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A Review of Studies on Real Estate Investment Performance in Nigeria

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Abstract

This study has been conducted to review the studies conducted on property investment performance in Nigeria with the aim of providing a clear insight into the trend, authors' affiliations, performance measurement techniques and the geographical focus of these studies. Published and unpublished research works in this research area were sourced and reviewed. The data and information used were sourced from online databases such as Google, Google Scholar, ScienceDirect, ProQuest, and ResearchGate. Printed journals (local and international), published and unpublished Masters and PhD theses were also among the sources of the data used. Descriptive statistics were used to analyse the authors' contributions, affiliations, geographical focus and the annual research trend of real estate investment performance in Nigeria and the results reported. The study found that the first study conducted on the performance of real estate investment was Olaleye (2000) followed by Olaleye (2002). Olaleye, A., Oyewole, M. O. and Dabara, D. I. were found to be the most active and leading researchers on this research area with contributory scores of 3.87, 3.61 and 3.21 respectively. On the average, about 2 studies on the subject were carried out annually with focus majorly on the Lagos property market, Southwest Nigeria. The review further revealed that nominal rate of returns, Sharpe index and coefficient of variation were the common performance measurement indices often adopted by majority of the previous authors. This study recommends that collaborative effort should be established among scholars of estate management and practicing estate surveyors and valuers with a view to bridging the gap between theory and practice and boosting property data banking in Nigeria. The geographical scope of real estate investment performance in Nigeria needs to be expanded to adequately cover all the regional property markets.

Keywords: Investment performance, Nigeria, real estate, review, risk-return

1.0 INTRODUCTION

The commitment of money or capital sum for a certain period of time by an investor in anticipation of future returns or stream of income that will reward such investor for the time, risk and uncertainty of these expected incomes is generally termed investment (Reilly & Brown, 2011). Investing in real estate or property is concerned with the acquisition or disposal of real assets such as land and the improvements thereon (buildings). Throughout this work, the terms real estate and property are used interchangeably to mean land and building or physical improvement on the land. Ng et al. (2017) noted that real estate or property investment has become a popular investment opportunity all over the world because of its peculiar or unique characteristics; it is believed that returns on real estate investments appreciate in real terms, even in adverse economic situations. It is a low-risk investment asset whose value is believed to appreciate even during economic downturn thus, a good source of portfolio diversification capable of preventing unsystematic risks (Nittayagasetwat & Buranasiri, 2016). The financial resources required for real estate investment is relatively huge and limited. Investment choices are made among various competing investment asset classes. Investors make choices from within direct real estate investment assets, between direct and securitised investment assets as well as property investment and other investment assets such as stocks and shares.

One of the major challenges facing property investors, especially in Nigeria, is making a sound investment decision; giving these numerous investment options to choose from (Oyewole, 2014). More and up-to-date researches on real estate investment performance, whether direct or indirect, have become necessary especially now that property investment performance measurement has gained wider recognition across the world, including Nigeria. The two critical questions that therefore informed this study include: how much do we know of the attention that has been given to research on property investment performance measurement in Nigeria? Do the previous researches on the subject matter adequately cover the six geo-political regions of Nigeria, giving the location uniqueness of real estate market? Although, available literature indicated that real estate investment performance analysis gained practical recognition in Nigeria about two decades ago and scores of studies have been conducted in the field afterwards. However, there are indications that these studies are very scanty, given the large size of Nigerian property market.

The overall aim of this article is to review notable studies on property investment performance in Nigeria with a view to providing detail insight about the extent of studies done on this subject by researchers in Nigeria. The outcome of this study is equally expected to guide researchers who may be interested in this topical issue as the gap(s) that exist in literature would be established in this study. The specific objectives of this study therefore are to: (1) establish authors' contribution to this research area and their affiliated institutions or organisations in Nigeria (2) examine the subject and geographical focus of property investment performance research in Nigeria (3) establish the trend in research on property investment performance in Nigeria and (4) assess the common performance measurement techniques adopted in previous studies on the topic. The operational definition of trend as used in this study is the number of researches conducted on the topic yearly over the period under investigation (2000-2020). This research report consists of six sections. After the foregoing introductory section is a review of the existing literatures. The study methodology is presented in section three while and section four contains the results of the study. The discussion of the study's findings is presented in section five and the final section is the conclusion and the study's recommendations.

2.0 LITERATURE REVIEW

2.1 The Emergence of Investment Performance Measurement

This subsection gives conceptual background to performance measurement of investment assets generally and particularly, property investments. The appraisal of the performance of investment portfolio became a matter of concern in the United States (US) during the 1950s and 1960s leading to the first consciously conducted investigation on the subject matter by the Bank Administration Institute (BAI) that subsequently published its findings in 1968 (Finlay & Tyler, 1991). Different methods of investment performance measurement were examined and the BAI's report eventually recommended the use of time-weighted rate of return (TWRR) as investment performance measurement index. The issue of risk measurement was equally examined and the BAI's report recommended that risk be determined by calculating the investment returns' variability over a specified time frame. The BAI's recommendations gained popularity in 1970 throughout the US.

While the BAI's recommendations were popularly adopted in practice in the US, the reverse was the case for the United Kingdom (UK) investment analysts. Rather, in 1970, the Society of Investment Analysts (SIA) in the UK set up a research committee to further examine the issue. The SIA committee's report recommended the use of the use of money-weighted rate of return (MWRR) as against the TWRR even though the merits of TWRR were acknowledged by the finding of committee. It was a notable step forward in developing a standard framework for investment performance, mainly stocks investment, in the UK. Although, the SIA's committee's report recognised a growing trend for investment by pension funds in real estate but suggested real estate investment be excluded when carrying out performance measurement of investment portfolios. Because there was no major research done to develop a framework that would address the issue involved in real estate investment performance, this sector lagged behind at that time. Kerrigan (2014) identified the factors that hindered the development of real estate investment performance measurement techniques and indices at this early stage to include:

i. Investing in real estate by pension funds was limited;
ii. There was dearth of reliable property transaction data;
iii. Absence of property value index with which to make property investment performance comparison and;
iv. There was no pressure upon real estate investment analysts to provide performance measurement at the time.

Wolski (2017) observed that the process of real estate performance measurement and analysis requires detailed and continuous examination as there is still much work to be done.

2.2 Some Real Estate Investment Performance Studies outside Nigeria

One of the earliest studies on comparative performance of direct and securitised real estate investment was by Giliberto (1990). The returns on these categories of real estate investment were computed and analysed using correlation coefficient to examine the relationship between the two asset types. The findings of the study revealed that a significant relationship existed between direct real estate investment and EREITs. Liow (1997) investigated the performance of listed property in Singaporean property market. Data on stock values from 1975 to 19995 were retrieved from the Stock Exchange of Singapore (SES) and analysed. The Sharpe ratio, Treynor ration, Jensen were calculated for the sample and comparison made between the sample's statistic and the market statistic. Further analysis was done using the Spearman Rank Correlation to examine the consistency of the property companies' return performances for the study period. The correlation metrics of the investment returns between property stocks and market portfolio were computed. The study's findings showed that listed property shares under-performed the stock market. Property companies were equally discovered to perform poorer than the stock market on the basis of risk-adjusted return.

Real estate securities performance in developing countries of Asia was critically analysed by Ooi and Liow (2004). The risk-returns of these investment assets were determined from transaction data of real estate securities and stocks between 1992 and 2002. The study's findings revealed that the traded property shares in five of the countries investigated under-performed the general stocks. This finding collaborated one of the earlier findings of Liow (1997) that property stocks underperformed the overall stock market in the US for the period investigated. In a study conducted by Boshoff and Cloete (2010), the interrelationship between the performances of direct real estate investment and listed property shares in South Africa was examined. The share prices of listed properties and values of sampled direct real estate investment assets over a 11-year period (1999 to 2009) were collected and analysed using correlation statistic. The finding of the study showed that there was a strong correlation between direct and securitised real estate investment in the study area for the period under assessment. Therefore, the study concluded that securitised property investment is a good substitute for direct real estate investment.

Similarly, Boudry et al. (2012) evaluated the relationship between the performance of direct and indirect property investment in the United States. Transaction based indexes were used to determine the correlation coefficient of the two real estate asset classes. The findings of the study indicated a strong relationship between direct and property shares in the study areas.

The relationship that existed between the performance of private and public property investments in Australia, Netherland, United Kingdom and United States property markets was studied by Yunus et al. (2012). Co-integration analysis was carried out using property transaction data of these categories of investments. The results of the analysis revealed that there existed long-run integration between privately and publicly traded real estate investment assets in the study areas. Haran et al. (2013) studied the performance behaviours of property investments in selected developed countries. Lead-lag correlation and co-integration models were adopted to analyse the data collected. The outcome of the study indicated that the returns of direct and indirect real estate investments varied and not integrated. This finding was at variance with the findings of Boshoff and Cloete (2010), Boudry et al. (2012) and Yunus et al. (2012). Kerrigan (2014) carried out a study that provided an overview of property investment performance in the United State of America between 1983 and 2012. The authors created CWI (cumulative wealth index) for the assets and compared their total returns. The risk-returns of all the assets were equally determined using the Sharpe and Treynor indexes. The study revealed that equity real estate investment trusts outperformed direct real estate investment on the basis of average annual returns on investment. However, apartment real estate outperformed other assets.

The long-term relationship between direct and indirect real estate property investments as well as stocks and bonds in Australian property market from 1985 to 2013 was critically analysed by Yong and Pham (2015). The study used Granger's binary variables to investigate the causal and the long-term co-integration relationship between the two assets. The study showed that there is a long-term equilibrium relationship between direct real estate, A-REITs, the general stock market, and long-term interests. Similarly, Kainulainen (2015) studied the long-term and short-term interrelationships between listed real estate and direct real estate, and the Finnish stock market. Using quarterly data from 1992 to 2014, Johnson Co-integration and Granger Causality Test were used to analyse the dynamic short-term and long-term relationships between assets. The results show that there is no long-term co-integration relationship between the direct real estate sector and the stock market. However, securitised real estate was found to have a long-term relationship with the stock market.

In addition, Kampamba and Nnang (2016) conducted a study comparing return on real estate investment with return on capital investment to provide potential investors in Botswana with information on the performance of direct and securitised real estate investments. Data was analyzed using statistical measures of variation (mean, variance and standard deviation) and qualitative data was analysed using content analysis. The results of the study showed that the return on investment in real estate was higher than that of stocks and shares. In conclusion, it is worth noting that most of the literatures reviewed above have one thing in common: Compared with the Nigerian economy, they are research conducted in a more advanced economy whose property markets are more mature than the Nigerian real estate market. Therefore, it may imply that the results or findings of these studies may not be adequate to judge the performance of real estate investment in Nigeria. The studies conducted in Nigeria on the subject matter are reviewed in the next subsection.

2.3 Review of Previous Studies on Real Estate Investment Performance in Nigeria

In the Nigeria, some research efforts have been made in the area of real estate investment performance. As earlier mentioned, this study is anchored on the previous researches on the performance of real estate investment in the Nigeria. In this subsection, previous studies on performances of real estate investment in Nigeria are reviewed under four major sub-themes as follows: (a) Studies that compared the performance of direct real estate investment assets (b) those that compared direct and indirect (securitised) real estate investment performance and non-property stocks or shares performances (c) comparative studies of the performance of indirect real estate and non-property stocks (d) non-comparative studies of real estate investment performance.

2.3.1 Studies that Compared Performance of Direct Real Estate Investment Assets in Nigeria

Some studies have been conducted in Nigeria that examined the comparative performance of direct real estate investment within and between towns or cities. One of such studies was Mfam and Kalu (2012) which examined the return and risk attributes of residential and commercial real estate investments in Calabar, Southeast Nigeria. Data on rental and capital values of the sampled properties were collected and analysed using time weighted mean. Return and risk of the investments were determined over the study period of 17 years. The results revealed that commercial properties performed better than residential properties on the bases of return and risk during the period under assessment. A comparative analysis of the performance of residential and commercial real estate investments in Ilorin was conducted by Oyewole (2013). This study covered the period 2000 to 2011; focusing on average return, risk-adjusted return, earnings growth and capital appreciation. The results showed that retail commercial real estate investments outperformed residential real estate investments with an average annual return of 14.2% and 11.8% respectively. This result is in agreement with that of Mfam and Kalu (2012).

Dabara et al. (2014) analysed the return and risk characteristics of office and retail property investments in the city of Osogbo using a survey research methodology. Data for the study were retrieved from all the valuation firms in the study area and used to determine the income, capital and total return on investment of the sampled commercial properties. Data were further analysed using weighted mean and standard deviation was used as a risk measure. The results showed that investments in commercial properties in the study area offer a positive rate of return ranging between 3.12% and 34.35% while the corresponding risk fluctuated in the range of about 1.50% to 10.11%. Similarly, Udoekanem et al. (2014) examined the investment performance of office spaces in the commercial property market in Abuja metropolis. Rental value data from 2001 to 2012 were collected from firms of practicing estate surveyors and valuers in Abuja. The main finding of the study was that the annual office building rental growth rate in Abuja during the period ranged between 8.3% and 11.97%, with Wuse district recording the higher annual rental growth rate. Based on the calculated coefficient of variation, the risk of achieving this ratio in Wuse was relatively low. Ade (2015) assessed the performance of residential properties in Ado Ekiti. From the survey, the capital

value, rental value and return on investment of apartments in the selected areas of Ado Ekiti were established during the period of 2008 to 2014. The research result shows that residential real estate investments in GRA, Adebayo and Ajilosun generate the highest growth in rental and capital values while investments in residential real estate in Ajebandele, Basiri and Housing Oke Ila showed lower returns.

At the regional level, Bello et al. (2018) conducted a comparative study of hotels and commercial property investments in the southwestern region of Nigeria. The investment characteristics of hotel and other commercial properties were analysed through the measurement of their performance on the basis of their occupancy rates. The research result showed that commercial properties and hotels behave similarly on four of the variables measured and differently on the remaining eight variables. The study also shows that there is no significant difference in the occupancy rate of commercial and hotel investment properties, as demonstrated by the Kolmogorov Smirnov two-tests. The study concluded that investing in hotel can be a more attractive and better investment, as evidenced by its short-term prepaid features and dynamic response to economic conditions when compared to investment in commercial properties. A comparative assessment of the performance of commercial and residential property investments in the city of Onitsha, Anambra state between 2007 and 2016 was researched by Udobi et al. (2018). Performances on the bases of annual return on investment and the risk levels were examined. The research data covers the rent and capital value of the residential and commercial property investments sampled. The data gathered were used to determine the average returns on investment while standard deviation and coefficient of variation were used to determine the risk levels. The results showed that commercial property outperformed residential property investments over the period of the study while on the other hand, residential property investments performed better on the basis risk-to-return profile. Obinna et al. (2018) looked at the performance of commercial property as an investment vehicle in Nnewi, Anambra State between 2006 and 2010 and 2011 to 2015 were determined and a comparison of the two periods was made. The study hypothesized that there was no significant difference in the return performances of shops, offices and warehouses in the town of Nnewi. However, the finding of the study showed that there were significant differences in the performance of shops and warehouses between the selected locations in the study area. A similar study was conducted by Mbah and Udobi (2019) to examine the comparative performance of commercial and residential property investment in Awka in Anambra state with relative to risk and interrelationship between 2008 and 2017. Mean returns, standard deviation and covariance were used to assess the performance of the sampled real estate investments in the study area. The results of the study indicated that investing in commercial property was better than investing in residential property. The study's finding was in consonant with Udobi et al. (2018) and Obinna et al. (2018).

The performance of residential and commercial property investments in the city of Enugu from 2010 to 2017 was conducted by Diala et al. (2019) and Nissi et al. (2019). Rental and capital value data for these properties over the eight years were collected from the estate firms in the study area. The collected data were analysed using the mean return, standard deviation and coefficient of variation to obtain the return and associated risk for respectively. The results showed that commercial property investments performed better than residential property investment for the period investigated. A similar study was conducted by Mbah and Udobi (2019) to investigate the relative performance of residential and commercial property investments in Awka, Anambra state between 2008 and 2017. Mean return, standard deviation and covariance were used to evaluate the different performance levels of property investments in the study area. The results of the study revealed that investing in commercial property was better than investing in residential property in Awka.

In Enugu, comparative studies of residential and commercial property investment performances from 2010 to 2017 were conducted by Diala et al. (2019) and Nissi et al. (2019). Data on the rents and returns on capital of these properties over the eight-year period were collected from the two estate firms in the study area. Arithmetic mean returns, standard deviations and coefficient of variations were computed from the data collected for the period. The study found that commercial property investments performed better, both on the bases of returns and risk, than residential properties in the study area. A similar study was conducted by Mbah and Udobi (2019) to examine the performance of residential and commercial property investment also in Awka in Anambra state with respect to investment returns and the associated risk within the period of 2008 and 2017. Mean returns, standard deviations and co-variance statistics were used to evaluate the performance of these categories of real estate investment within the study area. The findings of the study indicated that investment in commercial property performed satisfactorily better than investment in residential property. The findings of the study were in consonant with Udobi et al. (2018) and Obinna et al. (2018).

The performance of residential property investment in Lagos State was assessed by Okonu et al. (2019), using 1004 residential estate as a case study. The data, which were retrieved from the managing company for the period from 2010 to 2017, was analysed and the return-to-risk ratio determined. The research results showed that the risks associated with different apartments are high and there was a high relationship between returns accrued to the apartments. A more elaborate study the performance of commercial and residential property investments was carried out by Osa and Ekenta (2019). The study focused on the investment performance of residential and commercial properties in Lagos and Port Harcourt. The study samples were drawn from Victoria Island (Lagos) and New GRA (Port Harcourt) from which rental and capital value data from 2011 to 2017 were collected and analysed. The study adopted a cross-sectional survey design and questionnaires were used to collect rent and sales value data from practicing estate firms. The geometric mean returns for the property were calculated and the risks for achieving these returns were determined using standard deviations and coefficient of variations. Performance indicators computed revealed that commercial property investments in Victoria Island Lagos and New GRA Port Harcourt outperformed residential property investments and are also less risky. The trend in the performance of commercial and residential property investments in the southeastern Nigeria was examined by Awa et al. (2020) using Aba, Abakaliki and Owerri as case study. The study developed a forecast model for future rental and capital values determination in the selected cities. Annual rental and capital value data were collected through a questionnaire survey of these property investment classes. Regression analysis was used to model rental and capital value trends in the study areas. The outcome of the study revealed that while properties in Abakaliki recorded the highest annual rental growth rate, Owerri recorded the highest capital growth rate for the period under assessment. The study concluded that the growth trend in rents was high for all types of properties in the study area, except for Owerri, where the growth in capital value was greater than the growth in rental value for all types of real estate types.

2.3.2 Comparative Studies of the Performance of Direct and Indirect Real Estate Investments and Investment in Non-Real Estate Shares or Stocks in Nigeria

Studies around the world have shown that direct property investment underperforms securitised real estate, stocks and shares on nominal return basis but outperforms in terms of return-to-risk basis. This characteristic of direct real estate investment has accorded it a wider acceptability by risk-averse investors around the world. To examine this fact, Bello (2003) conducted a comparative analysis of the performance of residential property investments in Lagos and common equity investments. The relative performance of these investment assets was examined by measuring the average annual return, risk-adjusted return and capital growth. The results of the study indicated that investment in common stocks outperformed residential real estate investments in terms of absolute return. The results of the study also revealed that the risk associated with residential property investment was lower than that of common stocks. According to Oyewole (2006), while securitised real estate investment performed better in terms of returns and capital growth, direct real estate investment performed better on the basis of risk-return. This was the outcome of the study conducted to compare the performance of direct real estate investment in Lagos and the shares of UACN Property Development Company during the period from 1999 to 2004. The performance indexes used were average return on investment, income and capital growths, Sharpe Index and coefficient of variation. The performance of property investments compared to stocks or shares from 2001 to 2007 was examined by Olaleye et al. (2010). The average annual rate of return on investment of the selected assets was computed. Investment risk was determined using standard deviation. The findings of the study suggested that property investment performed better than stock or shares of other assets traded on the Nigerian Stock Exchange for the period under investigation. They equally showed diversification potentials which investors of a mixed asset portfolio can take advantage of. Similarly, Bello (2012) analysed the risk and return performance of commercial property investment in southwestern Nigeria. Samples for the study were drawn from Lagos, Ibadan and Abeokuta property market and selected stocks from the NSE for the period 2000 to 2009. The inflation hedging and diversification potentials of these investment categories were examined. The research's findings showed that the average return of all selected stock market investments is higher than that of commercial property investment. In terms of risk, commercial property investment exhibited a lower risk than stocks. However, it was found that investing in stocks offers a better hedge against inflation than commercial property. Contrary to what seems to be a popular claim in literature that real estate is the best hedge against inflation, this study suggested that real estate may not be the best hedge against inflation after all.

Udobi et al. (2013) had studied the performance of property investments in Onitsha compared to investment in bank shares in Nigeria over the period 2000 to 2010. The average annual yield on investment was calculated while the risk level of investment was determined through standard deviation and coefficient of variation. This study found that, based on the calculated performance indicators, investing in real property is safer than investing in bank stocks though with lower yield. In similar studies, Dabara et al. (2015) and Dabara et al. (2016) examined the investment performance of securitised and direct real estate investments in Gombe state compared to selected financial assets in Nigeria between 2005 and 2014. The data collected were used to calculate the average annual total returns on both asset and portfolio and their corresponding risk levels determined. Weighted mean, Pearson Product Moment correlation and ordinary least square regression were the analytical statistics adopted. The results of the analysis showed that investing in direct real estate yielded the highest return as well as the highest level of risk during the period of assessment. The study equally revealed that only direct real estate investment demonstrates the existence of diversification potential. Oyewole (2014) carried out similar study but on the performance of direct and securitised property investments in Lagos. The historical data collected through questionnaire survey was used to compute the average annual return on investment from 2000 to 2012. The total return for each type of property investment was analysed using the mean return, standard deviation, coefficient of variation and Sharpe Index. The research found that securitised real estate investments performed better than direct property investments on a nominal basis. However, direct real estate investments perform better in terms of return-to-risk returns as measured through Sharpe Index.

Ekemode and Olaleye (2016) conducted a study to compare the relative performance of indirect and direct property investments in Lagos. The average annual total returns on these investment properties were determined from the rental, capital and equity values collected for the period 1999 to 2014. To examine the volatility of the property market, the study period was sub-divided into short- and medium-term periods. The study found that property stocks outperformed unsmooth direct real estate on a risk-return basis. Adeogun et al. (2017) studied the comparative performance between private property investment in Abuja and investing in property shares to find out if the two property investment options are better substitutes or not. The study analysed the collected data and the results of the study showed that investing in property shares was riskier than investing in private real estate. There was equally a strong and positive correlation between property shares and private real estate investments. This indicated that the two types of property investment were good substitutes. The finding of this study was in consonant with the finding of Oyewole (2014) but at variant with Dabara et al. (2015) and Dabara et al. (2016). Similarly, Nwokenkwo et al. (2019) analysed stock market performance and investments in residential real estate in Bida, Niger State. Purposive sampling technique was adopted with regards to data collection. The data were used to determine the return and risk performances of the assets. The study further assessed the relationship that existed between the return on investment of residential property and stocks. The study found that the highest average yields were 5.22% and 7.36% and the lowest was 3.43% and 3.05% for 2-bedroom and 3-bedroom apartments respectively, varying by location in the study area, while the returns on selected stocks positively correlated with the yields on residential real estate on the basis of average yield and risk-to-return.

2.3.3 Studies on Performance of Indirect Real Estate versus Investment in Stocks in Nigeria

The first notable research in this subject area was Amidu and Aluko (2006). The study examined the performance of listed properties and construction companies in Nigeria between 2001 and 2005. The Sharpe Index was employed to determine the performance of the companies included in the study. The results showed that both listed construction companies and property companies underperformed stocks on the basis of average yield and risk. However, both offer an opportunity for portfolio diversification as indicated by weak

correlation between the assets. Amidu et al. (2008) extend the work of Amidu and Aluko (2006) by examining the performance of property shares and other assets traded on the Nigerian Stock Exchange. The annual opening prices, closing prices and dividends of the listed companies in the sample as well as data on the All Stocks Index (ASI), the CPI and returns on 90-day T-Bill for the period 1999-2005 were the data obtained and analysed using Regression and Sharpe ratio. The study found that while property outperformed the market on a nominal basis, it underperformed the market on a return-to-risk basis. However, property share did not provide a good hedge against inflation and does not correlate to the stock market. The results of the study further implied that real estate security is not a good substitute for direct investment in real estate even if it presents qualities of diversification.

The performance and diversification potential of property stocks in Nigeria were investigated by Emele and Umeh (2013) using samples of property stocks and other selected common stocks from 2003 to 2009. Mean variance and correlation analysis were employed to examine the correlation of property stocks with other common stocks. The result indicated a positive correlation between property stocks and common stocks showed that property equities did not perform better than other stocks and also property stocks did not offer diversification benefits. Ayodele and Olaleye (2015) examined the risk-adjusted performance of public real estate and other assets in the Nigerian investment market with an emphasis on downside risk. A quarterly return analysis from 2000 to 2013 was carried out. The study analysed the downside risks of securitised real estate and other investment assets in emerging African economies with specific reference to the Nigerian market. It compared the results obtained from the standard deviation and the downward deviation as well as the Sharpe ratio and the Sortino ratio. The study found that listed real estate stocks outperform other asset classes in terms of return, while other assets outperform listed real estate stocks in terms of risk on the basis of downside risk values. Comparing the excess returns to the risks; as measured by the Sortino ratio, the result indicated that equities, followed by listed real estate values, underperform other assets; while debentures outperformed other assets.

In addition, a comparative assessment of the performance and diversification benefits of real property and other selected stocks in Nigeria was carried out by Ekemode and Oyewole (2017). Data used for the study included monthly capital returns of real estate stocks and other selected individual securities traded on the Nigerian Stock Exchange. The share values of UACN Property Development Company were retrieved and analysed. Other selected equities included in the study were: 7UP, Berger Paints, Evans Pharmaceutical, Flour Mill, Guarantee Trust Bank, Julius Berger, Nigeria Breweries, Nestlé, Okomu Oil and Total Petroleum. Each of these stocks represents each sub-sector of the NSE. The opening and closing prices of the asset were obtained from daily price list published by the Nigeria Stock Exchange for a period of 10 years, from January 2004 to December 2014. These prices were converted into capital returns, using holding period return analysis. The relationship between each individual asset/stock was paired and the real estate stock examined using correlation analysis. The results of the study showed that real estate stocks present stable and favorable returns that can compete with other investment options on the Nigerian stock market on a risk-return basis.

Umeh and Okonu (2018) examined the contribution of real estate to the performance of the Nigerian Pension Fund's mixed asset portfolio to provide investment decision-making guidance for institutional investors and portfolio managers. The data for the study were collected from the annual and quarterly reports of the Nigerian Pensions Commission over a 10-year period from 2007 to 2016. The return on investment as well as the performance of different asset classes was calculated using Markowitz's performance measure. The results of the study show that returns from real estate have a weak negative correlation with returns from ordinary shares, private equity, cash and other assets, and foreign investment. The analysis also showed that returns on property investments have a low positive correlation with returns on government securities, and open and closed funds. It is worth noting that the conclusions of the studies reviewed in this sub-section vary widely. However, most of the findings of the reviewed studies have generally shown that securitised real estate investments behaved partly as a direct real estate investment and partly as investment in other stocks and shares.

2.3.4 Other Related Studies on Performance of Real Estate Investments in Nigeria

The first known study on the performance of real estate investments in Nigeria was Olaleye (2000) titled "*A study of property portfolio management practice in Nigeria*". This study used measures of return, standard deviation and Sharpe Index as performance measures. The study found that while portfolios in Ikeja outperformed government securities, the portfolios in Yaba district performed below the investor's target rate. The inflation-hedging characteristics of residential property investment in Gombe state was examined by Dabara (2015). The study adopted a survey approach to obtain key data of rental values of residential properties from valuation firms in the study area. These data were then converted to total returns. The secondary data used for the study included the consumer price index (CPI) as proxy for real inflation and yields on 90-day Treasury bill for the period from 2003 to 2012. Unexpected inflation was calculated as the difference between actual inflation and expected inflation. The three datasets were tested for PhillipPerron unit root and ordinary least squares regression analysis carried out. The study found that the inflation hedge performance of residential property investments in Gombe provided a partial hedge against inflation. Expected inflation provides complete hedging while unexpected inflation provides perverse hedge. Olanrele et al. (2015) examined the performance of Nigeria Real Estate Investment Trust (N-REIT) against index calculation and risk-adjusted return. The study assessed the performance of N-REIT using the Nigeria All Share Index (ASI) as a benchmark. The study adopted a quantitative analysis of financial data related to stock trading and stock trading of REITs on the Nigerian Stock Exchange for the period July 2010 to June 2014 to construct the weekly index. The finding of the research showed that the Nigeria REIT Index is valued at almost constant lower than the All Stocks Index, reflecting the underperformance of risk-returns. The N-REIT is also considered a low-cap REIT and has seen a decline in capitalisation.

The work of Udoekanem et al. (2015) which examined the dynamics of office rents for commercial properties in Minna. Data on the rental value of office spaces were obtained from estate firms operating in the area during the period 2001-2012. Key factors responsible for the change in office rents in the commercial property market in Minna are real GDP growth and vacancy rate. The performance of N-REITs in Nigeria was assessed by Olanrele (2016). Data on yields on N-REITs were computed and principal component analysis and correlation statistics used to further analyse the collected data. The research found that N-REIT outperforms the market and offered low

returns. From the literature reviewed in the above subsections, it is evident that most of the previous studies on the performance of real estate investments have mainly focused on the real estate markets of western and eastern Nigeria. Additionally, no previous study has used the modified Sharpe ratio as a remedy for the non-normality characteristics of real estate transaction data distribution. This violated an important assumption (the data should be normally distributed) to apply such performance measurement techniques such as standard deviation and the traditional Sharpe ratio. The non-normality the distribution of real estate return data has been debated. This question has been addressed by plentiful prior studies such as Byrne and Lee (1997), Lizieri and Ward (2000), Young et al. (2006) and Young (2008) as they have shown that real estate returns tend to be unusual. Amédée-Manesme et al. (2017) also asserted that real estate returns generally exhibit negative skewness and a fat tail indicates leptokurtosis.

2.4 Investment Performance Measurement Techniques

Twenty-eight techniques of measurement were identified based on the literature that were reviewed and presented in Table 1. Each of these measures may be applied to determine the various indicators or indices of performance measurement. These techniques can be grouped into four categories as follows:

(i) **General measures and measures of return**: investment returns can either be income or capital return. Income returns from real estate investments are usually in the form of rent received periodically by the lessor or landlord. Capital returns result from the appreciation of property values over a given period during an investment life cycle.

(ii) **Measures of risk**: In his pioneering work on 'Modern Portfolio Theory', Markowitz viewed investment risk as the likelihood that the actual returns would be less than the investor's expected return. Whereas there seems to be a general consensus to this definition, the measure of risk has been debated resulting to several methods of risk measurement such as variance, mean deviations and standard deviation.

(iii) **Combined measures of return and risk**: The two major classification return and risk performance of investment are reward-to-variability measures and reward-to-volatility measures. These measures include coefficient of variation, Sharpe Ratio, Jensen Ratio, and Treynor Ratio.

(iv) **Measures of the degree of diversification**: The practice investment diversification involves the combination of assets that are not correlated in a portfolio with a view to spreading risks. They include portfolio balance, and measure of portfolio efficiency and effectiveness of portfolio diversification. An assessment of the adoption of these techniques for analysing real estate investment performance by the previous researchers is one of the objectives of this study. The outcome is presented in section 4 of this report.

Table 1 Investment performance measurement techniques
(Source: Adapted from Finlay and Tyler, 1991)

S/No.	Performance Measurement Techniques
	General Measures and Measure of Returns
1	Income yield on cost
2	Income yield on value
3	Efficiency of income collection
4	Rate of income appreciation
5	Rate of growth in full rental value
6	Implicit rate of rental growth
7	Reversionary potential
8	Rate of capital appreciation
9	Time-weighted total return
10	Money-weighted total return
11	Internal rate of return
12	Financial management rate of return
	Measure of Risks
13	Historic risk factor
14	Variance
15	Downside semi-variance
16	Downside real variance
17	Standard Deviation element of systematic risk
18	Standard Deviation element of unsystematic risk
19	Beta coefficient
	Combined Measure of Return and Risk
20	Coefficient of Variation
21	Sharpe Ratio/index
22	Sortino Ration/index
23	Modified Sharpe Ratio/index
24	Treynor Index
25	Jensen Index

	Measure of the degree of Diversification
26	Portfolio balance
27	Correlation coefficients
28	Effectiveness/efficiency of diversification

3.0 METHODOLOGY

The major objective of this study is to: establish the contributions of the authors to this area of study and their affiliated organisations or institutions in Nigeria; review the subject and geographic focus of studies on real estate investment operations in Nigeria; establish trends or frequencies of studies on property investment performance in Nigeria and assess performance measurement techniques applied in previous studies on the subject. The research methods of Darko and Chan (2016) and Abidoye and Chan (2017) were adopted for this study. Abidoye and Chan (2017) reviewed the adoption of hedonic price modeling for property valuation in Nigeria. Their methodologies are considered suitable for this study and were therefore employed here. The data used for this study are purely secondary. These are data and information from published and unpublished studies on the performance of property investment. Published and unpublished studies in this area of study were retrieved and reviewed. The sources of these data and information are higher institution libraries and online databases such as Google Scholar, ScienceDirect, ProQuest, and ResearchGate. There are also print journals (national and international) as well as published and unpublished Master's and doctoral theses. For online searches, keywords such as 'real estate, property, 'investment performance,' performance measurement, 'investment performance analysis' and 'Nigeria' were used for research. A data search framework for this study is shown in Figure 1. In order to be able to identify the pioneering researchers in this subject area, the start year of search was left opened while the end date was pegged to year 2020 which is the year of this study.

Upon completion of the search, a total of thirty-nine (39) published studies and two (2) unpublished studies in Nigeria were reviewed and analysed. Of the studies retrieved, two (2) of which were edited in the conference proceedings, thirty-six (36) were peer-reviewed journal articles, one (1) published PhD thesis, and two (2) unpublished master's theses were retrieved, bringing the total to forty-one (41) studies that met the selection criteria as shown in Figure 1. Undergraduate research projects were excluded from the study because the authors perceived the lack of rigor in their approach to research as well as their narrow scope. The characteristics of these articles such as author, author affiliation, annual publication trends, and target research areas were analysed with the aid of descriptive statistical tools. To assess the author's contributions and the author's relationship to the topic, the procedure of Abidoye and Chan (2017) was adapted. In this way, the authors' contribution was determined by allotting a value of "1" to single authored study, '0.6' to first author and '0.4' to the second author for an article with two authors and so on as contained in Table 2. There is no distinction between research types or articles in term of scoring.

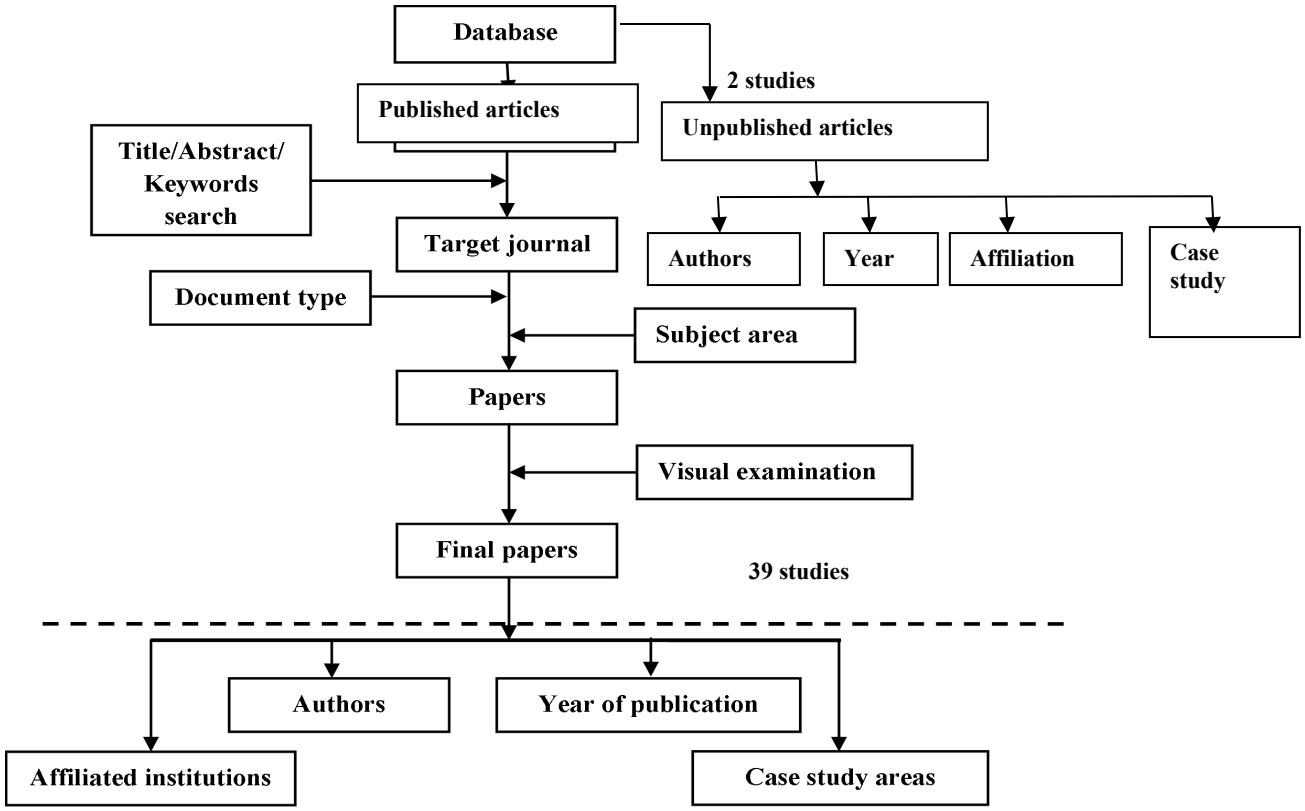

Figure 1 Research framework
(Source: Adapted from Abidoye and Chan, 2017)

Table 2 Score matrix for multiple authored articles
(Source: Adapted from Darko and Chan, 2016)

Number of authors	Order of specific authors				
	1	**2**	**3**	**4**	**5**
1	1.00				
2	0.60	0.40			
3	0.47	0.32	0.21		
4	0.42	0.28	0.18	0.12	
5	0.38	0.26	0.17	0.11	0.08

4.0 RESULTS

This section presents and discusses the analysed data on the pool of authors of the reviewed studies, their affiliations, the study areas, the years in which they conducted those studies and the measurement techniques.

4.1 Affiliations of Authors

The affiliations of the authors of the reviewed literatures are presented in Table 3. Universities (federal, state and private), polytechnics and government agencies were the identified affiliations. The study identified 16 universities, 6 polytechnics, 1 institute and 1 government body that the authors were affiliated to. It is worth noting that real estate firms were not among the identified authors' affiliations.

Table 3 Authors' affiliations, number of studies, feature and scores
(Source: Authors' analysis)

S/No.	Affiliations	Category	No. of studies	No. of time authors featured in studies	Score
1	Obafemi Awolowo University (OAU), Ile-Ife	University	14	22	12.41
2	Federal Polytechnic, Ede	Polytechnic	6	14	4.54
3	University of Lagos, Akoka	University	3	8	3.00
4	Nnamdi Azikwe University, Awka	University	3	7	2.79
5	University of Uyo, Uyo	University	3	7	2.58
6	Federal University of Technology, Minna	University	3	5	2.54
7	University of Ilorin, Ilorin	University	3	3	1.94
8	Institute of Management & Technology, Enugu	Institute	3	3	0.63
9	University of Malaya, Malaysia	University	2	7	3.09
10	Federal Polytechnic, Bida	Polytechnic	1	3	1.0
11	River State University, Portharcourt	University	1	2	1.0
12	Enugu State University of Technology, Enugu	University	1	2	0.79
13	Moshood Abiola Polytechnic, Abeokuta	Polytechnic	1	2	0.53
14	Federal Polytechnic, Ado-Ekiti	Polytechnic	1	1	1.00
15	Federal University of Technology, Akure	University	1	1	1.0
16	Baze University, Abuja	University	1	1	1.0
17	The Bells University of Technology, Otta, Ogun State	University	1	1	0.64
18	Abia State University, Uturu	University	1	1	0.61
19	Cross River University, Calabar	University	1	1	0.6
20	Abubakar Tafawa Balewa University, Bauchi	University	1	1	0.32
21	University of Technology, MARA, Malaysia	University	1	1	0.12
22	FMLH&UD, Abuja	Government Agency	1	1	0.11
23	The Polytechnic, Ibadan	Polytechnic	1	1	0.08
24	Federal Polytechnic, Offa	Polytechnic	1	1	0.08

4.2 Authors' Contributions

A total of sixty-one (61) real estate researchers (authors) were identified by this study to have contributed to research on property investment performance in Nigeria. Five of the top active authors in the subject area are showed in Table 4. These researchers were found to have contributed to at least three studies in this research area, irrespective of their authorship position.

Table 4 Authors' contributions
(Source: Authors' analysis)

S/No	Author	Affiliation	Position & No. of appearance in studies					Contribution score
			1st	2nd	3rd	4th	5th	
1	Olaleye, A.	Obafemi Awolowo University, Ile-Ife	4	2				3.87
2	Oyewole, M. O.	Obafemi Awolowo University Ile-Ife	3	1	1			3.61
3	Dabara, D. I.	Federal Polytechnic, Ede	6					3.21
4	Olanrele, O. O.	University of Malaya, Malaysia	3		1			2.10
5	Ekemode, B. J.	Obafemi Awolowo University, Ile-Ife	2	1				1.60

4.3 Focused Study Areas

Nigeria has been regarded as the most populous country in Africa at large and in West Africa in particular. Nigeria is made up of thirty-six states including the Federal Capital Territory (FCT), Abuja and is grouped into six geopolitical regions (North-East, North-West, North-Central, South-East, South-West and South-South). These geographical distributions are shown in Figure 2.

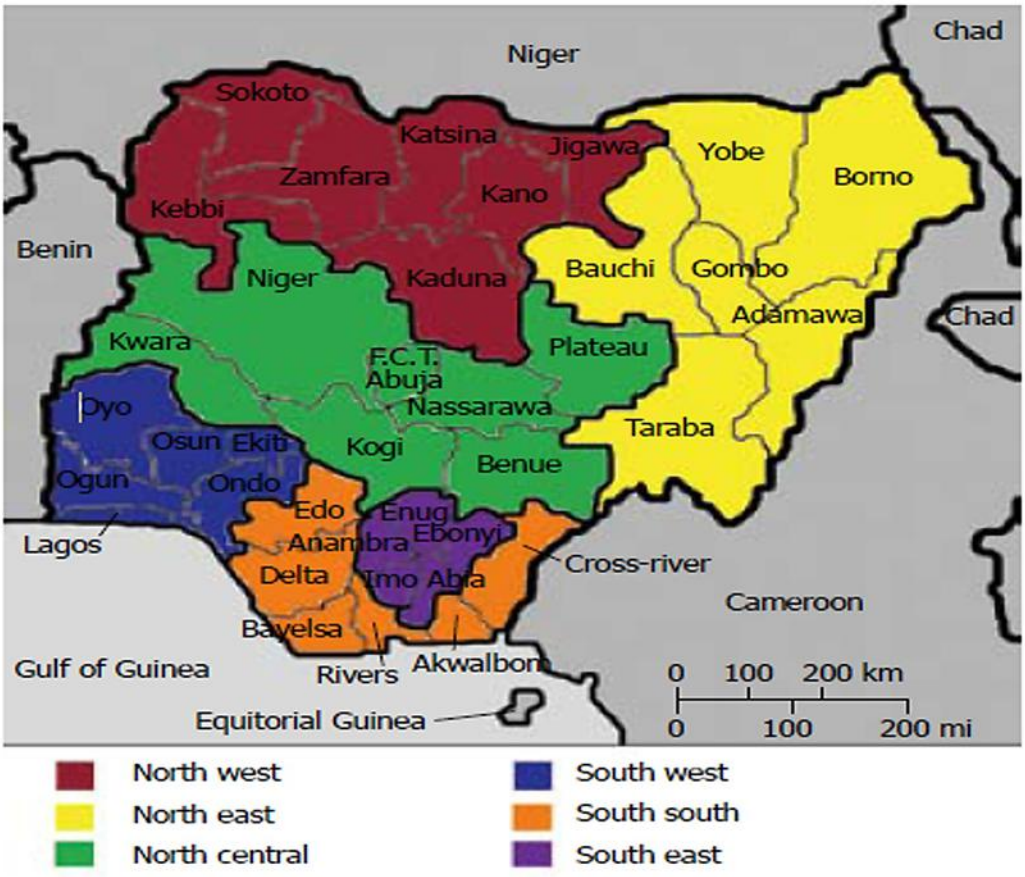

Figure 2 The six geopolitical zones of Nigeria including the Federal Capital Territory, Abuja
(Source: Adapted from Abidoye and Chan, 2017)

Table 5 shows the geographical scope of previous studies on real estate investment performance in Nigeria. nine (9) studies focused on the Lagos property market, two articles each focused on Abeokuta, Ibadan, Osogbo, Ado-Ekiti, Onitsha, Enugu metropolis and Abuja property markets and one article each focused on the remaining areas. Some articles combined more than one city as case study. Overall, eighteen studies focused on the property markets of South-western region of Nigeria representing 51.4% of the total studies analysed based on study areas, followed by South-east with nine studies representing 25.7%. North-central had five studies to its credit, accounting for about 14.3% while South-south had 2 studies (5.7%) and North-east recorded only 1 publication representing 2.9%.

Table 5 Study focus areas
(Source: Authors' analysis)

The study area	State	Geographical location	Total number of researches
Lagos metropolis	Lagos	South-west	9
Abeokuta	Ogun	South-west	2
Ibadan	Oyo	South-west	2
Osogbo	Osun	South-west	2
Ado-Ekiti	Ekiti	South-west	2
Onitsha	Anambra	South-east	2
Enugu Urban	Enugu	South-east	2
Abuja metropolis	Federal Capital Territory	North-central	2
Ilorin metropolis	Kwara	North-central	1
Bida	Niger	North-central	1
Akure	Ondo	South-west	1
Minna metropolis	Niger	North-central	1
Portharcourt	Rivers	South-south	1
Calabar	Cross River	South-south	1
Awka	Anambra	South-east	1
Aba	Abia	South-east	1
Owerri	Imo	South-east	1
Nnewi	Anambra	South-east	1
Abakaliki	Ebonyi	South-east	1
Gombe	Gombe	North-east	1

4.4 Annual Research Trend on Real Estate Investment Performance

The annual research trend on real estate investment performance is shown in Figure 3. From the graph, only six notable studies were conducted in this research area between 2000 and 2009, representing a 0.6 number of research works conducted annually on this topic in Nigeria. There was no notable study done on performance measurement of property investment in 2001, 2004, 2005, 2007 and 2009.

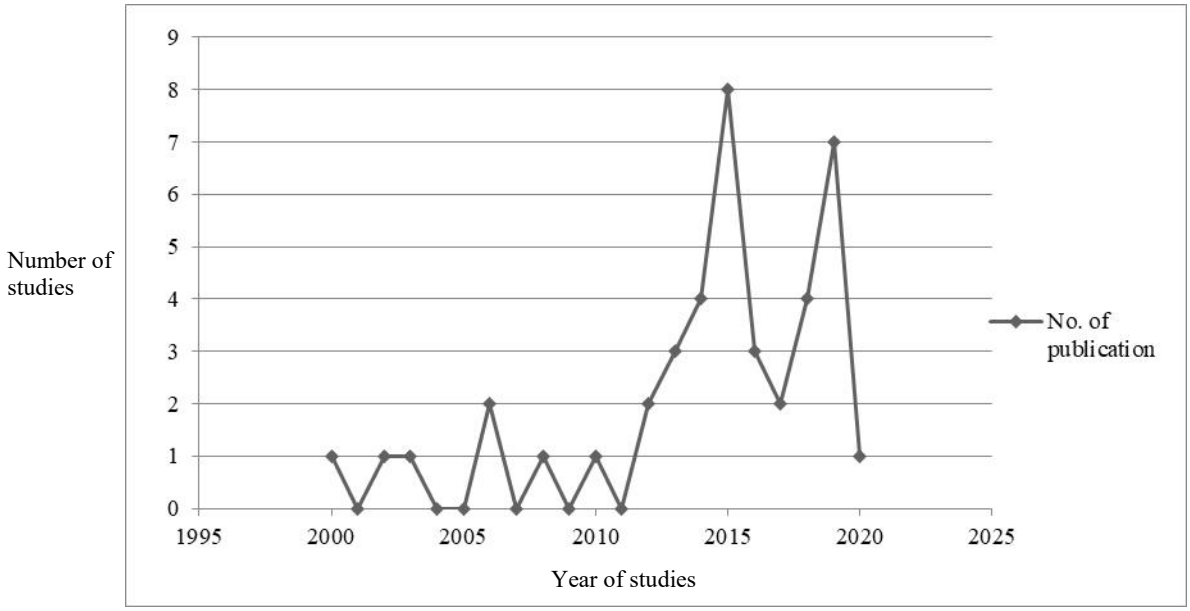

Figure 3 Trend in annual research on the subject
(Source: Authors' analysis)

4.5 Real Estate Investment Performance Measurement Techniques

Table 6 shows the various investment performance measurement techniques and their adoption by the authors of the reviewed studies. From the table, time-weighted total return was the popular measure of property investment return in 90.2% of the studies reviewed. Property investment risks were measured using variance and standard deviation techniques representing 95.1%. Risk-return performance measures were popularly done with coefficient of variation and Sharpe Ratio techniques.

Table 6 Real estate investment performance measurement techniques
(Source: Authors' analysis)

S/No.	Performance Measurement Techniques	No. of studies that adopted the Techniques	%
	General measures and Measure of Returns	0	0
1.	Income yield on investment cost	0	0
2.	Income yield on investment value	0	0
3.	The efficiency of income collection	0	0
4.	Rate of income appreciation	0	0
5.	Rate of growth in full rental value (FRV)	1	2.4
6.	Implicit rate of rental growth	1	2.4
7.	Reversionary potential	0	0
8.	Rate of capital appreciation	1	2.4
9.	Time-weighted rate of return (TWRR)	0	90.2
10.	Money-weighted rate of return (MWRR)	37	0
11.	Internal rate of return (IRR)	0	0
12.	Financial management rate of return (FMRR)	0	0
	Measure of Risks		
13.	The historic risk factor analysis	0	0
14.	Variance and standard deviation	39	95.1
15.	Downside semi-variance	2	4.9
16.	Downside real variance	0	0
17.	Standard Deviation element of systematic risk	0	0
18.	Standard Deviation element of unsystematic risk	0	0
19.	Beta coefficient	2	4.9
	Combined Measure of Return and Risk		
20.	Coefficient of Variation	22	53.7
21.	Sharpe Ratio/index	33	80.5
22.	Sortino Ration/index	1	2.4
23.	Modified Sharpe Ratio/index	0	0
24.	Treynor Index	5	12.2
25.	Jensen Index	5	12.2
	Measure of the degree of Diversification		
26.	Portfolio balance	0	0
27.	Correlation coefficients	15	36.6
28.	Effectiveness/efficiency of diversification	2	4.9

5.0 DISCUSSION

In Table 2, about 73% of the authors were affiliated to universities, 25% to polytechnics/institute and 2% to government agency. Some of the authors that have contributed to this topic were affiliated to two universities in Malaysia. These results affirm the outcome of Abidoye and Chan (2017) and that of Adewunmi and Olaleye (2011). These studies had confirmed that university and polytechnic scholars were the major researchers in estate management in Nigeria. It therefore, suggests property firms are actively involved in property investment market research here in Nigeria. There is need to investigate the reason for the non-participation of real estate practitioners in this research area are worth investigating thus, an area for further research. Regarding the contributions of each of the affiliating institutions to this research area, as measured by the number of studies carried out by the respective affiliated authors, OAU, Ile-Ife and Federal polytechnic, Ede were the top two affiliating institutions. This suggests that these institutions have been actively involved in the promotion of real estate investment researches. They have 13 and 6 notable studies on property investment performance measurement to their credits respectively. Majority of the identified researchers were affiliated to these two top institutions; 22 authors from OAU and 14 authors from the Federal Polytechnic, Ede. Their contribution scores are 11.41 and 4.54 respectively. By implication, OAU is the leading research institution in this research area in Nigeria.

In Table 3, there is a total of 55 studies as against the 41 reviewed. This is due to the fact that there were research collaborations among authors from different institutions or affiliations. Thus, some affiliations appear with just one study assigned to them. For instance, there were collaborative efforts between authors from Federal Polytechnic, Ede and Obafemi Awolowo University, Ile-Ife; between Institute of Management and Technology, Enugu and University of Uyo; among University of Ilorin, Federal University of Technology, Minna and Abubakar Tafawa Balewa University, Bauchi among others. Also, there were also concerted efforts among the sixty-one researchers in real estate investment performance evaluation (see Appendix A). This is explained by the fact that about 81% studies were conducted by multiple authors with only about 19% single authors. This finding has helped to established that there is a significant level of research collaborations among scholars in the field of estate management in Nigeria.

With respect to authors' contribution scores are shown in Tables 4. Olaleye, A., was the top most active author in real estate investment performance research, having led four studies and co-authored two studies and obtained a total score of 3.87. Oyewole, M. O., Dabara, D. I. and Olanrele, O. O. came second, third and fourth with total scores of 3.61, 3.21 and 2.10 respectively. It was also discovered that Olaleye, A., Oyewole, M. O., and Dabara, D. were affiliated to the top two institutions; Olaleye, A. and Oyewole, M. O. from

Obafemi Awolowo University, Ile-Ife and Dabara, D. I. from Federal Polytechnic, Ede. This result suggests a positive interrelation between the affiliation of researchers and the number of research works conducted. According to the finding of this study, Olaleye, A., Oyewole, M. O. and Dabara, D. I. could be described as the leading researchers in property investment performance appraisal in Nigeria.

This study revealed that Olaleye, A. of Obafemi Awolowo University, Ile-Ife was the first to conduct a research on real estate investment performance measurement in Nigeria. Based on this information, it can be concluded that Olaleye, A. was the pioneer of real estate investment performance research in Nigeria. Real estate scholars such as Bello, O. M., Oyewole, M. O. and Amidu, A. were equally found to be some of the earlier real estate investment performance researchers in Nigeria. Most of the researches in real estate investment performance measurement targeted Lagos state property market. As shown in Table 5, nine (9) of the study reviewed were conducted in Lagos, two articles each focused on Abeokuta, Ibadan, Osogbo, Ado-Ekiti, Onitsha, Enugu metropolis and Abuja property markets and one article each focused on the remaining areas. Lagos property market received greatest attention probably because of the robustness of its real estate market transactions, high concentration of estate surveyors and valuers and the high presence of property investors in the area. It is worth noting that real estate investment performance study has not been carried out in one major geopolitical zone of Nigeria, the North-west. North-west is the most populous geopolitical region in the country with an active property market. These results show that the South-western region of Nigeria had received the most attention in the area of property investment performance research. The factors responsible for this low involvement of these other geopolitical zone in the research topic are beyond the scope of this work and yet another area for further study.

The finding of this study revealed a fluctuation in the annual research output in this topic. As depicted in Figure 3, from 2000 to 2009 only six notable studies were conducted in this research area. This shows that only 0.6 number of research works was carried out annually on the topic within this 10-year period. There was no notable study on real estate investment performance in the years 2001, 2004, 2005, 2007 and 2009. The limited studies during the period in Nigeria could be attributed to the low importance attached to this research area by scholars, practitioners and investors. The lack of quality property transaction data due to the emerging nature of the Nigerian property market during this period, as noted in Dugeri (2011), might have contributed also. In 2010 only one study was conducted and in 2011 no study was carried on the topic. From 2012 to 2020 there has been a consistency in yearly research on this topic. Years 2015 and 2019 recorded the highest number of studies with eight (8) and seven (7) studies respectively. Between 2010 and 2020, annual study on real estate investment performance was estimated at five studies per annum. From this finding, it is reasonable to assert that property investment performance measurement received increased attention in Nigeria in 2015. However, in 2016 and 2017, the number of research efforts carried out on this subject dropped but picked up in 2018. Finally, Table 6 contains the list of identified investment performance measurement techniques and their adoption by Nigerian researchers over the years. From the table, money-weighted total return was the popular measure of property investment return in 90.2% of the studies reviewed. Property investment risks were measured using variance and standard deviation techniques representing 95.1%. Risk-return performance measures were popularly done with coefficient of variation and Sharpe Ratio techniques. None of the studies reviewed adopted the modified Sharpe Ratio, which is to be used when for risk-adjusted performance measurement due to the non-normality characteristic of property investment data. Correlation coefficient technique was predominantly to measure the degree of diversification of property investment portfolio by majority of the authors. This represents 36.6% of the studies reviewed.

6.0 CONCLUSION

This paper has reviewed studies on property investment performance appraisal in Nigeria. Forty-one (41) well-researched studies (published and unpublished) were retrieved and reviewed. Sixty-one (61) authors who were affiliated to 24 affiliations made up of 16 universities, 6 polytechnics, 1 institute and 1 government body were revealed by the findings of this study. Greater number of the studies came from authors affiliated with universities within Nigeria and a few outside Nigeria. This study found that real estate firms were not actively involved in research on property investment performance in Nigeria. As earlier affirmed by Laryea and Leiringer (2012) that researches in the built environment are been carried out university scholars and by extension, research institutes. In terms of the participation of institutions in this research topic, Obafemi Awolowo University, Ile-Ife and Federal Polytechnic, Ede were found to be the leading institutions or affiliations. The top four active authors in real estate investment performance research were Olaleye, A., Oyewole, M. O., Dabara, D. I. and Olanrele, O. O. However, Olaleye, A., Oyewole, M. O. and Dabara, D. I. were found to be the most active authors with contributory scores of 3.87, 3.61 and 3.21 respectively. These authors were equally affiliated to the top two leading institutions. Thus, there was positive correlation between the authors and affiliations' contributions to real estate investment performance research. Olaleye, A. was found to be the pioneering author in this research area in Nigeria. Lagos state was the major geographical focus for studies on real estate investment performance probably because of the active nature of Lagos property market. The focus of the authors was basically the Southwest geopolitical region of Nigeria and no study in this research area has been carried out in the Northwestern Nigeria. This is yet another research gap that needs to be filled by real estate researchers.

This study recommended that collaboration between scholars of estate management and practicing estate surveyors and valuers be promoted with a view to bridging the gap between theory and practice and to boost property data banking in Nigeria. The involvement of estate surveyors and valuers in real estate research is crucial in bridging the gap between theory and practice. The geographical scope of real estate investment performance in Nigeria needs to be expanded to adequately cover all the regional property markets. In addition, real estate data should always be subjected to normality test by the researchers to determine the appropriate statistical tools to be adopted for analyses. Finally, this study has provided information on property investment performance measurement in Nigeria drawing evidences from the existing literature on the subject matter. Significantly, this study is capable of guiding new researchers that may be interested in this field of study, having shown what have been done, the active authors, geographical focus, methods and techniques adopted and the knowledge gap established. It is worth reiterating that the data/information used for this study were primarily retrieved online.

Consequently, similar studies not indexed in the online databases or search engine may have been unintentionally excluded from this study. In addition, real estate performance variables adopted by previous authors have not been critically reviewed in this work, hence, this paper recommends it as an area for further study in this field. Despite the couple of weaknesses, the adoption of replicable methodology and analytical tools ensures valid inferences.

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APPENDIX A

Table 7 Authors' contributions
(Source: Authors' analysis)

S/No	Author	Affiliation	No. of appearance in publications					Contribution score
			1st	2nd	3rd	4th	5th	
1	Olaleye, A.	Obafemi Awolowo University, Ile-Ife	4	2				3.87
2	Oyewole, M. O.	Obafemi Awolowo University Ile-Ife	3	1	1			3.61
3	Dabara, D. I.	Federal Polytechnic, Ede	6					3.21
4	Olanrele, O. O.	University of Malaya, Malaysia	3		1			2.10
5	Ekemode, B. J.	Obafemi Awolowo University, Ile-Ife	2	1				1.60
6	Bello, N. A.	University of Ilorin, Ilorin	2					1.47
7	Udobi, A. N.	Nnamdi Azikwe University, Awka	2	1				1.34
8	Umeh, O. L.	University of Lagos, Akoka	1	2				1.28
9	Amidu, A	Obafemi Awolowo University, Ile-Ife	2					1.02
10	Ade, A. A.	Federal Polytechnic, Ado-Ekiti	1					1.00
11	Bello, O. M.	Federal University of Technology, Akure	1					1.00
12	Aro-Gordon	Baze University, Abuja	1					1.00
13	Ogunba, O. A.	Obafemi Awolowo University, Ile-Ife		3				0.98
14	Udoekanem, N. B.	Federal University of Technology, Minna	2					0.94
15	Okonu, A. A.	University of Lagos, Akoka	1	1				0.82
16	Diala, A. O.	University of Uyo, Uyo	1	1				0.79
17	Nissi, C. F.	University of Uyo, Uyo	1	1				0.79
18	Aluko, B. T.	Obafemi Awolowo University, Ile-Ife		2				0.68
19	Ighalo, J. I.	Bells University, Otta		2				0.64
20	Kalu, I. U	Abia State University, Uturu		1	1			0.61
21	Mfam, C. E.	Cross River University of Technology, Calabar	1					0.60
22	Mbah, C. C.	Nnamdi Azikwe University, Awka	1					0.60
23	Osa, K. O.	River State University, PortHarcourt	1					0.60
24	Emele, C. R.	University of Lagos, Akoka	1					0.60
25	Said, R.	University of Malaya, Malaysia		2				0.60
26	Nwokenkwu, C. B.	Federal Polytechnic, Bida	1					0.47
27	Adeogun, A. S.	University of Ilorin, Ilorin	1					0.47
28	Awa, K. N.	University of Uyo, Uyo	1					0.47
29	Obinna, A. C.	Enugu State University of Technology, Enugu	1					0.47
30	Odewande, A. G.	Federal Polytechnic, Ede		1	1			0.43
31	Ezema, C. C.	Institute of Management and Technology, Enugu			2			0.42
32	Ekenta, C.	River State University, PortHarcourt		1				0.40
33	Daud, M. N.	University of Malaya, Malaysia			2			0.39
34	Ankeli, A. I.	Federal Polytechnic, Ede		1		1		0.37
35	Jolaoso, A. B.	Moshood Abiola Polytechnic, Abeokuta		1				0.32
36	Onyejiaka, J. C.	Nnamdi Azikwe University, Awka		1				0.32
37	Chika, O. M.	Enugu State University of Technology, Enugu		1				0.32
38	Nwanekezie, F. O.	University of Uyo, Uyo		1				0.32
39	Adegoke. O. J.	Obafemi Awolowo University, Ile-Ife		1				0.32
40	Gambo, Y. L.	Abubakar Tafawa Balewa University, Bauchi		1				0.32
41	Uganabo, C. U.	Nnamdi Azikwe University, Awka		1				0.32
42	Dauda, Y.	Federal Polytechnic, Bida		1				0.32
43	Sanusi, Y. A.	Federal University of Technology, Minna			1			0.21
44	Nwozuzu, G. C.	Nnamdi Azikwe University, Awka			1			0.21
45	Izuchukwu, E. N.	Institute of Management and Technology, Enugu			1			0.21
46	Anih, P. C.	University of Uyo, Uyo			1			0.21
47	Araloyin, F. M.	Obafemi Awolowo University, Ile-Ife			1			0.21
48	Luqman, I	Federal University of Technology, Minna			1			0.21
49	Lasisi, J. O.	Federal Polytechnic, Bida			1			0.21
50	Nuhu, M. B.	Federal University of Technology, Minna			1			0.18
51	Akinwande, T. O.	University of Lagos, Akoka			1			0.18
52	Chiwuzie, A.	Federal Polytechnic, Ede			1			0.17
53	Olatunde, A. L.	Federal Polytechnic, Ede			1			0.17
54	Muraina, O. A.	University of Lagos, Akoka				1		0.12
55	Saibu, M. O.	Obafemi Awolowo University, Ile-Ife				1		0.12
56	Majid, R.	University of Technology, MARA, Malaysia				1		0.12
57	Omotehinshe, O. J.	Federal Polytechnic, Ede				1		0.11
58	Guyimu, J.	FMLH&UD, Abuja				1		0.11
59	Adegbile, A. M.	The Polytechnic, Ibadan					1	0.08
60	Soladoye, J. O.	Federal Polytechnic, Offa					1	0.08
61	Anthony, A. B.	Federal Polytechnic, Ede					1	0.08