b. Samuelson-McKean Model

Paul Samuelson and Henry McKean developed the Samuelson-McKean model. The method leverages the deficiency of the Binomial model. It can be used to analyse the perpetual development option incorporating continuous time. Given that interest in land could be held perpetually, the formula affords a means of evaluating endless options under continuous timing (Guma, 2008).

The input variables required for the Samuelson-McKean model are the current value of the underlying assets, the cost of construction, volatility of the built property value, built property cash yield rate, risk-free rate, and construction cost yield - approximated by differencing the risk-free and the growth in construction costs. The Samuelson-McKean model is more suitable in valuing RED options than other closed form solutions such as the Black-Scholes model (Geltner, 2007), given that the right to develop on land is regarded as infinite (Kim, 2008).

Barman and Nash (2007) posited that the closed form solutions, that is, the Samuelson-McKean and the Black-Scholes are premised on the same underpinnings of economic arbitrage. They are based on the assumptions of efficient real estate markets, random walk theory, normal distribution of returns, riskless construction costs ,and constant growth rate. Peter (2012) noted that it might be challenging to estimate and clearly communicate the meaning of results obtained from the closed form solutions because the model produces only one specific number that must be interpreted with extreme caution. In addition, it is prone to the use of wrong models or inferring wrong conclusions if the underlying assumptions are not clearly understood by the appraiser. Furthermore, the author noted that another deficiency lies in its inability to value complex payout structures. The models only allow for one kind of option within a project and cannot accommodate interplay of multiple options. Thus, given that RED is open to an array of several options, the applicability of the closed-form solutions is limited to an examination of only one type of option at any particular time. Masunaga (2007) noted that an advantage of the discrete and closed form approaches is that they are based on the risk-neutral framework. Hence, these models do not require risk-

adjusted discount rates, the need for which seems challenging in the valuation of real options.

6.3 Stochastic Differential Equations

The stochastic differential equations are used in deriving the closed form equations. Thus, a series of stochastic differential equations with boundary conditions are first solved. Often, however, the stochastic differential equations solution does not exist, and the partial differential equations are then solved using finite difference methods or Monte Carlo simulation. From a real options perspective, it is still pertinent to obtain a set of stochastic differential equations in valuing the option, and then apply a numerical procedure to obtain the results. It must, however, be noted that using the stochastic differential equations approach in option valuation is the most complicated approach and requires a measure of background in stochastic calculus (Miller & Park, 2002).

While the discrete and closed form approaches can calculate the true real option, value based on market equilibrium theory, the stochastic differential equations produce mathematically correct option values. Barman and Nash (2007) and Cailao (2009) however noted that real estate professionals tend to avoid their use given the mathematical complexity associated with the method. The discrete and closed form approaches are perceived to be complicated due to the need for an understanding of some underlying financial theories and principles. The stochastic differential equations approach is often avoided due to its highly sophisticated mathematical inclination. In addition, the difficulty in explaining the underpinning theories of the approaches to investors or decision makers led to the development of the Monte Carlo simulation approach in evaluating real options. Hence, it appears that the discrete and closed form approaches and the differential equation approach appears complicated and confusing. The Monte Carlo simulation approach, however, uses common tools that are familiar to most real estate appraisers and investors.

6.4 Monte Carlo Simulation

In response to the challenges encountered with the use of the discrete and closed form approaches, researchers in the fields of engineering and decision sciences proposed the Monte Carlo simulation model (Miller & Park, 2002; Barman & Nash, 2007).

In Monte Carlo simulations, thousands of possible future outcomes are generated randomly, and the option value of the project under these instances are calculated. As with other real option methods, the value of the option is arrived at by differencing the project with the option and the project without the option. The model gives the appraiser greater flexibility in analysing real options with less financial computational rigour (Masunaga, 2007; Peter, 2012).
The significant advantages of the model include its ability to ascertain path dependency in real options (Masunaga, 2007), how it incorporates identified sources of uncertainty, how it represents outcomes graphically, and how it

affords a more transparent analysis of results that is easy for investment decision makers to comprehend (Kim, 2008). However, a major demerit of the Monte Carlo based approach is that it might not always be possible to estimate true real option value mainly because of the arbitrary assumption of a single risk-adjusted discount rate. This could lead to either underestimation or overestimation of the real option value. However, this challenge can be overcome by incorporating the risk neutral dynamics into the Monte Carlo analysis (Masunaga, 2007; Kim, 2008; Cailao, 2009). The Monte Carlo simulation can also be used with other financial models which do not use this strict assumption.

Having examined the various real options models, the applicability of any of the models appears largely dependent on the appraiser and the sophistication of the investors. While it may also be evident that investment decision may still be based on naïve/heuristic approaches due to the apparent lack of sophistication of the appraiser or some other inherent factors, it can still be noted that appraisers and investors still incorporate some form of flexibility into their investment decisions. The study of Barman and Nash (2007) noted that investment appraisers incorporate flexibility into their decision-making process based on intuition and expert judgement. Although these naïve methods of flexibility might not always give optimal results, the real options models provide a means through which investors can incorporate flexibility through a standard quantitative process, thereby achieving optimal outputs for investment decisions.

However, it must be noted that the real options approach is not a silver bullet; there are inherent limitations with the approach. Bozbay et al. (2004) noted that there are tendencies for miscalculation and misuse of the ROA which could lead to wrong appraisal estimates. Furthermore, the authors noted that ROA is susceptible to model risk, that is, the risk associated with the use of an incorrect model, incorrect inputs in correct models, or the incorrect use of a correct model, all of which could lead to the problem of '*garbage-in-garbage-out*'. Chance and Peterson (2002) posited that since the value of the underlying assets can be subjectively influenced by exercising or not exercising the option, the real value of the option may not be an objective estimate. Other criticisms of ROA as noted by Chance and Peterson (2002) include the inability to explain absurd valuations and failure to meet assumptions such as lognormality, randomness and known and constant volatility. However, while these criticisms have varying effects on the outcome of the appraisal estimate and may give cause for concern, the criticisms only suggest that investment appraisers adopting the real options framework must keep these in mind and demonstrate some form of caution when adopting ROA.

7. Factors Influencing the Adoption of Real Option Models

While investment decisions are fraught with uncertainties about future market conditions, literature is replete with benefits of ROA in managing the effects of these uncertainties with regards to the investment appraisal. However, it appears that investment appraisers are somewhat hesitant to employ ROA (Block, 2007; Kjærland, 2009; Bravi & Rossi, 2012). Busby and Pitts (1997)

noted that while very few investment appraisers were aware of real options, most appraisers and decision makers only agreed intuitively with the qualitative recommendations of the model and did not empirically employ the models in RED appraisal. It appears that some factors influence the adoption or otherwise of the ROA by RED appraisers.

Busby and Pitts (1997) alluded to the fact that organisational constraints, industry regulations, special legislation and preference for the traditional appraisal methods are major factors determining the choice of appraisal methods. Furthermore, Lander and Pinches (1998) identified the following as factors inhibiting the adoption of real options approaches in RED. These are difficulty in understanding and implementing, constraints subject to assumptions, lack of mathematical skills, restrictive modelling assumptions, and increasing complexity. Uher and Toakley (1999) noted that inadequate knowledge, inadequate skill, ignorance, negative attitude, lack of understanding of potential benefits, and fear of working with probability and statistics as significant factors influencing the choice of methods adopted in the appraisal of RED.

Furthermore, a study by Block (2007) identified lack of support from top management as a key reason for why the real option was not being wholly adopted by most investment appraisers. Other reasons as identified by Block (2007) include a preference for DCF methods, a high degree of sophistication required for ROA and that real option encourages excessive risk-taking. Hence, investment appraisers tend to shy away from the use of ROA. Kjærland (2009) noted that the limited use of real option arose from the complexity of the model, the initial eagerness to embrace a modern method and the resultant disappointment and abandonment, complicating factors when adapting financial options theory to real-life scenarios, and a lack of tangible underlying assets. In addition, Dyson and Oliveira (2007) argued that a disadvantage of the ROA is its reliance on quantitative data. It must be noted that there is inherent difficulty in obtaining this data especially in emerging markets like Nigeria. The study of Carmichael et al. (2011), while affirming the arguments of Dyson and Oliveira (2007), argued that appraisers' hesitancy toward ROA derives from the lack of data required as input variables and unintuitive nature of ROA. Other factors influencing the choice of appraisal techniques especially among appraisers in emerging markets include; lack of expertise, lack of sound data, and giving priority to experience (Nnamani, 2017).

Thus, the above argument shows that the factors influencing the choice of ROA as an appraisal technique could be grouped under five broad headings. These are:

1. Individual-based factors; inadequate mathematical skills, ignorance/inadequate awareness about real option methodology and preference for rule of thumb methods.
2. Market-based factors; constraints arising from local operating/market environment and level of market maturity.

3. Client-based factors; inadequate sophistication from investors and inadequate demand by investors/clients.
4. Firm based factors; inadequate support/interest from top management personnel, management conveniences and industry regulations.
5. Data-related factors; need for good and reliable historical data and mathematical complexity in terms of data requirements.

This also suggests that despite the potential of real option in managing uncertainty in RED, it appears that ROA remains largely ignored and infrequently used by firms and investment appraisers. While literature has alluded to an array of factors apparently influencing its adoption, it must be noted that given the need to boost investors' confidence in the appraisal output and reduce losses associated with RED, the increasing sophistication of investors and the highly dynamic market fundamentals/variable inputs are a standard features of most emerging markets. Real estate investment appraisers could be encouraged to embrace methods that are more quantitative, in which appraisal estimates are realistic.

8. Conclusion

RED is subject to a varied number of interrelated circumstances, events and influences beyond the control of the investor. These circumstances often lead to uncertainty in the expected returns. Thus, forecasting profitability or a decision to invest might become 'a game of chance' if uncertainty and the investor's ability to alter the course of development are not adequately incorporated into the decision-making process. Given the importance of RED appraisal, the irreversible nature of RED and its significant capital involvement, the need for a realistic and meaningful RED appraisal estimates becomes apparent.

Investment in RED is dictated by the forces of demand and supply, which compels the need for appraisal of projected cash flows to determine the project's profitability or otherwise. However, appraisal estimates are often affected by different sources of uncertainty, which could be from sources within the project, the space market, or a combination of both external and internal project factors. These factors cast a shadow on the realisation of profitability from the investment outlay, thereby necessitating the need to account for these sources of uncertainty. Thus, profitability is dependent on the effective management of uncertainty.

In managing the effects of uncertainty in RED appraisal, on the one hand, traditional approaches have been criticised for their inability to adequately capture the effects of uncertainty, owing to the static rules and the possibility of the underlying inputs varying over the life of the investment. On the other hand, the probabilistic models do not adequately reflect the options that are inherent in an investment outlay. Thus, there is a need for the incorporation of contemporary approaches, such as ROA, in RED appraisal.
Where the investment appraiser makes use of ROA, the investment outlay is better suited to adjust to the unfolding realities of the space market, the

economy, or the project itself, thereby ensuring profitability of returns or reducing likely losses. Thus, with ROA, it is expected that the investor can decide on a number of pathways, such as growth, abandonment, deferral or modification, based on prevailing realities. This portfolio of options could be exercised either in combination or individually, and at different periods over the life of the investment. This will ultimately guarantee optimal investment decision with regards to RED and enhance the reliability of appraisal output.

The above conclusion is particularly relevant to emerging African real estate markets where studies have suggested that risk analysis and uncertainty management in RED were still analysed without recourse to robust and sophisticated appraisal techniques (Ogunba, 2004; Olaleye et al*.,* 2007; Nnamani, 2017). Further, there are particular volatilities associated with economic and other market indices in African markets resulting in high level of investment risk and uncertainty. Consequently, the adoption of ROA in RED appraisal could be relevant for these developing economies. Existing concerns, in the form of poor/inaccessible data, the level of appraisers' sophistication and other markets, as well as related institutional issues, must, however be critically examined for there to be an effective adoption of ROA in RED appraisal. This will ensure more realistic appraisal output and increasing investors' confidence in the appraisal practice.

In summary, against the need to provide information to stakeholders, this paper provides an overview of the varying forms and sources of uncertainty in the RED appraisal. The study also explored various methods employed in the management of uncertainty. A major conclusion from the review of the literature is that the RED appraiser and other institutional factors are major determinants in the choice of methods adopted in the management of uncertainty in RED appraisal. A general position from the review of studies showed a preference for the real options model. This could enhance the reliability of appraisal outputs and ensure best practices. However, given that the study has not empirically investigated the perspectives of RED appraisers to the management of uncertainty in RED, the discussion herein presented needs to be seen as a theoretical approach to the management of uncertainty. The study could serve as a guide for a broader empirical investigation into the management of uncertainty and the factors influencing the choice of ROA in RED appraisals.

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Hedonic Valuation of Real Estate Properties in Nigeria

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Abstract

Despite the wide adoption of the Hedonic Pricing Model (HPM) approach in property valuation in the real estate domain, a large number of studies conducted by real estate scholars, have tended to focus on the 'explanatory' rather than the 'predictive' ability of the technique. Given this industry focus, and thus the lack of information on the predictive nature of HPM, the present study sets out to investigate the predictive accuracy of HPM in property valuation. Data on sales transaction of residential properties were collected from registered property firms practising in the Lagos metropolis property market, in Nigeria. The collected data were divided into two categories - the training set which was fitted to the HPM developed, and the testing dataset which was used for the model validation. Accuracy metrics were used to evaluate the predictive accuracy of the HPM developed. The analysis shows that the HPM approach produced inaccurate predicted property values in terms of a high mean absolute percentage error (MAPE), mean absolute error (MAE) and root means square error (RMSE) which may not be acceptable by rational real estate investors. Also, about 60 % of the predicted property values produced an inaccuracy that is ± 20% of the actual values, while only 26% yielded an error of margin which is within the industry acceptable margin of between ± 0 and 10%. The HPM could not be entirely relied on to produce accurate property valuation estimates. Therefore, further studies are needed to be carried out to identify more reliable and robust property valuation approaches that can produce values that would be acceptable to all property valuation stakeholders.

Keywords: Hedonic Pricing Model; Property Attributes; Valuation Inaccuracy; Property Valuation; Lagos

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1. Introduction

The ability to determine the accurate value of a real estate property plays a fundamental role in an economy. This is because property values influence investors' decisions (Goodhart & Hofmann, 2008). The techniques used in estimating the values of real estate properties have been categorised into two classes, namely traditional and advanced approaches (Pagourtzi et al., 2003). None of these techniques can be viewed as the 'best' for all real-life valuation problems, this is due to the peculiar strengths and weaknesses of each approach (Lam et al., 2008). Of the advanced valuation approaches, the Hedonic Pricing Model (HPM) approach, which was introduced in the real estate domain in the early 1970s (see Rosen, 1974), has received significant acceptance by real estate researchers for property pricing estimation in different property markets around the world (Tse & Love, 2000).

The wide popularity of the HPM technique in the real estate domain has translated into it being adopted both in practice and in theory (Schwartz, 1995). The HPM technique is commonly adopted for measuring the explanatory power of different property attributes (independent variables) on the formation of property prices (dependent variable) (Sirmans et al., 2005). This contribution could either be positive or negative contributions (Selim, 2011), due to the fact that the economic, legal, social, political and cultural landscape of property markets around the world differ (Jenkins, 2000).

Property valuation inaccuracy remains an international issue surrounding property valuation practice (Babawale, 2013a), without the exception of the Nigerian property market (Adegoke et al., 2013). The effect of property valuation inaccuracy on the economy of any nation cannot be overemphasised because both individual and corporate investors have a large proportion of their investments in real estate assets (Yalpir, 2014). Moreover, real estate valuers are usually consulted to estimate the value of properties, and a misleading property valuation estimate could adversely affect the books of a real estate investor (Taffese, 2007).

Considering the aforementioned, this study will: (1) develop an HPM equation from a dataset (training), (2) predict the holdout sample with the developed HPM equation (testing), and (3) establish the predictive accuracy of the HPM technique for accurate property valuation by evaluating the predicted values using accuracy metrics. This study will provide valuable insight into the suitability of the HPM technique to produce accurate property valuation estimates.

2. Literature Review

The Hedonic Pricing Model

The principles of HPM are based on the estimation of the value of composite goods, by establishing the contributory powers of each independent variable in the formation of the value of a utility bearing commodity (Limsombunchai et al., 2004). Court (1939), Muth (1966), and Lancaster (1966), amongst others, were the early studies that adopted HPM in a research endeavour.

With reference to the real estate research domain, Haas (1922) and Wallace (1926) conducted some of the early studies that employed HPM in appraising agricultural property, while Ridker and Henning (1967) adopted it for residential property appraisal. Despite all of these research efforts, the application of HPM lacked the much-needed theoretical justification in these early days (Chin & Chau, 2002). However, Rosen (1974), who has been widely referred to as the originator of the HPM technique, provided an explanation of HPM by developing an index for the determination of the price of automobiles. The HPM technique has been employed in solving different real-life issues which include healthcare (Berndt et al., 2000; Cutler & Berndt, 2007), computers (Nelson et al., 1994), automobiles (Ohta & Griliches, 1976; Triplett, 2004) and home appliances (Silver & Heravi, 2001), to mention a few.

The theory of HPM is based on regression analysis, which could be in the form of simple regression or multiple regression (Selim, 2009). In the case of simple regression, the analysis is geared towards evaluating the relationship between a dependent variable and one independent variable. Whereas, when the relationship being investigated is between a dependent variable and more than one independent variable, then it is referred to as multiple regression (MR). MR is largely employed for real estate property price analysis because the value of a real estate property is dependent on more than one attribute (Jenkins, 2000). One of the essences of the regression analysis is to develop the best-fit representation for the relationship that exists between the dependent variable and the independent variables of the sample data being analysed (Elhag, 2002). According to Kmenta (1997), simple and multiple regression can be expressed mathematically as shown in Equations 1 and 2, respectively.

$$\hat{Y}_i = \beta_0 + \beta_1 X_{1i} + \varepsilon_i \quad (1)$$

$$\hat{Y}_i = \beta_0 + \beta_1 X_{1i} + \beta_2 X_{2i} + \ldots\ldots\ldots + \beta_k X_{ki} + \varepsilon_i \quad (2)$$

Where $\hat{Y}_i$ = predicted value β_0 = regression constant

β_1 = slope of $\hat{Y}$ with variable X_1 when variables X_2, X_3, ….., X_k are held constant

β_2 = slope of $\hat{Y}$ with variable X_2 when variables X_1, X_3, ….., X_k are held constant

β_k = slope of $\hat{Y}_i$ with variable X_k when variables X_2, X_3, ….., X_{k-1} are held constant

ε_i = random error in $\hat{Y}$ for observation i

$\beta_1, \beta_2, \beta_3, \ldots\ldots\ldots, \beta_k$ are referred to as the regression coefficients.

Property Value Determinants: Previous International Studies

The attributes that influence the price of properties have been categorised into three groups, namely: structural, locational and neighbourhood factors (Powe et al., 1995). Structural attributes describe the details of the building, locational attributes describe the property's access to social and economic facilities, while neighbourhood attributes depict the quality of the neighbourhood where the property is located (Mok et al., 1995). Chin and

Chau (2002) posited that most structural factors contribute positively to the value of properties. This could be attributed to the fact that home-buyers mostly consider structural features when making residential decisions (Moghimi & Jusan, 2015). The impact of these various attributes on the sale prices of properties has been investigated in different real estate markets around the world. Table 1 provides a few studies that have examined the influence of some of these property attributes on property values.

Table 1. Hedonic Pricing Model and Attributes' Studies

Attributes	Studies
Property size	Pozo (2009), Selim (2011)
Floor level	Choy et al. (2007), Jim and Chen (2006),
Better view	Benson et al. (1998), Choy et al. (2007)
Balcony	Morancho (2003), Chau et al. (2004)
House number	Bourassa and Peng (1999), Chau et al. (2001)
Age of property (-ve)	Tse (2002), Choy et al. (2007),
Closeness to school	Downes and Zabel (2002), Clapp et al. (2008)
Location	Ge and Du (2007), Pozo (2009)
Property type	Fletcher et al. (2000)
Proximity to transport facilities	Mbachu and Lenono (2005), Choy et al. (2007)
Proximity to shopping centres	Sirpal (1994), Des Rosiers et al. (1996)
Proximity to place of work	Ottensmann et al. (2008)
Security	Ceccato and Wilhelmsson (2011), Owusu-Ansah (2012)
Proximity to CBD	Topcu and Kubat (2009), Sanjari (2012)
Number of bedrooms	Canavarro et al. (2010), Selim (2011)
Number of bathrooms and toilets	Ottensmann et al. (2008), Pozo (2009)
Parking space	Wen et al. (2005), Canavarro et al. (2010)
Sea view	Hui et al. (2007), Topcu and Kubat (2009),
Open space/parks	Nicholls and Crompton (2005), Voicu and Been (2008)
Place of worship	Carroll et al. (1996), Babawale and Adewunmi (2011)
Noise	Tomkins et al. (1998), Espey and Lopez (2000)
Green areas	Morancho (2003), Jim and Chen (2006)
Air quality	Hui et al. (2007), Ayan and Erkin (2014),
Landfills/waste site	Seok Lim and Missios (2007), (Ready, 2010)
Power lines	Sims et al. (2009), Elliott and Han (2013)

Note: CBD means central business district

Property Value Determinants: Previous Nigerian Studies

In measuring the impact of various property attributes on property values in Nigeria, scholars have adopted HPM to examine the effect of the proximity of landfills (Akinjare et al., 2012), universities (Babalola et al., 2013), places of worship (Babawale, 2013b), the presence of Jacuzzi bathtubs (Otegbulu & Johnson, 2011) and neighbourhood security (Adegoke, 2014) on property values. Other attributes are the electricity supply (Famuyiwa & Babawale, 2014), the number of bedrooms (Oduwole & Eze, 2013), the number of bathrooms and toilets (Babawale et al., 2012), pipe-borne water (Babawale et al., 2012), and the property size (Oduwole & Eze, 2013), among others.

Previous studies that have adopted HPM in real estate in Nigeria have only established the explanatory relationship between property attributes and

property values. To date, efforts have not been directed at substantiating the suitability of the technique to produce accurate and reliable property valuation estimates that can be a good proxy of property value. Therefore, there is a need to bridge the gap between 'explaining' and 'predicting' modelling, as this would provide the "reality check to the relevance" (Shmueli, 2010: p.292) of HPM for property valuation. Taken together, this study aims to establish the predictive ability of HPM for property valuation to produce accurate and reliable property valuation estimates.

Property Valuation Accuracy

Property valuation accuracy has received widespread attention from real estate researchers in different property markets around the world - the US, UK, Australia, and so on. Waldy (1997) defines valuation accuracy as the measure of the closeness or divergence of valuation estimates to the market value of a subject property. Waldy (1997) further argued that valuation variation/variance is the difference in the values arrived at by different valuers when a subject property is being appraised and should not be mistaken for valuation accuracy. The position of Crosby (2000) substantiates the argument of Waldy (1997) but adds that valuation bias occurs when there is a consistent overvaluation or undervaluation of a subject property, in relation to the sales price (target).

The issue of valuation inaccuracy could lead to the bankruptcy of real estate investors, and stakeholders rely largely on the opinion of value communicated by real estate professionals to make real estate investment decisions (Taffese, 2007). If this happens, it could lead to the questioning of the relevance, as well as the credibility of valuers. At the same time, it could reduce the confidence stakeholders have in the profession (Adegoke et al., 2013), and this will, in turn, affect the performance of the property market and inadvertently the economy of the nation at large, due to the relevance of real estate to the economic development of a nation (Chiang et al., 2015).

In a more stable property market, those variations in property valuation estimates may occur to a lesser degree, while in an unstable market, the reverse may be true (Shapiro et al., 2012). Valuation inaccuracy may be unavoidable in property valuation because different valuers interpret the property market and property value determinants differently, but there is an acceptable range of variations in estimates (Shapiro et al., 2012).

Hager and Lord (1985) posited that the range of acceptance for property valuation inaccuracy should be about 5% more or less of the average value of the subject property. Similarly, Mackmin (1985) suggested that valuation estimates produced by valuers would be acceptable if they were within ± 5% range of the property value. Furthermore, Hutchinson et al. (1996) argued that a valuation estimate within 5 to 10% range is acceptable, only when it is above 10% that the estimate can be subjected to contention. This argument is supported by Brown et al. (1998) who mentioned that a valuation figure 10% above or below the actual amount could lead to a valuer being accused of negligence in property value estimation. However, Crosby et al. (1998)

mentioned that judges usually adopt the bracket of 10 to 15% to decide if a valuation figure is inaccurate. The authors argued that the accuracy of valuation figures should be based on the process adopted by valuers in arriving at such figures and not solely on the margin of error of the estimated valuation figure.

3. Research Method

The Data

The authors chose Nigeria as the study area because it is an emerging economy (Akinbogun et al., 2014), where the awareness and know-how of automated valuation models is limited (Abidoye & Chan, 2016). Transactions (i.e. sales and purchases) data were collected from registered real estate firms located in the Lagos metropolis property market in Nigeria. A registered real estate firm is a firm that is registered with the Nigerian Institution of Estate Surveyors and Valuers (NIESV) and Estate Surveyors and Valuers Registration Board of Nigeria (ESVARBON). These organisations are the professional bodies that regulate the real estate professionals and profession in Nigeria. It is assumed that the data collected from NIESV and ESVARBON should be reliable due to the expected professional conduct of these legitimate organisations. Due to the unavailability of a centralised sales transaction data bank in Nigeria (Ashaolu & Olaniran, 2016), the data collection process was limited to those firms that provided access to the information on completed transactions relating to residential properties. Therefore, structural attributes of residential properties were the major independent variables selected for this study (see Table 2). This is not uncommon in similar studies such as Do and Grudnitski (1992) and Thanasi (2016), amongst others, where structural attributes datasets were used to model property prices. The only neighbourhood variable added is the sea view, being that the study area is surrounded by water bodies (see Figure 1), and it was possible for the real estate professionals to provide such information regarding the properties included in this study. In the same vein, the location of a property was included in order to distinguish the location of each observation (property), i.e. to describe the geographical positions of the properties in the study area. The list of the 11 independent variables and one dependent variable are presented in Table 2 alongside their mean, standard deviation, minimum and maximum values.

Table 2. Descriptive Statistics of the Variables

Variable	Mean	Standard Deviation	Minimum	Maximum
Dependent				
Price in Naira (₦)	149,769,541.60	199,367,090.90	14,500,000.00	1,182,844,000.00
Independent				
Bedrooms	3.49	1.26	1	10
Toilets	4.28	1.37	1	7
Bathrooms	3.38	1.25	1	7
Property type	3.87	1.45	1	6

Boys' quarters	1.08	1.36	0	8
Parking	3.27	2.45	0	20
Age	3.30	4.97	0	42
Floors	2.83	2.19	1	16
Security fence	0.98	0.14	0	1
Sea view	0.05	0.22	0	1
Location	3.36	1.70	1	5

In total, 321 complete observations were retrieved upon completion of the data collection phase of the study. These represent the details of residential properties sold and purchased in the high-income neighbourhoods of the Lagos metropolis (Island property submarket) which include Ikoyi, Victoria Island, Lekki Peninsula Phase 1 and other active neighbourhoods on the Lekki - Epe Expressway corridor (see Figure 1). The properties included in this study are located in a submarket that is amongst the finest and most vibrant property markets in Nigeria, which is occupied by high-income earners and expatriates (Babawale & Johnson, 2012).

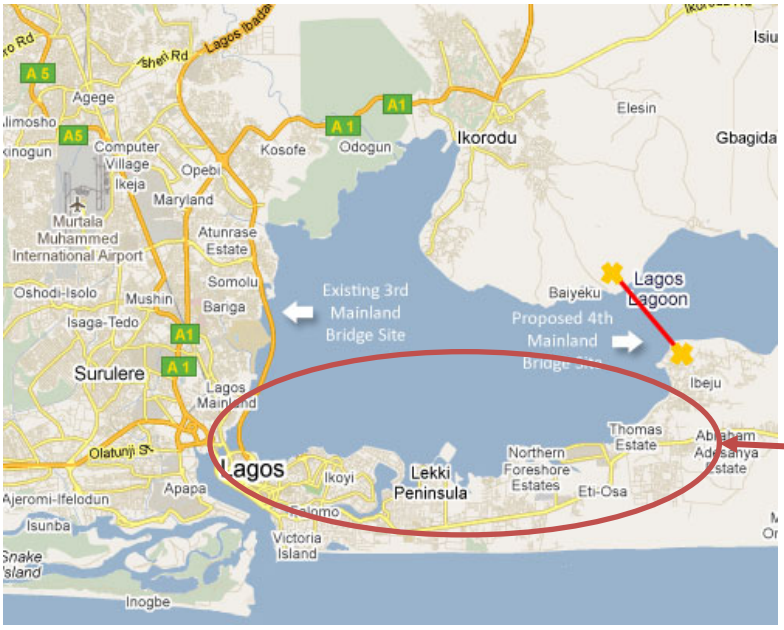

Figure 1: Map of Lagos showing the study areas under investigation
Source: http://www.lgtnigeria.com/topic_page.php?id=87&page=1

Table 3 provides the definition and measurement of both the dependent variable and the independent variables. Out of the 11 independent variables, the presence of security fence and sea view are dummy variables, and they are represented by the value "1" if they are present and "0" when otherwise. After the data collection exercise, it was observed that the transactions were completed between 2010 and 2016. The composite consumer price index (CPI) published by the National Bureau of Statistics (2016), was used to deflate the real estate property values. This was done to adjust for time value for money (i.e. inflation).

Table 3. Definition, Measurement and Frequencies of the Variables

Variable	Definition	Measurement
Price	Sale price of the property	Naira (₦), Nigerian currency
Bedrooms	Number of bedrooms	Numeric (0,1,2,3…)
Toilets	Number of toilets	Numeric (0,1,2,3…)
Bathrooms	Number of bathrooms	Numeric (0,1,2,3…)
Property type*	Construction style of the property	Numeric (1, 2...6)
Boys' quarters	Number of BQ rooms	Numeric (0,1,2,3…)
Parking	Number of parking lot	Numeric (0,1,2,3…)
Age	Property age	Numeric (0,1,2,3…)
Floors	Number of floors	Numeric (0,1,2,3….)
Security fence	Availability of security fence	1 if available, and 0 otherwise
Sea view	Presence of sea view	1 if available, and 0 otherwise
Location	Location of the property	The neighbourhood situated

***Note**: Property type includes: duplex (1), detached house (2), semi-detached house (3), terrace (4), flat (5) and others (6).*
BQ means boy's quarters which is called servants' quarters in some environment.

Model Specification

The selection of the variables to be included in the model started with the testing for multicollinearity between the independent variables by estimating their partial correlation coefficients. The multicollinearity test reveals a correlation between the number of bathrooms and the number of toilets in a property. The correlation coefficient of the number of bathrooms and the number of toilets was 0.965. Consequently, the number of toilets variable was removed from the independent variables list. However, it should be noted that the presence of multicollinearity is irrelevant when adopting HPM for prediction (Nguyen & Cripps, 2001), thus it will not affect the predictive performance of the property valuation model. The Glejser test was performed to check for heteroscedasticity. This analysis shows that there is no presence of heteroscedasticity amongst the variables because the significant coefficients of all independent variables are greater than 0.05 (Gujarati & Porter, 2009).

The linear relationship between property prices and the independent variables was established. The scatter plot approach was adopted to visualise the association between the variables. The scatter plots show that there is a linear relationship between property prices and the independent variables. The relationship recorder here is common in real estate related studies (McGreal et al., 1998; Limsombunchai et al., 2004). There is no consensus in the literature as to the best functional form to be chosen in HPM analysis (Kryvobokov & Wilhelmsson, 2007). However, in this study, the linear functional form was adopted. This is because it can be easily computed and also relatively easy to interpret (Lin & Mohan, 2011). The linear functional form has also been frequently adopted in previous studies, and this could be attributed to the ease of the interpretation of the parameters (Morancho,

2003), which is noteworthy for a study of this nature. The HPM was developed using the Statistical Package for the Social Sciences (SPSS) software, version 20.0.

In order to test the predictive accuracy of the HPM technique, the data set was divided into two parts, i.e. for training and testing of the model. 80% (256) of the samples were used to develop the HPM equation, while the remaining 20% (65) holdout samples were used for the testing of the model. The accuracy of the model was tested based on its r^2, mean absolute percentage error (MAPE), mean absolute error (MAE), root means square error (RMSE) and ultimately, the percentage of the predicted values that are close to the actual property values (holdout samples). According to Lin and Mohan (2011), MAPE, MAE and RMSE can be estimated using the expressions in Equations 3, 4 and 5, respectively.

$$\text{MAPE} = \frac{\sum_{i=1}^{n}\left(\frac{P_i - \hat{P}_i}{\hat{P}_i}\right)}{n} \times 100 \quad (3)$$

$$\text{MAE} = \frac{1}{n}\sum_{i=1}\left(P_i - \hat{P}_i\right) \quad (4)$$

$$\text{RMSE} = \sqrt{\frac{1}{n}\sum_{i=1}^{n}\left(P_i - \hat{P}_i\right)^2} \quad (5)$$

Where n is the number of observations, is the actual property price and is the predicted property price from the model.

4. Results and Discussion

Empirical Results

The result of the HPM analysis is presented in Table 4. The model produced an adjusted r^2 value of 0.76 and an r^2 value of 0.77, which indicates that the variables included in the model explain 77% variations in the prices of properties. Most of the variables produced expected (positive) signs to property values, while others produced unexpected signs. For instance, expectedly, the age of a property had a negative sign which is consistent with the existing literature (see, for instance, Hui et al., 2007). Suggesting that an old property will usually command a lower value when compared with new ones. Unexpectedly, the effect of the number of bathrooms and the presence of a security fence in a property was negative, and it could be attributed to the localised nature of the property market, suggesting that an additional number of bathrooms may not increase the value of a property in the study area. This is similar to the findings of Nguyen and Cripps (2001) who found that an additional number of bathrooms could negatively influence property prices. In the same vein, Owusu-Ansah (2012) and Adegoke (2014), among others, found that when adequate security measures are in place in a neighbourhood, for instance: proximity to a police station, improved lighting and so on (which

could result in a low crime rate), this would significantly increase the price of a property. However, this study found that the presence of a security fence (a security measure) in a property could negatively influence its price. This may be attributed to the fact that most of the residential neighbourhoods sampled usually have a general neighbourhood-organised security personnel in addition to each house's security guards. Suggesting that the presence of a security fence in these neighbourhoods may not be regarded as a security measure for real estate investors.

Table 4. Result of the Regression Analysis

Independent variables	Coefficient	*t*-ratio	*p*-value
Bedrooms	8664822.596	0.738	0.461
Bathrooms	-20051336.870	-1.448	0.149
Property type	8076944.769	1.144	0.254
Boys' quarters	102816020.589	15.151	0.000
Parking	9526774.351	2.615	0.009
Age	-1635743.326	-1.068	0.286
Floors	4539570.089	1.455	0.147
Security fence	-10789691.840	-0.229	0.819
Sea view	154767562.522	4.832	0.000
Location	-26885403.503	-6.176	0.000
Constant	98778305.063	1.396	0.164

r^2= 0.766, Adj r^2= 0.757, F-ratio= 80.381, n=256

Of all the ten variables, the presence of a sea view and the number of boys' quarters[1] (BQ) in a property are the most highly significant variables that influence the price of a property. Both variables had the highest coefficients that contribute to the price formation of a property in the study area. In a similar study by Mok et al. (1995), it was found that a property that has a sea view will command a higher value. Also, the positive influence of the BQ room on the price of properties was reported in the study of Basu and Thibodeau (1998).

Model Performance

As earlier stated, in order to achieve the objectives of this study, the performance of model developed was tested using the MAPE, MAE and RMSE accuracy metrics. These approaches are commonly adopted in the literature (McCluskey et al., 2013), and the closer the value of both MAE and RMSE are to 0, the better the model (Lin & Mohan, 2011). MAPE is a measure of the prediction error expressed in percentage. The results shown in Table 5 reveals an MAE value of N61,408,856 and an RMSE value of N103,370.573. In addition, a MAPE value of 38.23% was recorded which depicts that the predictions produced an average error of 38%, which may not be acceptable by a rational real estate stakeholder. These suggest that there is

[1] Boys Quarters (BQ) refers to servants' or maid's quarters on a property

some level of inaccuracies in the HPM approach prediction, this is despite the satisfactory r^2 value of 0.77. This confirms that the performance of a model could not be evaluated entirely by adopting the r^2 value (Willmott, 1981). The findings of the study corroborate the position of Ogunba and Ajayi (1998) and Babawale and Ajayi (2011), who reported that the level of property valuation inaccuracy prevalent in the Nigerian appraisal practice is unacceptable based on the international standard.

Table 5. Predictive Accuracy of the HPM Technique

Accuracy metric	Hedonic Pricing Model
r^2	0.77
MAPE (%)	38.23
MAE	61,408,856.10
RMSE	103,370.573.40

The HPM generated from the analysis was used to value the holdout sample in order to establish the predictive accuracy of the HPM technique. The result of the predictions was categorised to establish the percentage of the samples that fell within the acceptable margin and those that did not. The information in Table 6 shows that only 26.67% of the predicted property values have an error margin of between ± 0 and 10%, while 13.33% of the predicted values have an error margin of between ± 11 and 19%. In addition, 60% produced an error of ± 20%. It is worth mentioning that the inaccuracies recorded are high, resulting in wide disparities between the actual property values and predicted values (see Figure 2).

Table 6. Valuation Accuracy of the HPM Prediction

Accuracy range	Frequency (n)	Percentage (%)
± 0-10%	8	26.67
± 11-19%	4	13.33
Above ± 20%	18	60.00

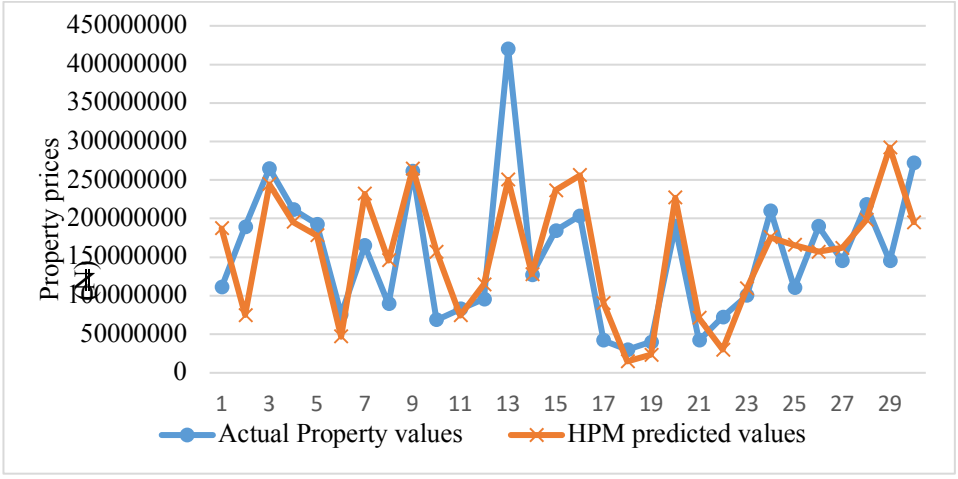

Figure 2: Actual and Predicted Property Values

These findings appear unsatisfactory, suggesting that the adoption of the HPM technique for property valuation would not produce an accurate and reliable property valuation figure that can be a good proxy for market value. This corroborates the study of Thanasi (2016) conducted in a European market (Albania) and found that the HPM approach could not produce accurate valuation figures. The present study provides an exploration of an investigation from an African property market (Nigeria). One of the implications of this is that the generation of inaccurate property valuation estimates in any property market would continually deepen the loss of the confidence that property valuation end-users place on the real estate profession and professionals. Property valuation inaccuracy could be minimal in stable (developed) property markets (Shapiro et al., 2012). This has been substantiated in the studies of Newell and Kishore (1998) and Parker (1998), among others. Therefore, it is highly imperative that research endeavours be directed at investigating and addressing the factors mitigating against the estimation of accurate property valuation figures, especially in developing economies. If property valuation inaccuracy is reduced to an acceptable standard, this will result in achieving a sustainable property valuation practice.

5. Conclusion

The need to establish the predictive accuracy of the HPM technique for property valuation in a developing country necessitated this study. Data for residential properties sold and purchased in the study area were retrieved from registered real estate firms and were used to develop HPM. The evaluation of the HPM developed shows that the approach could not produce accurate property valuation estimates based on the high MAPE, MAE and RMSE values generated. In addition, it was found that a large proportion (60%) of the predicted property values produced an error margin of ± 20%, which is far above the acceptable industry standard. In order to address the issue of valuation inaccuracy, there is a need to adopt appropriate valuation techniques. This would reduce the investment risk of various real estate investors/stakeholders and this would in turn influence property market stability. The independent variables adopted in this study were mainly structural attributes, whereas locational, neighbourhood and macroeconomic variables were not examined. Also, data were collected from high-income property markets. Subsequently, if all these are explored, different results may be generated. The issue of valuation accuracy cannot be overemphasised due to its influence on the overall economy of any nation. Therefore, research efforts should be continually invested in developing accurate property valuation models that are more suitable in their application within emerging property markets.

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Challenges to Land Registration in Kaduna State, Nigeria

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Abstract:

Nigeria's land registration programmes are beset with challenges. The linkage between land, the government and the people create a complex system with unique obstacles. This research investigates the challenges of land registration in Nigeria with an in-depth study of Kaduna State. The objective is to ascertain the frequency of land registration and the factors that stand as challenges to land registration from the perspectives of households, consultants in land transactions, and the Kaduna Geographic Information System (KADGIS). The results indicate a low level of land registration in which challenges include ignorance, affordability problems, inefficient registration processes, corruption, and inadequate skilled workforce with the human capital to implement the programmes. The research has implications for both land and housing markets in Nigeria and Africa in general.

Keywords: Land Market; Land Title Registration; Land Tenure Formalisation; Security of Tenure; Title Registration; Nigeria

1. Introduction

Rapid urbanisation has placed urban land in African countries under pressure. In many of these countries, access to urban residential land by households is limited and thus an issue of public concern. Africa and Asia are the fastest urbanising continents and Nigeria together with India and China expected to account for 37% of the projected growth of the world's urban population between 2014 and 2050 (United Nations Department of Economic and Social Affairs, 2014). In most African countries, houses are in short supply and the land market appears to be moribund (Tibaijuka, 2004). In Nigeria, access to urban land is such a sensitive matter that the security of land rights can be precarious. This is reflected in the difficulty in searching for information for land transactions and the inefficient production of formal land title documents by the government (Federal Ministry of Housing and Urban Development,

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2006). The result is that in many cases, urban land purchasers find it difficult to confirm the validity of land titles they want to acquire. Indeed, households' access to urban land with secure tenure, especially for the low and middle-income groups, has become an important factor in governance. One way to achieve security of land rights is through land registration.

Land title registration, with formal evidence of ownership such as a Certificate of Occupancy and formal documentation of land transactions in public land registries, are essential to the efficient functioning of the land markets. For instance, land titling stimulated land markets in Thailand where titling project increased the number of households engaged in land transaction and in Davao, Jakarta, Indonesia where tenure security such as having a registered title strongly affected land prices (Feder & Nishio, 1999). Title documents provide confidence to market operators and are important aspects of security of tenure. This can be seen in the example of China in which Ma et al. (2013) found that Chinese households that consider land certificates important to the protection of land rights make significant investments on agricultural land. Land registration is vital to the security of tenure and security of tenure plays an important role in enhancing investments in land. In particular, access to land with secure tenure is significant to urban housing delivery. This is important to Nigeria as it faces a severe urban housing shortage. The overall housing deficit is estimated at 17 million units as of 2014 (The Nigeria Housing Finance Programme, 2014).

Land registration was introduced in Nigeria by the British Colonial Administration in 1863 (Federal Ministry of Housing and Urban Development, 2006). However, despite this relatively long history of land registration and the importance of land registration to land market operations, the level of land title registration is low (Federal Ministry of Housing and Urban Development, 2006). Estimates indicate that in all of Africa, less than 15% of the land has been officially registered with title deeds, and for the sub-Saharan Africa it is just 1% (Tibaijuka, 2004). However, the reasons behind why registration rarely occurs is where this research emerges. The study conducts empirical investigations into the challenges to land registration in the Nigerian context.

There are studies in Nigeria's land markets which have either investigated land registration or have alluded to it. They include Babatunde et al.'s (2014) research on the activities of land administration machinery in Abuja, and Minna, Olanrele and Agbato's (2014) study which dealt with land rights registration and property development for poverty eradication and slum clearance in Nigeria. Further, Ojo (2014) researched end-users' satisfaction on land title registration process in Akure, Ondo State. In addition, Nuhu (2009) investigated approaches to enhance land titling and registration in the Kongila neighbourhood of Minna, Niger State. Some of these studies found constraints to land registration. Babatunde et al. (2014) and Olanlere and Agbato (2014) found ignorance, high processing costs, delays and lengthy processes, extortion of money by officials, and government insensitivity to be obstacles to land registration. Ojo (2014) found end-users' dissatisfaction as a significant factor that make the title registration process difficult.

Interestingly, Nuhu (2009) found a high level of compliance with land registration by landowners with 82% of the 40 respondents having their land registered. Nuhu however questioned whether the land owners had complied with what he called contemporary registration. While these studies assess the land registration processes within Nigerian context none focus on identifying the challenges to land registration in Nigeria. Furthermore, the above studies fail to look at the issue from a holistic perspective, or from the perception of a diverse sample of households, public land administration agencies, and key consultants in Nigerian land transactions such as law firms and estate surveying and valuation firms. There is a clear gap in the literature and as such this research is essential to addressing the lingering problems of land registration in the country.

Existing research on Nigeria's land markets does not interrogate land registration issues with respect to Kaduna State. Land administration in Nigeria is the responsibility of individual states in accordance with the Land Use Act, 1978. The Act vests all land within the territory of each state in the Governor of that state to hold in trust and administer it for the use and benefit of all Nigerians (Section 1, Land Use Act, 1978). Each state prescribes its own system according to its needs. Kaduna State is the second largest state (by population) in northern Nigeria (NPC, 2009). Its capital, Kaduna, was the capital of the defunct Northern Region, the largest of the three regions at independence. It is today regarded as the political capital of the region. Consequently, land tenure rights, especially in urban areas, are issues of significant public concern in the state. The state, therefore, deserves to be covered in land registration studies.

Thus, the study investigates the challenges to land registration in Kaduna State. The objective is to ascertain, through a robust method of mixing quantitative and qualitative studies with a triangulation of results, the land registration programmes in the state, the frequency of land registration, and the factors that constitute challenges to land registration. This is analysed from the perspectives of households, consultants in land transactions, and the Kaduna Geographic Information System (KADGIS) given its responsibility for land administration in the state. Mixed method studies integrate the components of qualitative and quantitative methods and enable a better and fuller understanding of research problems (Creswell, 2014). The mixed method and triangulation of results, therefore, enhance the validity of the results.

2. The Research Context

Nigeria is a developing country in the West African sub-region. Kaduna State belongs to its Northwest geopolitical zone. Land markets in the state are dominated by the private sector; especially individuals and households. In Nigeria, rapid urban population growth and city expansion exist amid inefficient urban management, poor urban planning, high poverty rates, weak institutions, inefficient infrastructure and poor governance. These aspects have continually heightened urban land management problems. Access to urban land by low and middle-income households is particularly difficult in

the state. However, perhaps even more challenging still, is the task of recording land titles due to low land titling and registration. Obtaining a Certificate of Occupancy (C of O), which is the formal evidence of land title, involves a costly and lengthy process. The Centre for Affordable Housing Finance in Africa (2016) notes that the process could take upwards of five years. Similarly, the World Bank (2009) states that the costs for formalising land transactions in Nigeria are cumulatively the highest in the world. In addition, Doing Business (2012) ranked Nigeria 180 out of 183 economies in efficiently registering properties. Registration typically comprises 13 procedures, 82 days and 20.8% of property value (The World Bank, 2012).

Nigeria's Land Use Act, 1978, broadly regulates land administration in the country. The law established two formal land titles; the *Statutory Right of Occupancy* granted by a State Governor and the *Customary Right of Occupancy* granted by a Local Government Chairman. The evidence of these titles is a *Certificate of Occupancy*, commonly referred to as C of O. The national law that regulates land registration in Nigeria is the Land Registration Act No. 36 of 1924. The law is adapted by the states. Some states have gone further to enact new laws on land registration. In Kaduna State, relevant laws include the Kaduna State Land Registration Law of 1982, the Kaduna Geographic Information Service (KADGIS) Law of 2015 and the Kaduna Land Use Regulations of 2017. The Kaduna Geographic Information Service Law of 2015 established the KADGIS and charged it with the responsibility of the '*management of land matters in the state including all issues relating to title, registration, searches and such other responsibilities*' (Section 15(1) Kaduna Geographic Information Law 2015, p.5). The enactment of the two later laws and the establishment of the KADGIS are significant steps in the state's land administration reform. The KADGIS took over the responsibilities of the former Ministry of Land and Survey. On the other hand, the Kaduna Land Use Regulations of 2017 sets general guidelines for land use and administration in the state. It sets out the procedures for obtaining a *Right of Occupancy* and the processes for applying for the direct allocation of land from the government and different forms of land registration and formalisation programmes.

This section has highlighted the legal framework that guides land registration in Kaduna State as an indication that the research is on a programme that is backed by law. The research investigates the challenges in the implementation of these laws and is therefore significant.

3. Literature Review

The review of the literature on land registration primarily in African contexts is presented in this section to highlight the works that have been done, the key findings of these works and the gaps in the literature and then set the current research in context.

Formal definitions and documentation of land rights provide clarity on the ownership of land. Historically, the need for records in land transactions, especially regarding the secure exchange of ownership, has always existed.

Even within informal settings, parties provided some form of written evidence of transactions. This need for land records eventually motivated formal land registration systems (Hanstad, 1998).

Land registration is often categorised into registration of deeds and registration of titles. The former is a recording of instruments of property transaction, thus providing evidence on successive transfers of land rights, while the latter provides records of the rights and duties an identified entity holds over specified property (Hanstad, 1998; Kanji et al., 2005). Hanstad (1998) notes that the registration of deeds, called '*land recordation*' in the United States, developed first and involves registering or recording documents relating to land interests. Such records, held at a public land registry, establish a priority of claims in cases of double selling of a parcel of land. On the other hand, in title registration, the state guarantees all rights shown in the land register (Hanstad, 1998). Kanji et al. (2005) assert that land titling is the strongest legal form that registration of land rights can take. Across and even within countries variations in land registration systems exist. This existence of variations suggests that findings from one context may not be applicable to a different context and so researches in various aspects of land registration should be extended to contexts where they are lacking. This study is therefore necessary as it conducts investigation in a context in which studies on the subject are scarce.

Land registration enhances the security of tenure, encourages investments in land and enables land to perform its economic functions more effectively, such as in its marketability and use as collateral for credit. Many developing countries consider land registration as a high priority in their quest for economic development (Feder & Nishio, 1999). One intention of providing formal land tenure rights is to provide strong security of tenure, thereby stimulating investment and efficiency of land use (Holden & Ghebru, 2016). Secure tenure gives confidence to land market operators and land users. It should be promoted as a means of achieving sustainable urban development (UN-Habitat/OHCHR, 2016). Several international financial institutions, notably the World Bank, international donors and national governments, have since recognised the importance of secure tenure in promoting economic development. Consequently, many of these actors have promoted land titling programmes as a means of enhancing tenure security, securing investments, protecting property rights, unifying land markets, improving access to formal credit and reducing poverty (Payne et al., 2009). Based on these perceived benefits, arguments have been advancing over the years in favour of land titling (Kanji et al., 2005). However, there are variations in the outcomes of land registration programmes in different contexts. Given the importance placed on land registration by many developing countries, the support for it by various international agencies and the benefits that could be derived from it, an investigation into the challenges to land registration is necessary. The outcomes of such research will show areas that need to be addressed to reduce the likelihood of programme failure. This study makes contribution to knowledge in this respect.

In his seminal book, *The Mystery of Capital*, the Peruvian economist, Hernando de Soto stressed the importance of formalising property ownership. De Soto (2000) suggests that economic emancipation in the third world and former communist countries is possible through titling and documentation of ownership rights. De Soto argues that the poor in these countries do not lack assets, but that they lack the representation of rights to assets by formal titles which enable the assets to perform their economic functions. He subsequently argues that due to the inadequate documentation of rights to these assets, the assets cannot be traded outside the local circles, readily turned into capital or used as collateral for credit. He refers to these assets as 'dead capital'. De Soto (2000) is in effect saying that granting formal titles to the disenfranchised over their land will resuscitate the 'dead capital' in the assets and consequently provide economic empowerment to the poor. He, therefore, advocates for the formalisation of property rights as a way to tackle poverty. De Soto's work has reignited the debate on property formalisation (Benjaminsen et al., 2008; Sjaastad & Cousins, 2008). The work coupled with the growing international concern for legal framework regarding land ownership in developing countries, has motivated several governments in these countries to engage with land titling programmes and formalisation of land rights with the aid of international development agencies.

Land assets constitute significant capital. What is far less clear, however, is whether land titling resuscitates 'dead capital' (Payne et al., 2009). Lack of formal titles can constrain the marketability of land or the use of land as collateral. However, there are several other factors that exclude low-income groups from the credit market such that even with formal titles, they may still not be able to resuscitate their 'dead capital'. These factors include low household savings and incomes (which limit households' ability to pay the required deposits for loan and make the instalment repayments), inadequate loanable funds, and high interest rates (Nwuba & Chukwuma-Nwuba, 2018). Moreover, banks and mortgage institutions in Nigeria do not deal with low-income groups with respect to mortgages (Nwuba & Chukwuma-Nwuba, 2018). They usually deal with the high-income groups and people with regular and verifiable income. Such people are mostly in the formal sector, but the majority of the poor and low-income groups operate in the informal sector. The lack of regular and verifiable income excludes poorer Nigerians from the credit market. Thus, land titling is not sufficient to invigorate the 'dead capital' in land held by the poor. The credit market needs to be developed in affordable ways before titling can effectively play the expected role of enabling land to be used as collateral. In many contexts that affect the poor, the imperfections of the credit market can result in failure to meet the preconditions for the operation of the market (Deininger & Feder, 2009). In such situations, the authors argue, expecting large credit-related benefits from land registration programmes may be unrealistic. Similarly, Payne et al. (2009) found from a literature review that the impact of land titling on access to mortgage credit by the poor seems less impressive than the forecasts. Thus, although land titling provides security of tenure and other benefits, it is not sufficient in itself to address poverty or grant the poor access to the credit market as De Soto (2000) claims. Moreover, for titling to provide the expected benefits, the potential constraints to its implementation have to be

dealt with. As such, this study's focus on challenges to land registration aims to identify these constraints which can limit the success of land registration programmes. The study is therefore relevant.

In Nigeria, some states have implemented land administration reforms which centre on land titling and registration systems. However, these programmes, which essentially focus on urban land, are mostly reforms of the land registration process. Thus, these reforms involve changes from manual to digital processes rather than massive registration programmes. The states implementing these changes include Lagos, Anambra, Kano, Enugu, Kaduna and the Federal Capital Territory Administration. The Federal Lands Department established the Federal Lands Information System (FELIS) to handle registration of lands under the control of the Federal Government across the states of the Federation. In most cases, land registration takes place on request. Thus, the land registration reform programmes are implemented by the federal and state governments, an indication of the importance attached to it in the country. Therefore, investigating the factors which can pose challenges to these programmes (as does this study) is important to land administration in Nigeria.

The land registration process in Nigeria faces various problems. These obstacles often discourage landowners from registering their land. Aluko et al. (2004) note that the procedure for formalising land transactions after purchase of land in Lagos State is cumbersome, bureaucratic, costly and lengthy. Thontteh and Omirin (2015) investigated land registration reforms in Lagos State with the aim of determining the effectiveness of the Electronic Document Management System (EDMS) used in land registration. The findings indicated that the EDMS improved land registration. The reforms resulted in improvement in security of tenure, public confidence in transactions, centralised and consolidated file storage, and a reduction in waiting time for obtaining land information. However, it did not reduce land disputes, or increase the number of applications processed or revenue generation by the government. In addition, it takes over 120 days to process title registration. The problems affecting land registration in the state include: the high cost of registration, inadequate technical skills and incompetent staff, high land charges, ambiguous legal framework and institutional problems (Thontteh & Omirin, 2015). Although these studies have identified some challenges to land registration, they focus only on Lagos State. This study extends the enquiry on land registration in the Nigerian context to Kaduna State where research on the subject is sparse and as such fills some gaps in the literature.

A number of other African countries have implemented land titling and various other forms of formalisation programmes. Kanji et al. (2005) investigated land titling in Ghana, Mozambique and Ethiopia. They found that land registration systems are different between and within the countries. In Ethiopia and Mozambique, variants of the land title registration model are adopted while in Ghana, deeds registration and land title registration are used. With regard to land registration in the peri-urban areas, the findings indicated that in all the case studies, low-income groups had low access to registration

systems which tended to encourage the transfer of rights to investors and elites. In Ghana, the process of land registration takes a long time, is cumbersome, and has failed to address the widespread tenure insecurity. The land title registration process is inaccessible to most people and appears not to provide tenure security in the perception of local land users. The study also found that in Mozambique, registration was not accessible to low-income groups due to lack of information and high costs, many of which are illegal payments such as paying officials to process an application. Overall, transparency is vital to an equitable and effective system of registering land and property rights (Kanji et al., 2005). The processes and outcomes of land registration in these countries confirm the existence of variations in different contexts and as such support our argument of the necessity for studies in land registration in various contexts. There are therefore knowledge gaps with respect to contexts in which studies are yet to be conducted. This study fills these gaps within the Nigerian context.

Furthermore, Deininger and Feder (2009) reviewed the literature on the impact of land administration intervention in specific contexts. They found that in situations where overall conditions are favourable, there was substantial evidence of positive tenure security effects of land registration, which manifested in higher levels of investment and less effort to protect land rights. However, evidence of improved access to credit as an outcome of formalisation of land rights was negligible. Deininger and Feder (2009) argue that the nature and realisation of the benefits from land registration depend on the broader socio-economic and governance programmes in additional to the actual nature of governance programmes. The evidence of positive tenure security outcomes from land registration is of economic importance because research has shown that security of tenure has the potential to stimulate investment and efficiency of land use (Holden & Ghebru, 2016). It is important therefore to find out the challenges to land registration which could constrain its effectiveness and limit the realisation of this important outcome. These studies do not address the subject. That is the essence of this study – to ascertain these challenges in the Nigerian context to enable Nigeria's land administrators plan land registration reforms more effectively.

In addition, Feder and Nishio (1999) reviewed the literature on empirical works on the benefits of land registration. The study provided empirical evidence of the economic benefits of land titling and registration in several countries. These benefits include access to institutional credit, increased investment in land, higher productivity, higher incomes and greater efficiency of the land market (Feder & Nishio, 1999). Durand-Lasserve and Selod (2007) also provided empirical evidence that tenure formalisation programmes improved land market efficiency, labour market participation, housing conditions, and health and fertility. Interestingly, the review did not find an impact on access to credit. Similarly, an evaluation of the short-term impact of a pilot land regularisation programme in Rwanda found improved access to land for legally married women and a significant impact on investment, which was particularly pronounced for female-headed households (Ali, Deininger, & Goldstein, 2014). From these studies, there are several economic benefits that result from land registration in various

contexts. Obtaining these benefits requires that potential obstacles to land registration are addressed. To enable an efficient implementation of land registration programmes by Nigerian states, it is necessary to ascertain what these obstacles are, which is the focus of this study. The outcomes will be beneficial not only to Nigerian states, but also to other African countries due to similarities in the levels of economic development.

In other developing countries beyond Africa, land registration has also gained importance. This is demonstrated in Lawry et al's. (2014) systematic review on the effect of land rights recognition interventions on agricultural productivity, investment and income in Africa, Asia and Latin America through a synthesis of 20 quantitative studies and 9 qualitative studies. The study found substantial productivity and income gains from land tenure recognition but with marked regional variations. It noted that the database for Africa was very limited. The gains were stronger in Asia and Latin America and much weaker in Africa (Lawry et al., 2014). The limited database for Africa suggests the existence of gaps in land registration research within the African context. This study contributes to filling these gaps.

Land registration and titling programmes in some countries have faced challenges and have failed to generate the expected benefits or resulted in negative outcomes as indicated in the reviews that follow. Studies in Mali, Niger and South Africa reveal challenges which could make formalisation counter-productive. These include impending formalisation resulting in a scramble for land in Niger, formalisation playing into the hands of powerful people in Mali and the potential for formalisation to intensify the tension between individual and communal land rights in South Africa (Benjaminsen et al., 2008). Likewise, findings in Dar es Salaam, Tanzania suggest that formalisation of land rights reinforced the relegation of poor urban farmers to the edge of the society, ideologically and physically (Bersaglio & Kepe, 2013).

Overall, in Sub-Saharan Africa, formal land titling programmes are slow and expensive and central governments lack the capacity to implement fair, large-scale national land registration systems (Toulmin, 2009). The result is that in many places simpler versions of land registration involving support to local institutions to implement intermediate forms of registration are more viable options (Toulmin, 2009). In an earlier study of land tenure reforms in Kenya and Tanzania, Pinckney and Kimuyu (1994) found that land titling and tenure reforms did not enable the use of land as collateral for formal sector credit or enhance tenure security, and so the programmes did not provide additional incentive to invest in land. The findings also indicated that land titling in Kenya caused more problems than it resolved resulting in the local communities ignoring the titles and reverting to indigenous tenure (Pinckney & Kimuyi, 1994)

In addition, through a literature review and case studies in Senegal and South Africa, Payne et al. (2009) found that overall, land titling programmes have failed to achieve their economic or social policy objectives such as enabling access to formal credit, stimulating investments in housing and property

development, and generating considerable increases in property values. The study found considerable evidence of increased tenure security from land titling. The researchers argue, however, that many alternative forms of tenure including informal or unauthorised settlements also provide high levels of security. Holden and Ghebru's (2016) review of the literature reveals cases of corrupt and inefficient bureaucracies and high costs of formal land titling in different countries. This was reported to result in the displacement of the poor and vulnerable groups in favour of the rich, and an absence of significant investment or credit effects of land titling.

The above cases which indicate both successes and failures in land registration outcomes in different contexts buttress the need for a holistic investigation of the challenges which can constrain land registration programmes from fulfilling their goals. This is where this research emerges as it investigates the problem from the perspective of various stakeholders in the Nigerian context.

In the past two decades, research and policy attention on land registration in Africa have experienced significant growth. Indications from the literature are that many countries have implemented various forms of land registration. Several studies have investigated these land registration programmes through surveys and literature reviews. Most of these studies have researched the benefits and outcomes of land registration programmes. These outcomes vary in different contexts, making research in different contexts necessary. Moreover, although a few existing studies discuss challenges and obstacles to land registration, none is actually designed purposely to investigate the problem in the Nigerian context. This leaves important gaps in the literature. Drawing on a survey of households triangulated with the perspectives of consulting firms in land transactions and the government, this study addresses these gaps within the Nigerian context using a mixed method of surveys and interviews.

4. Materials and Methods

The research is a mixed method with a triangulation of results. It combines a quantitative study of a cross-sectional survey with qualitative method involving personal interviews. Two samples were developed for the quantitative study from 326 surveys completed by landowning households, and 53 completed by consultants in land transactions (34 firms of estate surveyors and valuers and 19 law firms). For the qualitative study, 2 samples were developed, one from the government and the other from consultants in land transactions. The government sample comprises two officials and one retired official of KADGIS. The consultants' sample includes 9 respondents (5 estate surveyors and valuers and 4 lawyers). The respondents for the qualitative study were selected through purposive sampling based on their experiences in the subject of investigation. To eliminate a level of bias, the respondents were assured of anonymity.

The rationale for adopting this research design is two-fold. The first reason is to enable the collection of data from a population dispersed in a wide

geographical area. The survey addressed this issue. The second reason is to get a deeper understanding of the factors that constitute challenges to land registration and the ways they constrain registration. The interviews were used to address this. Interviews provide an opportunity for an in-depth probe into a research question. The mixing of the two methods and triangulation provided greater validity for the results.

In the survey of the consultants, 62 firms of registered estate surveyors and valuers who practice property transaction consultancy, were identified through the Kaduna State Branch of the Nigerian Institution of Estate Surveyors and Valuers (NIESV). All the firms were surveyed. In addition, 53 law firms were identified through the local chapter of the Nigerian Bar Association. 19 firms that practice property transaction consultancy were surveyed. A total of 53 questionnaires were retrieved, comprising 34 for estate surveyors and valuers and 19 for law firms. That translates to a response rate of 65%.

The household survey was for a more extensive study. The sample was drawn from an estimated population of 705,322 regular urban households in Kaduna State. A regular household refers to a household consisting of,

> "*a person or group of persons living together usually under the same roof or in the same building/compound, who share the same source of food and recognise themselves as a social unit with a head of household*" (NPC, 2010, p.iii)

The National Population Commission usually measures its housing distributions such as housing tenure with regular households. In the 2006 national census, regular household population in Kaduna State was 1,115,974. (NPC, 2010). This figure was updated to 2016 with the national annual average population growth rate of 2.65% for 2005 – 2010 and 2.67% for 2010 – 2015 (United Nations, Department of Economic and Social Affairs, Population Division, 2015). The study population was then estimated from the updated figure of 1,451,280 households at 48.6%, the country's estimated proportion of urban population to the total in 2016 (United Nations, Department of Economic and Social Affairs, Population Division, 2014). Thereafter, the sample size was determined with the Taro Yamane sample size formula which is given as:

$$n = \frac{N}{1 + N(\mathrm{e})^2}$$

Where $n =$ sample size required
N = the population size
e = the level of precision
(Singh & Masuku, 2014)

Thus, the sample size for the estimated population of 705,322 households at a precision level of ±5% is approximately 400. A sample of 450 households was surveyed. However, this paper is on an aspect of the survey which

covered 326 landowning households who either inherited their land or purchased from private landowners.

The survey employed a stratified two-stage cluster sampling scheme. The population was stratified into three based on the senatorial districts in the state. Kaduna city was surveyed in the Kaduna Central Senatorial District. Zaria was surveyed in Kaduna North. Moreover, Kafanchan and Zonkwa were surveyed in Kaduna South. Cluster sampling was then employed with the wards in each city as clusters. Households were then subsampled in the wards through a random process.

Questionnaires designed for the study were used to collect the data. Households were required to state whether they registered their land titles and transactions with the land registry (a sample of the questionnaire is attached as an appendix). On the other hand, the consulting firms were required to state how often they register their clients' titles and transactions on a 7-point scale ranging from 7 for always, 4 for only sometimes, and 1 for never. Both samples were also asked the challenges they encountered in the process of registration and the reasons for non-registration. The survey results were triangulated with interviews of state officials and professionals. The triangulation enabled cross-validation of the results.

The questionnaires were validated on a random sample of 50 households and 5 consultants with Kendall's coefficient of concordance (W). The reliability was measured with the Cronbach's alpha statistic. The interviews were one-on-one and were semi-structured. An interview guide was prepared and piloted on one respondent. Based on the observations, the guide was modified, and a final version prepared and used in the study. The interviews were conducted in December 2017, January 2018 and April 2018 and with the consent of the interviewees, recorded on electronic devices. The survey data analysis employed frequency, percentages and mean, while the interview data were transcribed and analysed with the thematic analysis method.

5. Results

5.1 *Respondents' Demographic Characteristics*

Table 1 contains the households' demographic characteristics. Male respondents comprise 81.3%, while female respondents constitute 18.7%. The majority, comprising 81.6% are married while only 18.4% are single. The age bracket of 40 to 49 constitute 35.6% of respondents and is the largest proportion. About 67.5% of the respondents have a degree or other tertiary education. Mean sample household monthly income is 77,312 Naira (US$212.60), while the median is 73,500 Naira (US$202.13). Mean household size is 7.06, while the median is 6. About 75.5% of the respondents acquired their land through purchase from private landowners while 24.5% acquired through inheritance. Overall, the sample has a sufficient spread of respondents over different categories of households.

Table 1: Households' Demographic Characteristics

Characteristics	***Frequency***	***Percent***	***Cum percent***
Sex			
Male	265	81.3	81.3
Female	61	18.7	100.0
Marital Status			
Married	266	81.6	81.6
Single	60	18.4	100.0
Age bracket of respondent (years)			
Less than 30	42	12.9	12.9
30 – 39	108	33.2	46.1
40 – 49	113	34.5	80.6
50 and above	63	19.4	100.0
Educational level of respondent			
No formal education	1	0.5	0.5
Primary education	11	3.5	4.0
Secondary education	93	28.5	32.5
Degree/other tertiary education	220	67.5	100.0
Source of land acquisition			
Purchase from private landowners	246	75.5	75.5
Inheritance from family/communal land	80	24.5	100.0

Source: Field Survey, 2017.

Tables 2 and 3 contain the demographic characteristics of the estate surveying and valuation firms and law firms respectively. In each case, the largest proportion of the firms has a staff strength of 6 to 10. Among the estate surveying firms, 47% has rendered services in property transactions for 6 to 10 years, while among law firms, the majority of 57.9% has rendered services for 15 to 20 years. Male respondents constitute the majority in both samples. All the responding lawyers are married, while 85.3% of the estate surveyors are married. Furthermore, 58.8% of the estate surveyors had experience of 10 years or less, while 41.2% had over 10 years' experience. For the lawyers, 47.4% had experience of 10 years or less, while 52.6% had over 10 years' experience. The age bracket of 40 to 49 constitutes the highest proportion of respondents in both cases. Also, a majority of the respondents hold a Bachelor's degree. The sample reflects the situation in the market. Most practice owners or heads in the two professions are middle-aged, married men who possess a first or Master's degree or a higher national diploma for estate surveyors and valuers.

Table 2: Respondents' Demographic Characteristics (Estate Surveying and Valuation Firms)

Characteristics	*Response Categories*	*Frequency*	*Percent*	*Cumulative percent*
Firm's staff strength	1 – 5	12	35.3	35.3
	6 – 10	14	41.2	76.5
	11 - 15	2	5.9	82.4
	16 – 20	4	11.8	94.1
	Above 20	2	5.9	100.0
No. of years firm has rendered service in land agency in Kaduna	1 – 5	2	5.9	5.9
	6 -10	16	47.1	53.0
	11 – 15	7	20.6	76.6
	16 – 20	3	8.8	82.4
	Above 20	6	17.6	100.0
Responding officer's sex	Male	32	94.1	94.1
	Female	2	5.9	100.0
Responding officer's marital status	Married	29	85.3	85.3
	Single	5	14.7	100.0
Responding officer's age group	Below 30	2	5.9	5.9
	30 – 39	10	29.4	39.3
	40 – 49	19	55.9	91.2
	50 and above	3	8.8	100.0
Responding officer's post-qualification experience (years)	1 – 5	4	11.8	11.8
	6 – 10	16	47.1	58.8
	11 – 15	10	29.4	88.2
	16 – 20	1	2.9	91.2
	Above 20	3	8.8	100.0
Educational qualification	PhD	1	2.9	2.9
	Master's degree	9	26.5	29.4
	Bachelor's degree	10	29.4	58.8
	HND	14	41.2	100.0

Source: Authors' Field Survey, 2017

Table 3: Respondents' Demographic Characteristics (Law firms)

Characteristics	*Response Categories*	*Frequency*	*Percent*	*Cumulative percent*
Firm's staff strength	1 – 5	5	26.3	26.3
	6 – 10	10	52.6	78.9
	11 - 15	3	15.8	94.7
	16 – 20	1	5.3	100.0
	Above 20	0	0.0	100.0
No. of years firm has rendered service in land agency in Kaduna	1 – 5	1	5.3	5.3
	6 -10	6	31.6	26.8
	11 – 15	11	57.9	94.7
	16 – 20	1	5.3	100.0
	Above 20	0	0.0	100.0
Responding officer's sex	Male	17	89.5	89.5
	Female	2	10.5	100.0
Responding officer's marital status	Married	19	100.0	100.0
	Single	0	0.0	100.0
Responding officer's age group	Below 30	0	0.0	0.0
	30 – 39	8	42.1	42.1
	40 – 49	9	47.4	89.4
	50 and above	2	10.5	100.0
Responding officer's post-qualification experience (years)	1 – 5	0	0.0	0.0
	6 – 10	9	47.4	47.4
	11 – 15	9	47.4	94.7
	16 – 20	1	5.3	100.0
	Above 20	0	0.0	100.0
Educational qualification	PhD	0	0.0	0.0
	Master's degree	8	42.1	42.1
	Bachelor's degree	11	57.9	100.0
	HND	0	0.0	100.0

Source: Authors' Field Survey, 2017.

Table 4 contains the demographic characteristics of the interview respondents of which nine are male and three are female.

Table 4: Interview Respondents' Demographic Characteristics

Resp.ID	Sex	Age Bracket	Marital Status	Educational Qualification	Profession	Experience (in years)	Remarks
M01SS	Male	41 – 45	Married	HND	ESV	17	State official
M02L	Male	36 – 40	Single	LLB, BL	LAW	7	Private practitioner
M03ES	Male	46 – 50	Married	M.Sc.	ESV	15	Private practitioner
M04ES	Male	46 – 50	Married	HND	ESV	7	Private practitioner
M05SS	Male	51 – 55	Married	B.Sc.	Geography	10	State official
M06ES	Male	41 – 45	Married	PhD	ESV	13	Private practitioner
M07ES	Male	46 – 50	Married	M.Sc.	ESV	15	Private practitioner
M08ES	Male	51 – 55	Married	HND	ESV	9	Private practitioner
M09SS	Male	55 – 60	Married	HND	ESV	38	Retired state official
F10L	Female	36 – 40	Married	LLB, BL	Law	7	Private practitioner
M11L	Male	51 – 55	Married	LLB, BL	Law	20	Private practitioner
F12L	Female	46 - 50	Married	LLB, BL	Law	15	Private practitioner

Source: Authors' field work, 2017 and 2018

Notes:

1. ESV = Estate surveyor and valuers.
2. Experience refers to post professional registration for the ESV, post call to bar for the lawyers and years in public service for state officials.
3. ESVs usually work for a considerable period, sometimes up to 10 years after academic qualification before they get professionally registered. Thus, total work experience is usually much longer than post-professional registration experience.
4. Retired state official (35 years of public service, 3 years of private practice).

5.2 Quantitative Results

The results in Table 5 indicate that the majority of landowners who purchase or inherit their land do not register their land. Over 70% of respondents did not register. Interestingly, a majority of this group, about 65%, do not consider registration necessary and the remaining 35% do not know about registration. The respondents are either not aware of registration, or they are aware but do not consider it necessary. In either case, it is a problem of ignorance. The results therefore demonstrate that ignorance is a significant

constraint to land registration in Kaduna State. A noteworthy minority of respondents, 29%, registered. Respondents who registered their land experienced problems, the most significant being the long process of the registration. Over 87% of the respondents who registered their land encountered this problem. Also, a substantial proportion of respondents who registered, constituting 75%, encountered high costs, while about 67% experienced delays.

Table 5: Summary statistics on the frequency of land registration and registration constraints (Households' data)

Variable	*Frequency*	*Percent*	*Cumulative percent*
Method of land acquisition			
If you have land or building, how did you acquire the land?			
Direct state government allocation	14	3.9	3.9
Direct local government allocation	22	6.1	10.0
Purchase from private landowners	246	68.0	78.0
Inheritance from family/community land	80	22.0	100.0
Frequency of registration			
If you purchased or inherited your land, did you register your land with the Lands Ministry?			
Yes	96	29.4	29.4
No	230	70.6	100.0
If you registered your land, what challenges did you encounter in the process			
High cost of the registration	72	75.0	N/A
Long process	84	87.5	N/A
Delays	64	66.7	N/A
If you did not register your land, what was the main reason?			
Don't think registration is necessary	150	65.2	65.2
Don't know about registration	80	34.8	100.0

Source: Field Survey, 2017.

From the consultants' results (Table 6), registration is carried out 'Only sometimes' which recorded the highest response of 41.5%. The mean for the construct on the 7-point scale is 4.11 which falls within 'Only sometimes'. This is fairly high compared to households' results which suggests that land purchasers are more likely to register their land if consultants handle the transactions. Nevertheless, the level of registration is still low for urban land markets. About 24.5% of the respondents say they often or always carry out registration. In contrast, a higher proportion comprising about 34% say they rarely or never carry out registration. The results therefore demonstrate a low level of land registration in the study area, which corroborates the households' results.

The most significant reason for non-registration is high cost - 'client says registration is expensive'- was experienced by 54.7% of the respondents. The next is 'client does not ask me to register' which recorded a 28.3% response rate. This factor suggests that the client is either not aware of the necessity to register or does not want to register. The main challenges encountered in the process of registration are delays and lengthy processes, which were experienced by 81% and 77.4% of the respondents respectively. About 28.3% of the respondents respectively experienced high cost and making unofficial payments to officials. Making unofficial payments is a strong indication of corrupt practices.

Table 6: Summary Statistics of the frequency of land registration and registration constraints (Consultants' Data)

Variable	*N*	*Percent*	*Cumulative percent*
When you purchase residential land for your clients, how often do you register the transaction/your client's title with the lands registry			
Always	6	11.3	11.3
Very often	4	7.5	18.9
Often	3	5.7	24.5
Only sometimes	22	41.5	66.0
Rarely	14	26.4	92.5
Very rarely	3	5.7	98.1
Not at all	1	1.9	100.0
In cases that you registered titles/transactions, what problems did you encounter in the process?			
High cost for the registration	15	28.3	N/A
Long process	41	77.4	N/A
Delays	43	81.1	N/A
Making unofficial payments to officers	15	28.3	N/A
Others (please specify)	0	0.0	N/A
In cases that you did not register your transactions with the lands registry, what was the main reason?			
Client does not ask me to register	15	28.3	28.3
Client says registration is expensive	29	54.7	83.0
Client says registration is not necessary	3	5.7	88.7
I do not discuss registration with the client	6	11.3	100.0

Source: Field Survey, 2017.

Integrating the results of the two samples, the findings indicate that the level of land registration is low and that the following are challenges to land registration:
Ignorance on the part of landowners, high costs for registration, lengthy process, and delays in processing registration.

5.3 Qualitative Results

This section presents the results from the qualitative aspect of the study. The results are presented and discussed in themes which emerged from the analysis of the interviews conducted in the study. The themes are Land Registration Programmes and Processes, Reasons for Non-registration of Land and Challenges in the Registration Process. These themes enable the understanding of land registration issues in Nigeria with greater depth and in context. Table 7 contains the themes and the variables (sub-themes) for each theme).

5.3.1. Land Registration Programmes and Processes

The state officials identified and explained 6 land registration programmes in the state as shown in Table 7. Explanations of each programme and their procedures as provided by the government officials are included below.

Table 7: Thematic Analysis Results

S/N	***Themes***	***Variables***
1	Land Registration Programmes and Processes	Systematic Property Registration Programme Systematic Recertification Programme Systematic Regularisation Programme Regular Application (Clean grant) Direct Allocation (Title registration) Deeds Registration
2	Reasons for Non-registration of Land	Ignorance Attitude Affordability problem Registration process Ownership type Avoiding payments to government Perceived security of tenure
3	Challenges in the Registration Process	Corruption Inefficient Process - manifests in: • *Poor Record-keeping* • *Delays* • *Lengthy processes* • *Cumbersome process* Inadequate human capital and working tools Incomplete documentation by applicants Resistance to change by government staff

Source: Authors' interviews 2017/2018

1) Systematic Property Registration Programme

Systematic property registration is targeted at low and middle-income earners who have houses but do not have the means to process C of O (M01SS). It aims to title all occupants of land within high density urban and rural areas and agricultural land. It is a process of mass land registration with the government taking the initiative and covering the costs. KADGIS officials go house to house to get the details of properties and their owners. The agency then compiles a list of landowners and after public display sends the list to the governor for approval. The landowners are issued C of O at a token fee of 5,000 Naira (US$13.8). About 5,000 certificates have been issued through this programme (M01SS)

2) Systematic Recertification Programme

Recertification is a mandatory conversion of the old manual certificates of occupancy to digital form. The process requires holders of statutory or customary right of occupancy to submit a recertification application form to KADGIS. The applicant submits the old C of O to KADGIS for cancellation and issuance of a new digital certificate. The old certificate is properly vetted because we have instances of people submitting fake certificates (M01SS). The programme is a reform to curtail fraudulent acts in title documents and restore confidence in land transactions (M09SS). The state officials say the process takes 30 days, but the consultants interviewed dispute this, saying it takes several months and even years. The agency continually overshoots its time targets. The processing fees are graduated with time. At the beginning of January 2017, it was 20,000 Naira (US$55). It has increased by 10,000 Naira every quarter to 40,000 Naira. There is an additional fee of 20,000 Naira for the registration of C of O. If the recertification requires assignment, the applicant pays an additional fee of 80,000 Naira (US$220) Fees for assignment were previously 6% of the capital value of the property (M01SS).

Previously, holders of Customary Right of Occupancy converted them to the Statutory Right of Occupancy under a registration programme called Conversion. This process involves changing a customary right of occupancy granted by a local government to a statutory right of occupancy granted by the governor of a state (M009SS). This became necessary because areas where local governments prepared layouts and made grants were declared urban areas and since it is only the Governor that can grant right of occupancy in urban areas, holders of customary rights of occupancy issued by local governments are required to change their rights to statutory rights (M09SS).

3) Systematic Regularisation Programme

This land registration programme entails formalising planned, unapproved layouts and property rights in them. Occupants of such layouts are required to apply to the state government to regularise their land rights, but the programme is yet to commence. The layout has first to be reviewed for conformity with planning regulations (M01SS). Unapproved layouts are created without state government approval. They are usually created by

private landholders who subdivide their land and sell to individuals to develop.

4) Regular Application

The regular application is a process in which a landholder, who has never held a right of occupancy on any land he or she occupies or claims, applies for a new grant for the right of occupancy through the Regular application process. It covers registration previously done under a programme termed, *Clean Grant*, which is the formalisation of titles obtained from the purchase of land from customary landholders. "The process starts from the zonal lands office" (M09SS). It requires the applicant to provide two key documents as evidence of title – the sale agreement and confirmation of the title of the applicant by the district head, the village head and the ward head of the area where the land is located (M09SS). These are the customary land administrators, and their confirmation of title is required "to curb land disputes and problems that sometimes arise due to conflicts of ownership" (M09SS). The application is lodged at the zonal land office in the local government. The Zonal Land Officer sends the application to the Chairman of the Local Government for recommendation and after the recommendation sends it to the headquarters of the KADGIS for title processing (M09SS).

5) Direct Allocation

Registration under this programme involves registering title documents that result from government allocation of land. The government prepares layouts and allocates the plots to applicants. It issues rights of occupancy to the allotted owners, who are required to pay the fees for the processing of title (M01SS; M05SS). Survey plans are prepared for each of the plots by the state Surveyor-General, and a *C of O* is prepared in the name of each allottee and executed by the governor. Thereafter, the allottee pays the full allocation and processing fees before the document is registered by the deeds register and the *C of O* delivered to the title holder. There have not been direct allocations recently (M01SS; M05SS).

6) Deeds Registration

This is the registration of transactions such as mortgages and assignments of land rights. The Land Use Act of 1978 requires that the consent of the Governor be obtained for all alienation of land rights. The governor's approval specifies the conditions for granting the consent. For assignments, if there is a transaction and the parties want the formal transfer of title to the new owners, the title holder will make an application for title transfer by assignment. When the consent of the governor is obtained, the deed of assignment is stamped and registered, and a change of ownership takes place. After the registration of the deed of assignment, a certificate of occupancy is processed and issued in the name of the assignee. However, from the time the deed of assignment is registered, the title is conferred on the assignee (M09SS).

The period for processing applications varies with types. The state officials explained that assignments usually take one month, while consent to mortgage takes about one week from the time the application is submitted and all documentation provided. The other registration programmes take one to two months from the time application is submitted at the agency's office with all documentation provided (M09SS).

5.3.2 Reasons for Non-Registration

As shown in Table 7, the interviewees advanced a number of reasons why landowners do not register their land, which include ignorance, nonchalant attitudes to registration by landowners, affordability problems, perceived security of tenure, and communal ownership of land. These findings corroborate the survey results. The impact, according to the interviewees, is that the level of registration is low which also confirms the survey findings. All the respondents agree that ignorance is a major hindrance to land registration. They say there is a general lack of awareness about registration. A respondent stated: "*People practically do not know the value attachment to documentation of land transactions*" (M02L). Similarly, another respondent stated: "*A lot of them don't even see the reason why they should obtain title to their land… Some believe that it is only when they want to sell or take a loan from the bank that they need registration*" (M03ES). The respondents also believe that landowners have a nonchalant attitude towards registration.

In addition, most of the respondents agreed that affordability is a major problem. They say the costs are too high relative to the income of the people, despite cost reductions the government has introduced. As a respondent stated:

> *"A lot of them cannot afford the cost of registering their title. The government put a flat cost of 80,000 Naira. A lot of people are still poor… In many suburbs, the cost of land is about 300,000 Naira and you are asking them to pay about 25% of that* [for registration]" (M03ES)

He argues that the government should still reduce the costs. However, another respondent has a different view. Although he agreed that cost is a problem, he said that the problem is more of attitude than costs. He stated: "*One thing I want to believe is that it is not money. The money they pay for the certificate is nothing compared to the amount they purchase the property"* (M02L). The government appears to have recognised the affordability problems and introduced cost reductions for the different registration programmes and the officials believe that government has done much in cost reduction. They cited an example of a deed of assignment, which used to cost 6% of the value of the property but is now fixed at a flat rate of 80,000 Naira (M09SS). A consultant agreed to this (M11L)

Other reasons why landowners do not register their land include ownership type, perceived security of tenure under the customary land tenure system, delays and lengthy process of registration and attempts to avoid paying government charges such as ground rents, which landowners pay when their titles are registered. The respondents say that people do not usually register

land that is communally owned such as family land because the co-owners do not normally agree as to whose name should be used for the registration (M07ES). The government has recently tried to solve this problem by registering communally-owned land under the programme termed Systematic Land Title Registration (SLATR), now called Systematic Property Registration Programme. (SPRP) (M07ES; M11L). The respondents could not however confirm the success of the programme. In addition, the delays in processing registration and the lengthy registration process discourage landowners from registering their land (M07ES). Furthermore, as the respondents point out, customary landowners who are natives in an area perceive that the traditional institutions offer them secure tenure and so they do not need registration. They see registration as an exercise for people who are not natives of the area (commonly referred to in Nigeria as non-indigenes) who purchase land from them (M03ES). Across the country, customary land tenure offers security of tenure as the state recognises titles held under native law and custom. The only issue with such titles is the inability to use them for formal transactions such as collateral.

5.3.3 Challenges in the Registration Process

The results also indicate that there are various challenges in the land registration process (Table 7). They include corruption of public officers, the inefficiency of the registration process, inadequate human capital, resistance to change by the officers, and incomplete documentation by applicants.

The respondents consider corrupt practices a critical challenge, especially before the introduction of reforms (M06ES; M02L; M11L). Making unofficial payments to land registry officials can make a difference in the service delivery by substantially reducing the processing time. The results showed that officials posed as consultants such that it became customary for people who came to register land to engage them for a fee to 'follow up' on their files. Speaking about the previous system, a respondent stated,

> "*The speed of the procedure depends on who is following it up and how much you are able to give outside the official fees… no official time frame. It depends on what you can do and your relationship. The relationship and some tips were the major factors"* (M06ES)

Other respondents corroborate this response. As a state official stated: "*Some of the staff paraded themselves as consultants*" (M05SS). Another respondent described it thus:

> "*In the previous system, land registration had always been who you have to assist you to push for what you want… you have to have unofficial retainership with some identified staff who have a kind of inroad into the system to facilitate it… But with the introduction of KADGIS, the process has been simplified… is very straightforward. With or without knowing anybody in KADGIS, your processing will go on smoothly"* (M04ES)

These are manifestations of corrupt practices which is in agreement with the survey finding of making unofficial payments to officials.

The results also indicate that the system is inefficient. The inefficiency manifests in record-keeping problems, delays in the processing of registration applications, and lengthy and cumbersome processes. These findings are consistent with those from the surveys. Describing the situation, a respondent stated:

> *"I have up to 60 files* [applications] *for recertification. There are certain payments I made February last year for recertification. And now it is April current year. A state government engaged me to perfect their title documents for all their land, but up till now, there is nothing. They have not been able to process even one single application. I have written up to ten reminders to the DG KADGIS, but unfortunately, there is no response… You go to their complaint desk, they will say they will get back to you, but they will not."* (M11L)

The respondents say the registration process is lengthy and cumbersome and involves many delays. They identified inefficiency, record-keeping problems, the powers of the governor under the law to grant rights of occupancy and the requirement for the consent of the Governor for alienation of land as the major causes of the delays and lengthy process (M11L; F12L). The Governor signs the certificates of occupancy and approves grants and consents. The process often results in delays due to the busy schedule of the governor. Respondent M11L stated that he has tried to process some applications for the past two years without success. The record-keeping is a widespread complaint. As a respondent described it:

> *"…you can go several times* [to the land registry] *without laying your hand on the file. There won't be record to show which office the file is… There is a particular one that took me almost six months to lay my hands on the file"* (F12L)

Another respondent stated: "*It takes a long time for the files to be found…A times, the files are misplaced, or they cannot be found*" (F10L). A state official said that inadequate facilities for file storage caused the problem. He stated: "*We experienced a lot of missing files*" (M09SS). The state officials identified a shortage of qualified manpower, people's resistance to change, and incomplete documentation by applicants as challenges the agency faces. As one official stated:

> *"We have issues of people refusing to accept change… we have staff that are really not ready to key into the changes. Even on the part of the public, we have that challenge… because people think they can do things the old way. But the most important challenge is a shortage of qualified manpower"* (M01SS)

They said that these factors are some of the causes of delays. They also said that when there is incomplete documentation, the processing of an application is put on hold (M05SS; M09SS).

Thus, the results have shown that there are a number of factors that constrain land registration. The respondents are unanimous in indicating some measures which should be taken to minimise these challenges. They include creating awareness through public enlightenment programmes, further cost reductions, engagement of more staff with the relevant skills, and creating a more efficient processing system.

5.4 Integrating Quantitative and Qualitative Results

Integrating the results from the qualitative and quantitative studies, we can summarise the findings as follows:

The Kaduna State government has 6 different programmes for registration of land. These are: (1) the Systematic Property Registration Programme, (2) the Systematic Recertification Programme, (3) the Systematic Regularisation Programme, (4) the Regular Application, (5) the Direct Allocation, and (6) the Deeds Registration.

The level of land registration in the state is low. In addition, there are a number of challenges to land registration, some of which are reasons why landowners do not register their land while others are challenges encountered in the registration process. The reasons why landowners do not register their land include: ignorance on the part of landowners, inability of landowners to afford the cost of registration, nonchalant attitude to land registration by landowners, communal ownership of land, attempts by landowners to avoid paying government charges such as ground rents, perceived security of tenure under the customary land tenure, and the delays and lengthy process of registration which discourage people.

Similarly, factors which constitute challenges in the land registration process include corruption (which manifests in making unofficial payments to land registration officials), and inefficient registration process (which manifests in poor record-keeping, delays, and lengthy and cumbersome processes). Other factors include: inadequate human capital and working tools, resistance to change by KADGIS officials, and incomplete documentation by applicants. All these factors, in one way or the other, limit land registration, resulting in low level of registration

6. Discussion of Results

The results of the quantitative and qualitative studies corroborate each other. Both suggest the existence of failures in the land administration system, which cause failures in the land market and consequently market inefficiency. Despite the various land registration programmes, the level of registration is low which suggests that the system is inefficient. A low level of land registration means that official records do not capture the majority of land transactions in the state. This has an implication for government revenue and the availability of information for land market transactions. The government loses revenue it would otherwise get if the level of registration were high. This suggests that there is room for increase in land-based revenue in the state.

Moreover, the low level of registration means that often market participants do not get adequate information for their transaction. Scarcity of information causes market failure, resulting in the land market being inefficient. The situation is exacerbated by the numerous challenges to land registration. There is, therefore, a need for the government to vigorously pursue the reforms it has introduced within the land administration system.

The findings on the factors that constitute challenges to land registration support Babatunde, et al. (2014), Olanrele and Agbato (2014) and Thontteh and Omirin (2015), Holden and Ghegu (2016) and Kanji et al. (2005) who also found similar factors as obstacles to land registration in their respective research contexts.

Similarly, the results suggest that the cost of registration needs to be further reduced. Although some respondents said that the cost of registration is little compared to the cost of purchasing a property, for the majority purchasing land is a long-term project for which they have to save for multiple years. To these people, registration is an additional burden which, if possible, should be avoided. If the cost of registration is high relative to the disposable incomes of households, the willingness and ability for land registration is constrained. The result is a lack of information in the land markets which causes market failure. The implication is that land administration reform measures need to give adequate consideration to the costs of land registration bearing in mind the level of disposable incomes of households.

Furthermore, the findings demonstrate that ignorance is a fundamental problem to land registration. Even if the challenges of costs and procedures are adequately addressed, there would still be problems of low land registration because people cannot buy into a system that they are not informed about even if the costs of entry are free. The findings, therefore, suggest that government reform measures should integrate systematic enlightenment programmes to educate people on the need and benefits of land registration. Furthermore, the problem of corruption reflects the widespread unethical business conduct in Nigeria.

The problems associated with registration of titles and the high level of lack of formal titles to land have implications for the land market, especially with respect to security of tenure and ease of land transactions. Without a formal title and evidence to it, proving land ownership is difficult. Consequentially, land market transactions are difficult, resulting in market failures. These failures affect the housing market and worsen housing problems. The implication is the necessity for the government to continue and further advance its land administration reforms to ensure it is in line with best practices.

7. Conclusion

The importance of land registration cannot be over-emphasised. Its role in motivating investment in land, providing security of tenure and information for land transactions is essential to economic activities. It should therefore be

promoted, and steps taken to remove obstacles to its success and advancement. The research has implications for the land and housing markets in Nigeria and Africa in general. The land market is a critical component of the housing market. In Nigeria and several other African countries, most households build rather than buy their homes. To build the homes, they have to acquire land. Land market transactions are therefore important to households. Failures in the land markets worsen housing problems. Land registration plays an important role in enhancing land market efficiency. It is therefore important in addressing urban housing problems in Africa. Insecurity of tenure is one of the consequences of non-registration of land titles and constrains investment in land. Low level of land registration is thus a potential source of urban housing problems.

Moreover, as the results indicate, the challenges to land registration are wide and varied. The implication is that a wide-range of reform measures are necessary to address these challenges to enable the development of efficient land markets and consequently contribute to solving urban housing shortages in African countries. Changing the registration process from the manual to digital system, as is done in some Nigerian states, is essential but not sufficient to address the challenges. More comprehensive reforms are necessary. These should include: educating the public on the necessity and benefits of land registration, developing mechanisms to streamline the land registration process and supply of information for land market transactions, and introducing modes of payment that could lighten the financial burdens of land registration. It is important to state, however, that improving land registration is not sufficient in itself to stabilise the land markets or address the urban housing shortages prevalent in African countries. Measures to deal with poor access to land and housing finance by urban households, inefficient housing policies and the high cost of home building are also necessary.

This research provides a unique insight into land registration problems in Nigeria through an exploration of the views of the government and the people they govern with a method that combines quantitative surveys and qualitative interviews. The research contributes to evidence-based land administration reforms in the country. The results are significant for policymakers in formulating and reviewing reforms in land registration. They are also significant to land transaction consultants in building literacy in land registration among their clients. In addition, the issues raised in the research are equally relevant to many African countries where land registration and insecurity of land tenure have posed significant challenges to the development of the land markets. Thus, the research makes valuable contributions to Africa's land market literature.

The limitation of the study is that it is based on data from urban land transactions. The results may be affected if data from rural land transactions are included. Nevertheless, the inclusion of the KADGIS in the study ensures that such effect is not likely to be significant. Future researchers should consider investigating further measures to address the challenges to land registration in the state.

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Appendix

Questionnaire for Research on Access to Land
Where appropriate, please mark **X** against the option you choose or fill in the space as appropriate

Section A: Respondent's Profile

Please supply the following information concerning yourself

1) Sex

   Male ☐ Female ☐

2) Marital Status

   Married _____ Single _____

3) To which of the following age brackets do you belong?

   Less than 30 ☐ 30 to 39 ☐ 40 to 49 ☐ 50 and above ☐

4) What is your highest educational qualification?

   None ☐ Primary school ☐ Secondary school (or equivalent) ☐

   Degree or other higher education qualifications ☐

5) How many years have you worked? _____
6) Please state the number of persons currently living with you _____
7) What is your income per month_____?
8) What is the income of your spouse (if any) per month_____?

Section B - Tenure Status and Land Acquisition Sources
In the table, please tick the option that applies to you

Tenure Status
9) Which of these categories do you belong to? a) Owner-occupier (living in your own house) b) Tenant building your own house c) Tenant owning land but yet to start building d) Tenant not owning land but planning to acquire
How land was Acquired
10) If you have land or house state how you acquired the land a) Direct State Government allocation b) Direct Local Government allocation c) Purchase from private landowner d) Inheritance from family/community land e) Other sources (please specify) _____

11). If you have not got land yet, what is the reason?

a) High cost of land
b) I cannot find land to buy
c) The land I can afford is not buildable

12) If you purchased your land, how did you buy it?

a) Through a registered estate surveyor
b) Through a lawyer
c) Through a local agent
d) Direct from the land owner
e) Through other intermediary (specify)_____

Nature of title on the land

13) Does your land have

a) State C of O
b) Local Government C of O
c) No C of O.

If your land has C of O, is the C of O

a) In your name
b) In the name of the original owner

Evidence of your own title on the land

14) What kind of papers do you have for the land in your name?

a) Power of Attorney
b) Sale agreement
c) Deed of assignment
d) Receipt of purchase
e) Others (please specify) _____
f) No evidence of title

15) a) After you purchased your land, did you register your title documents with the Lands Ministry? Yes _____ No _____

b) If you registered your title document with the government, what problems did you encounter in the process?

- High cost of the registration
- Long process
- Delays
- Others (specify)

c)If you did not register your title documents, what were your reasons

- Don't think it is necessary
- Don't know about registration
- Others (specify)