DOI: https://doi.org/10.68128/jocrebe.2023.yyb6epw7

Journal of Contemporary Research in the Built Environment ISSN: 2636-4468

Volume 7, Number 1, March 2023 © Department of Building, University of Uyo

RECENT DEVELOPMENT IN INVESTMENT VALUATION: Issues in Annuity Application in Nigeria

Yusuf L. Gambo[1]

[1]Department of Estate Management, University of Jos, Nigeria

ABSTRACT

Purpose: In recent times, valuers' approaches to value have come under intense criticism. In the light of foregoing, this paper aims at investigating the application of ordinary annuity and annuity due in investment valuation with a view to identifying factors influencing the adoption of appropriate annuity as the occasion demands.

Design/methodology/approach: Data were obtained from 338 consulting valuation firms in Abuja, the capital city; city of Lagos, and Port Harcourt as the country's most vibrant property markets through administered questionnaire. Data from valuation firms were also complemented by the response of 106 valuation lecturers in the universities and polytechnics. Data were analysed using frequency tables, simple percentages and Relative Importance Index.

Findings: Findings show that valuers in private practice in the country typically receive rent yearly in advance and based their valuations on rent in arrears models. Most Nigerian valuers are not conversant with annuity due models and cannot apply them in practice. Most valuation lecturers in tertiary institutions teach ordinary annuity instead of annuity due.

Research limitations/Implications: This study fills existing gap in the body of knowledge by identifying factors impeding shift to more appropriate annuity models in an emerging economy where rent is received in advance.

Originality/value: The study is perhaps the first to examine annuity application between practitioners and academics empirically, on a broader basis in Nigeria.

Keywords: Annuity due; Investment valuation; Nigeria; Ordinary annuity; Valuation standard.

1. INTRODUCTION

At the turn of the 21st century, what is commonly known as globalisation, shaped many activities across international and national boundaries. This recent phenomenon has enormously impacted international trade and professional practice. Like any other profession, real estate and valuation have been under the heat of globalisation which demands standardisation of professional practice. This attracts critical attention to valuation methods both from within the valuation profession and from other quarters, especially from the financial sector. This arose from sharp variations in approaches, leading to over valuation that led to the financial crisis in UK and US in the 70s and 90s, respectively. The importance of property to the economy was clearly recognized which was brought to bear by the

[1] Email: yusuf_gambo@yahoo.com

collapse of the property market after 1973 and 1990. Owing to the importance of property, it is stating the obvious to say that the way in which valuers carryout their work will be closely scrutinized.

In the recent past, the methods valuers employ to arrive at a value, both assumptions and processes of workings, have been increasingly examined. This is well pronounced in the case of income approach (investment method of valuation) distilled from numerous criticisms of the method in books, journals, and academic research (Crosby, Newell, Matysiak, French, & Rodney, 1995; Ogunba & Ajayi, 2007; Gambo, 2014)). Most recently, in Nigeria, there had been a case of concern expressed by the leadership of the Nigerian Institution of Estate Surveyors and Valuers (NIESV) on two valuers expressing a wide margin of value on valuation of the same property. This problem stems largely from inadequate data, valuers' skills and training, and approach to value. In the light of the foregoing, this paper focuses on the application of ordinary annuity and annuity due assumptions in the income approach to value, also known as the investment method of valuation in commonwealth countries that modelled their valuation practice after the United Kingdom (UK) during the colonial era.

The anticipation principle is the foundation of the income approach to value. The anticipation principle holds that the market value of a property is the present value of all the income it will bring in the future taking into account all market benefits. The future income stream could come from a series of incomes, an increase in the asset's value, or amenities. Expected future benefits or income streams are those that the market thinks will happen. Value estimates are directly affected by what market players think will happen in the future and how they think the property will benefit them. The principle connects expected earnings (rental income) and the value of similar properties. The income approach from the principle of anticipation produces periodic returns (income) or annuity, which predicts the overall price of an investment and reflects the investment's capital value.

Similarly, the investor purchases an annuity (a stream of income paid over time). Merriam-Webster defines an annuity as "a sum of money payable yearly or at other regular intervals". In the context of this paper, an annuity is the regular payment of rent, whether it is monthly, quarterly, bi-annually, or annually. An ordinary annuity is when rent is paid at the end of the year or end of the tenancy; while an annuity due is when rent is paid at the beginning of the year or commencement of the tenancy.

Property investors in the UK receive rent from property even for longer leases at the end of the lease transactions. This arrangement continued in the UK until the middle of the 20th century (Baum & Crosby, 1995). The UK investment valuation models were fashioned to reflect this reality based on ordinary annuity assumptions where rent is received in arrears. The early edition of Parry's valuation tables in 1913 addressed the UK's current economic situation, taking into account the payment of rent in arrears (ordinary annuity) (Davidson, 2002). Subsequently, the pattern of rent payment changed in the UK; investors started receiving rent on most classes of property quarterly in advance in the mid-20th century. Despite the investors' response to changing economic situation in the UK, Parry's valuation tables continued with the assumption that rent was payable annually in arrears from the 1960s till the 1990s. However, some valuation literature in the UK started recognising the inappropriateness of applying ordinary annuity in investment valuations captured in Parry's valuation tables. Rose (1977) and Babcock (1978) were the first academics to look at how annuity due is used to value investments in the UK. Rose's tables consider rent payment quarterly in a year, with interest paid yearly. Bowcock's tables show that income is due quarterly, and interest is paid every six months. In the latest version of Parry's tables, which came out in 2002, quarterly in advance tables and annuity in arrears tables were put together. Even though it happened slowly, the UK has recently changed how it values investment yielding properties in response to the changing economy. Instead of using ordinary annuity assumptions, it now uses assumptions made quarterly in advance. Though events in the UK led to changes in Parry's, Rose's, and Babcock's tables, this does not change the rent situation in Nigeria and other Commonwealth countries where rent is paid a year in advance.

In Nigeria today, academics and practitioners still teach and fashion their practice based on ordinary annuity assumptions in Parry's valuation tables of 1913 despite Nigeria's rent payment not agreeing with Parry's valuation models developed in the colonial era. It would appear that there is not much effort from academics and practitioners to correct this abnormality. This paper seeks to address the question why the continuous use of the valuation model in a country whose rent payment does not support such. This paper examines factors responsible for the continuous use of ordinary annuity,

where the assumptions on which it is based are not appropriate, so as to improve valuation best practices in the country.

2. LITERATURE REVIEW

This section will first and foremost give an overview of some historical development of investment valuation methods (income approach to value) and how annuity modelling shaped investment valuation in the UK and Nigeria based on UK texts which largely influenced investment valuation practice and teaching in Nigeria.

The Income approach to value largely depends on income from property investment and the time value of the income (rent) (Crosby, Davaney, & Wyatt, 2020). This means that money earned today is worth more than money earned in the future for the same amount. In the income approach, the market value is the sum of future returns (annuity), but each future stream of income is discounted to present-day equivalent sum based on the time value of money and an appropriate rate of return (interest). Year purchase (YP) is the value of the right to receive ₦1 yearly. It is the present value of an annuity of ₦1. In the UK and other Commonwealth countries, the annuity's years purchase (multiplier) is based on equity, while in the US, the years purchase was based on mortgage equity until the mid-1970s (Enever & Isaac, 2002) . The valuer's training and experience are shown by their ability to predict and advise on the right annuity to be capitalised. When figuring out how to capitalise the net income, it is important to know if the annuity is paid at the beginning of the year (in advance) or the end of the year (in arrears). An ordinary annuity is when rent payments are made at the end of the transaction period. The annuity series for an ordinary annuity, where rent is received in arrears (at the end of the year), is given as:

$$\frac{1}{(1+\mathrm{i})}+\frac{1}{(1+\mathrm{i})^2}+\;-\;-\;-\;-+\frac{1}{(1+\mathrm{i})^{\mathrm{n}}} \qquad \ldots \text{ eqn. } 1$$

However, where rent is due at the beginning of the transaction period, it is called an annuity due. The rent received in advance (beginning of the period) coincides with the end of the year (n – 1) and is represented as:

$$1+\frac{1}{(1+\mathrm{i})}+\frac{1}{(1+\mathrm{i})^2}+\;-\;-\;-\;-+\frac{1}{(1+\mathrm{i})^{\mathrm{n}-1}} \qquad \ldots \text{eqn. } 2$$

Equations 1 and 2 show a difference in annuity streams between an ordinary annuity and due annuity circumstances. This, by implication, gives rise to variation in the YP models for rent in arrears and rent in advance situations.

In Nigeria, rent payments and leases are based on rent/lease in advance, which is properly captured in the tenancy and lease agreements (Ogunba, 2012). The investment valuation models should therefore reflect annuity due modelling, not ordinary annuity inherited from the UK based on their prevailing situation in the colonial era. It would appear that the academia in Nigeria still based investment valuation theory on UK literature; the practitioners also use ordinary annuity models, which invariably accentuate the problem of irrationality and mathematic inaccuracy in the valuation processes. The review will focus mostly on texts from the UK, how advocacy for an annuity due came through, and factors affecting the use of annuity due even where rental income is received in advance. The review will also examine how advocacy for the use of appropriate annuity faired in Nigeria and the texts that followed to reflect Nigeria's peculiarities.

Parry's valuation tables, first published in 1913 in the UK, assumed that rents received by investors were paid in arrears annually because rents were normally paid at the end of the leases rather than at the beginning of the period of the leases (Davidson, 2002). The annuity series adopted for this circumstance was described earlier in equation 1. Going by the annuity pattern in equation 1, Parry's tables give the YP single rate formula as:

$$\mathrm{YP_{sr}}=\frac{1-\mathrm{PV}}{\mathrm{i}}=\frac{1-\frac{1}{(1+\mathrm{i})^{\mathrm{n}}}}{\mathrm{i}}=\frac{\mathrm{A}-1}{\mathrm{A_i}} \qquad \ldots \text{eqn. } 3$$

At the end of the 20th century, the way rent was paid in the UK changed, and rent started to be paid three months in advance. From the 1960s to the 1990s, Parry's tables were revised several times, but the assumption that rent was paid annually in arrears stayed the same. One of the reasons cited for that according to Ajayi (2010) was the conservative nature of the UK valuers who were slow to respond to refinement in the investment valuation model influenced by rent payment patterns. Ajayi (2010) further remarked that another factor which could be attributed to this slow change is the assumption that the use of ordinary annuity in the investment valuation model could still give accurate value. Crosby (1992) agreed with this point of view when he said that when valuers in a market use the same approach to value, an accurate model tends to result, even if the adopted model is irrational.

At the end of the 1970s, some valuation literature in the UK began to point out that the ordinary annuity in Parry's tables was not a good choice (Davidson, 2002; Enever & Isaac, 2002). Academics started the change by making the YP formulas based on rent paid in advance (Harvard, 2000). Rose made a case for rent-in-advance formulas in 1977 (Johnson, Keith, & Shapiro, 2000). He thought valuers might not use rent-in-advance formulae because there were no valuation tables. To solve this problem, he made tables based on the YP dual rate, adjusted for tax, and based on rent and sinking fund payments made annually or quarterly in advance. Rose's tables accounted for money coming in three times a year, with interest paid yearly. Based on his tables, YP to be applied to income receivable quarterly in advance is given as:

$$YP_{sr} = \frac{\frac{1-\frac{1}{(1+i)^n}}{1}}{4\left[1-\sqrt[4]{(1+i)}\right]} \qquad \ldots \text{eqn. } 4$$

The parameter i in the formula represents the annual nominal rate of interest. This, therefore, makes the expression for the YP of a reversion to infinity to be:

$$YP_{perp} = \frac{(1+i)^{-n}}{4[1-(1-r^{1/4})]} \qquad \ldots \text{eqn. } 5$$

Around the same time, Babcock (1978) pushed for changes to how investment yielding properties were valued based on how the rent was paid. To help valuers in the UK, Babcock made valuation tables based on rent paid in advance. His formulas accounted for rent paid in advance every three months and interest paid every six months (half-yearly). He thought that most investments had less than a year's worth of interest and that most were calculated every six months. However, Enever and Isaac (2002) presented evidence to demonstrate other methods of conversion as against Babcock's tables which used the same formulae as Rose's (equation 1 & 2) except that in the formulae represented the annual effective rate of interest rather than nominal rate proposed by Rose. In the 1980s and 1990s, academics in the UK were the ones who changed how investment valuation models were used. Notable are the works of Enever (1981), Richmond (1985), Baum and Mackmin (1996), and Isaac & Steley (1991), who began to incorporate rent-in-advance formulas in their textbooks. These academics pointed out how wrong and inaccurate it would be not to use the right investment valuation model when the time calls for it. Isaac and Steely (1991) remarked that it was important to analyse the rental income pattern so that the right discount rate could be used to value the income pattern. Over time, many UK texts also noted that it was customary for interest to be paid to investors at period less than annually, supporting earlier assertion of Babcock (1978). The text further buttressed that the rate of interest used in the determination of compounding of the nominal rate as earlier submitted by Baum and Mackmin (1996) was correct. The advocacy for the use of annuity due modelling is found in isolated chapters of all the respective texts, while the other chapters of their textbooks upheld the use of rent in arrears credited annually; reasons being that most practitioners are only familiar with rent payment in arrears assumptions (Johnson, Keith, & Shapiro, 2000). From the argument of UK's authors, it suggests that a factor that could potentially drive the continuous use of ordinary annuity models is non-familiarity with rent in advance formulae by the valuation community both in practice and academia. Baum and Mackmin (1996) warned valuers who use quarterly-in-advance formulae to ensure that their works consider the right market relationship between income patterns and yields. They further remarked that using quarterly in advance tables to predict the value of income received in advance might not be the best idea since the valuation date rarely matches the

date when rent is due, and the actual pattern of income might look more like a quarterly in arrears payment (Ogunba, 2012). Ogunba further remarked that, even though academics in the UK are still talking about how to use the right annuity assumptions when the situation calls for it, the profession in the UK is still resistant to change, and many valuation firms and textbooks still use rent in arrears formulas from the 1990s. The relatively low yields on prime properties may be one reason ordinary annuity is still used in the UK even though the economy is changing. Switching from ordinary annuity to annuity due does not change the capital value as much as a change in the yield when interest rate terms are at different intervals. Ogunba is of the opinion that the traditional practice might continue because the investment method is just one way to value something, and the comparison method is still used to test how reliable the investment valuation process is.

In 1991, the Investment Property Forum (IPF) put out a paper that brought back the idea of using rent-in-advance formulas in real life. They spread the idea of using quarterly tables in advance. IPF refused to keep using the all-risk yield as nominal market benchmarks based on the assumption that rents are paid annually in arrears. They also said that this did not reflect the reality of the market and pushed the idea that the UK valuation community moves toward models that reflect the actual timing of the cash flow. The steps that the IPF took to make rent in advance tables were another sign that valuers could keep using ordinary annuity models if there were no due annuity tables. The tables made by the IPF (rent paid in advance quarterly) were based on the idea that capital values would not change if the profession switched to a quarterly method.

In response to campaigns for quarterly-in-advance models, Davidson (2002) added quarterly-in-advance tables to the 12th Edition of Parry's tables. These tables made it easy to convert nominal yields, where income is received annually in arrears, to effective yields, where income is received quarterly in advance and vice versa. Davidson's conversion tables were based on the following formulae:

$$i = 4\left[1 - (1 + r)^{-1/4}\right] \qquad \text{... eqn. 6}$$

$$r = \left[\frac{1}{\left(1 - {}^{i}/_{4}\right)^{4}} - 1\right] \qquad \text{... eqn. 7}$$

The parameter i is the nominal yield, and r is the effective yield in the above formulas (equivalent yield). Parry's tables retain the traditional way of determining years' purchase, where income is assumed to be received once a year in arrears. However, the same edition of the tables advocates for income to be received three times a year in advance. The fact that Davidson gave conversion tables in 2002 could make people more likely to use rent-in-advance formulae.

The quarterly in advance formulas in Parry's tables was criticised by French and Cooper (2000), who looked at Parry's tables in 2000. They said Parry's effective yield formula does not consider quarterly payments due in advance. Because of this, they maintained that the change from getting payments once a year to getting payments quarterly in advance will not go as smoothly as possible. That it would be better to assume that capital values will not change if valuers use a quarterly approach. Instead, the yield should be shown differently. French and Cooper (2000) further remarked that the way the yield is used was not the most important problem. Instead, the most important thing is how the year's purchase is used with the rent to determine the capital value. They suggested the use of explicit growth discounted cash flow (DCF) with the help of a formula which transfers data annually at the end of the year (in arrears) into data quarterly in advance.

Even though professionals in the UK have advocated for rent in advance tables, it has not significantly influenced UK's valuation textbooks or the valuation community. Johnson *et.al* (2000) in their recently "Modern Methods of Valuation" textbook acknowledged the advocacy by IPF to persuade valuation community in the UK to switch from collecting rent once a year in arrears to collecting rent every three months in advance. On the other hand, the authors decided to keep the ordinary annuity formulas in their text because they are still used by valuers all over the UK. In the tenth edition of their textbook, they also talked about how likely they would switch to quarterly in advance. This suggests to us that the sustained use of rent-in-arrears formula is tied to basically two reasons. The first reason is that valuers do not know how to use the formulae for annuity due (rent in advance). The second is that there is no guidance note and enforcement by the regulatory body.

In a more recent study, Tipping (2008) found that residential tenancy reform in the 1980s and 1990s made it more likely for practitioners in the UK to pay their rent in advance every month. He pointed out that Parry's tables (Davidson, 2002) gives a framework for converting from the nominal annuity in arrears to effective quarterly in advance tables. However, he made the case that it is now time to also give a framework for converting monthly to quarterly. Tipping (2008) said that it should be easier to do monthly conversions with the help of computers, which also makes it easier to make valuation models. Davidson's method for converting nominal yields to true equivalent yields led to the formation of two formulas for calculating nominal and effective monthly yields in advance rental payments. The formulae are as given below:

Conversion from the effective yield rent receivable monthly in advance to nominal yield:

$$i = 12\left[1 - (1 + r)^{-1/4}\right] \quad \text{... eqn. 8}$$

The difference between the nominal yield and the effective yield rent receivable monthly in advance (Nominal yield to the effective yield rent receivable monthly in advance):

$$r = \left[\frac{1}{\left(1 - {}^{i}/_{12}\right)^{12}} - 1\right] \quad \text{... eqn. 9}$$

Tipping's observations suggests that one reason to keep using the ordinary annuity model instead of the quarterly in advance model is because the quarterly in advance model does not account for monthly in advance leases, which are becoming more common in the UK, and no model takes into account monthly modelling. In the light of forgoing discussion, it is clear that the UK has made some progress towards using the right annuity model, even if practitioners and educators are being cautious by not moving from the annuity in arrears to quarterly or monthly in advance.

In Nigeria today, the advocacy for the use of annuity due is limited and mainly contained in textbooks. Valuation teaching in the country is based on the UK textbooks. The only academic papers that discussed the issue are Okoye (1994); Ajayi (2010); Ogunba (2012) and most recently Nnamdi and Emeka (2020). Okoye's study was a review which used work examples to demonstrate the arithmetic inaccuracy of rent in arrears calculations. Ajayi (2010) was an inaugural lecture which among other things advocated for more rationality through the use of rent in advance formulae in Nigeria. The papers by Okoye (1994) and Ajayi (2010) were basically theoretical and not empirical to examine the factors responsible for the continued use of ordinary annuity modeling. Ogunba (2012) was limited to Lagos state, and he only got responses from 9 valuation lecturers in the Southwest by telephone interview. The paper looked at how valuers see why the ordinary annuity assumption is still in use even though it is not the right way to use it. The study found that three main things made it hard to switch to more accurate annuity due assumptions: the lack of guidance notes/directives to valuers on the use of rent in advance assumptions from regulatory bodies, the lack of annuity due valuation tables, and the belief that due annuity calculations are hard to do. Ogunba (2012) suggested that regulatory bodies should initiate trainings and sponsor publication of tables that are appropriate for the Nigeria's circumstance. The study by Ogunba (2012) based on practitioners in Lagos alone and few responses from the academia cannot be used to generalize for Nigeria. Nnamdi and Emeka (2020) based their study on four towns from Southeast region of the country- Aba, Enugu, Onitsha and Owerri. They used basically descriptive statistics to analyse the data. They found that the cause of non-use of annuity due is traceable to inappropriate and inconsistent use of valuation inputs. They suggested that the Nigerian Institution of Estate Surveyors and Valuers should require valuation firms to send data to the institution.

In Nigeria today, three valuation tables and a few papers advocate for the use of appropriate annuity. Two of the three tables (Ifeodiora, 1996; Udechukwu, 2009; Udechukwu, 2018) use the same formulas for ordinary annuities as the first Edition of Parry's tables. The third table (Adeyemi, 1998) used some formulas for an annuity due with interest added every year. Adeyemi said in the introduction that valuers in Nigeria do not use annuity due modelling because there are no tables available to help practitioners and academics use it in their work and classes. Adeyemi's table was a big step toward getting people to use the right annuity formulas. In any case, he did some calculations in the tables with rent in arrears formulae.

Most of the debate about annuity due models in Nigerian universities today, is found in a few textbooks. Valuation is taught based on texts from the UK, especially the conservative "Modern Methods of Valuation" (Johnson *et. al.*, 2000; Davidson, 2002). The first indigenous valuation textbooks (Ifediora, 1993, Ajayi, 1998) and some textbooks that published in the 2000s (Kuye, 2000, Kalu, 2001, Udechukwu, 2006) also used the rent received in arrears as a basis for their calculations. These texts gave the same reasons as the authors of "Modern Methods of Valuation" in the UK for why rent in arrears (ordinary annuity) should be used. Because of this, the valuation community in Nigeria is not familiar with the annuity due formulae. However, few valuation texts in Nigeria (Udo, 2003; Ifediora, 2006; and Ogunba, 2013) have started demonstrating rent in advance a formula which is a significant departure from the traditional UK texts to reflect Nigeria's peculiarities. In his texts, Udo (2003) shows the YP rent due in advance as:

$$\mathrm{YP} = 1 + \mathrm{YP}(n-1) = 1 + \frac{1 - \frac{1}{(1+\mathrm{i})^{n-1}}}{i} \qquad \ldots \mathrm{eqn.}\,10$$

The US alternative formula is given as:

$$\frac{(1-\mathrm{PV})(1+\mathrm{i})}{\mathrm{i}} \text{ or } \frac{(\mathrm{A}-1)(1+\mathrm{i})}{\mathrm{Ai}} \qquad \ldots \mathrm{eqn.}\,11$$

Ogunba (2013) adopted the formulas expressed by Udo (2003) above.

From the review above, it's clear that there is a gap in research and not enough people are trying to show how annuity due can be used in reality where rent is received in advance. The few studies based their work on geo-political regions. However, the review has identified factors hindering the use of annuity due models in a country where rent is received in advance. It is pertinent to broaden the scope of our studies and test those factors in a practical setting.

3. METHODOLOGY

The study is aimed at two groups. First, the valuers firms in Abuja, Lagos, and Port Harcourt. Abuja, Lagos, and Port Harcourt were chosen for the study because they have the country's most active real estate markets and are home to more than 60 per cent of the country's Estate Surveying and Valuation firms (Ogunba 2013; Gambo 2015). There are 768 Valuation firms in Nigeria. Of the 768 firms, Lagos has 320 firms; Abuja records 105 while 55 are in Port Harcourt, according to the most recent NIESV Directory. The practicing valuation firms in the study area represent 63% of the total number of practicing firms in the country, which is a good number for generalisation.

Two parts to the questionnaire were given to valuers in the study area. In the first part, questions were asked about the respondents' socioeconomic and educational backgrounds, years of practice, gender, position in the firm, and academic qualifications. The section asked what they thought about why ordinary annuity models are still used. The answers were mostly measured on an ordinal scale. Krejcie and Morgan's (1970) sample size table was used by Adewunmi (2014) and Gambo (2015) to figure out how big the sample frame needed to be. Krejcie and Morgan table gives sample size of 86 in Abuja (Abj), 175 in Lagos (Lag) and 48 in Port Harcourt (PH). However, the response in Abuja, Lagos and Port Harcourt were 87, 203, and 48 respectively. Table 1 shows the sample frame and sample size obtained.

Table 1: Professional Valuation Firms Distribution in the Area

Location	Total No of Valuation Firms	Required Sample Size	Sample Size Achieved	Rate of Response (%)
Abj	105	86	87	83
Lag	320	175	203	63
PH	55	48	48	87
Total	480	309	338	70

The cluster sampling method is considered best for this study because most valuation firms are in pockets of cluster big cities. Earlier studies by Babawale (2008), Ogunba (2004), and most recently Gambo (2015) used the same target audience with cluster sampling and found it very effective. Data

from Estate Surveyors and Valuers was analysed using the Relative Importance Index (RII) to determine most important criteria on the respondents' response.

The second study population was Lecturers teaching valuation in universities and polytechnics. Based on records from the Estate Surveyors and Valuers Registration Board of Nigeria (ESVARBON), 27 accredited universities and 30 accredited polytechnics offer Estate Management in the country. One hundred seventy-five lecturers are associate members of NIESV from records of the NIESV academic wing. Based on the adequacy of table of sample size (Krejcie and Morgan (1970), the sample size for the second population of the study is 123. However, using a total enumeration of the sample frame of 175, only 106 valuation lecturers responded; this represents about 61% of the total number of respondents. Data from this target audience reveal the annuity model being taught in our tertiary institutions. The Content check of the National University Commission (NUC), National Board for Technical Education (NBTE) and NIESV Professional Practice Examination's curriculum complemented information from tertiary institution lecturers to verify if due annuity models were captured.

4. PRESENTATION AND DISCUSSION OF RESULTS

Table 2 shows that individuals solely operate 90% of the valuation firms in the study areas, not in partnership. The nature of ownership is a good reflection of general private valuation practice in the country.

Table 2: Nature of ownership Firms

Study Area	Type of ownership	Frequency	Per cent	Total
Abj	Sole Ownership	79	90.8	
	Partnership	8	9.2	87
Lag	Sole Ownership	176	86.7	
	Partnership	27	13.3	203
PH	Sole Ownership	42	87.5	
	Partnership	6	12.5	48

Table 3: Valuers' Gender

Study Area	Gender	Freq.	%	Total
Abj	Male	83	95.4	
	Female	4	4.6	87
Lag	Male	175	86.2	
	Female	28	13.8	203
PH	Male	41	85.4	
	Female	7	14.6	48

The private practice of property valuation is dominated by the male gender, with about 90% predominantly male gender, as seen in Table 3.

Table 4 shows the educational backgrounds of the respondents. It can be seen that in Abuja, slightly above 41% (36) of the valuers have B.Sc.; about 29% (25) have M.Sc.; and slightly above 1% (1) has PhD. Lagos shows a different result with about 40% (81) having M.Sc.; 30% (61) have B.Sc.; about 23% (46) have HND; while about 3% (5) have PhD. In Port Harcourt, slightly above 52% (25) have B.Sc.; 27% (6) have M.Sc.; about 13% (6) have an HND, while none of the respondent has PhD. This shows that the respondents are educated.

Table 4: Valuers' Academic Qualification

Study Area	Qualification	Freq	%	Total
Abj	ND	2	2.3	
	HND	11	12.6	
	B.Sc	36	41.4	
	PGD	12	13.8	
	M.Sc	25	28.7	
	PhD	1	1.1	87
Lag	ND	2	1.0	
	HND	46	22.7	
	B.Sc	61	30.0	
	PGD	8	3.9	
	M.Sc	81	39.9	
	PhD	5	2.5	203
PH	HND	6	12.5	
	B.Sc	25	52.1	
	PGD	4	8.3	
	M.Sc	13	27.1	48

Table 5: Designation of the Respondent

Study Area	Position/Rank	Freq	%	Total
Abj	Principal Partner	33	37.9	
	Partner	4	4.6	
	Associate Partner	24	27.6	
	Head of Department	18	20.7	
	Senior Surveyor	8	9.2	87
Lag	Principal Partner	85	41.9	
	Partner	7	3.4	
	Associate Partner	59	29.1	
	Head of Department	22	10.8	
	Senior Surveyor	30	14.8	203
PH	Principal Partner	17	35.4	
	Partner	1	2.1	
	Associate Partner	14	29.2	
	Head of Department	14	29.2	
	Senior Surveyor	2	4.1	48

Table 5 shows in Abuja principal partners constitute about 38% (33); about 28% (24) are associate partners; departmental heads are 21% (18) department, while the rest are either partners or senior surveyors in the firms. The result in Lagos indicates that about 42%, (85) are principal partners; associate partners slightly above 29% (59); senior surveyors are about 15% (30), while about 11% (22) are department heads. Port Harcourt records 35% (17) as principal partners, slightly above 29% associate partners, while 29% (14) are heads of departments. This demonstrates that the majority of respondents were the firms' principal partners.

Table 6: Professional Membership Grade

Study Area	Membership Grade	Freq	%	Total
Abj	Associate	85	97.7	
	Fellow	2	2.3	87
Lag	Associate	180	88.7	
	Fellow	23	11.3	203
PH	Associate	46	95.8	
	Fellow	2	4.2	48

Table 6 shows that all the respondents are corporate members of the Institution, with about 90% being associate members. Fellows of the Institution are about 10%. This implies that all the

respondents are professional members of Nigerian Institution of Estate Surveyors and Valuers (NIESV) who are also licensed by Estate Surveyors and Valuers Registration Board of Nigeria (ESVARBON).

Table 7: Rent Collection Pattern in Nigeria

Mode of Rent Payment/Type of Properties	Bungalow & Flats	Duplexes	Tenement Buildings	Banking Halls	Office Spaces	Shop Spaces
Annually in Advance	322 (95.3%)	331 (97.9%)	287 (84.9%)	338 (100.0%)	316 (93.5%)	289 (85.5%)
Annually in Arrears	00	00	00	00		00
Quarterly in Advance	4 (1.2%)	00	00	00	21 (6.2%)	18 (5.3%)
Quarterly in Arrears	00	00	00	00		00
Monthly in Advance	12 (3.5%)	7 (2.1%)	51 (15.1%)	00	01 (0.3%)	31 (9.2%)
Monthly in Arrears	00	00	00	00	00	00
TOTAL	338	338	338	338	338	338

Table 7 shows the rent collection pattern by practitioners. Rent is received predominantly annually in advance in Nigeria, except in a few cases where rent is received monthly or quarterly. It is therefore stating the obvious to say 90% of the rent in Nigeria is paid in advance annually. This supports the position of Ogunba (2012) that rents in Lagos are received annually in advance, except for shops and some residential buildings received monthly or quarterly in advance.

Table 8: Showing Frequency of Annuity Due Application

Response	Frequency	Per cent (%)
Always	4	1.2
Most times	12	3.5
Sometimes	34	10.1
Never	288	85.2
TOTAL	338	100

From Table 8, slightly above 85% never had reason to employ the due annuity model in their investment valuation. This might be because they are unaware of annuity due models. The practice in Nigeria is patterned after the practice in the UK; Nigeria, like the UK, is averse to adopting annuity due to reflecting the reality of rent receivable annually in advance.

The response from the academia complemented the response from practising Estate Surveyors and Valuers. The teaching curriculum of Estate Management discipline was examined from the prescribed NUC, NBTE, and NIESV Professional Practice Examination curricula to ascertain if due annuity modelling is captured. The scrutiny revealed no clear mention of annuity modelling at the moment.

Table 9: Teaching of Annuity Due Modelling in Nigeria

The teaching of Annuity Due Modelling	Freq.	Percent
Lecturers are not aware of the annuity due to modelling; as such not teach it	19	17.9
Lecturers are aware of the annuity due but deem it not necessary to teach because it is unpopular, and the profession does not apply it in practice	48	45.3
Lecturers are aware of the annuity due but do not teach it because the curriculum does not capture that	33	31.1
Lecturers are aware of the annuity due to modelling and teaching it as an extended curriculum, not referring to an ordinary annuity	0	00.0
Lecturers teaching both ordinary annuity and annuity due with emphasis on the appropriateness of annuity due to modelling	6	5.7

Table 10: Factors Influencing Continuous Use of Ordinary Annuity Models

Factors	Strongly Agree W=4	Agree W=3	Disagree W=2	Strongly Disagree W=1	Weighted Freq. ∑Wf	RII	Ranking
Non-availability of rent in advance valuation tables	84	116	41	58	824	2.76	5th
Ordinary annuity gives the same value figure as an annuity due	52	61	122	101	736	2.19	7th
Non-familiarity with rent in the advanced model (not taught in school)	187	91	18	11	1068	3. 48	1st
Absence of guidance notes and strict enforcement by the regulatory bodies	96	112	34	62	850	2.80	4th
Valuers conservativeness (not willing to adopt models not in popular use)	102	148	28	20	928	3.11	2nd
Rent in advance tables are available but are not easily procured	45	62	123	98	710	2.12	8th
The client understands rent in arrears more	31	48	105	125	603	1.95	10th
Valuers are averse to annuity due formula because it is more complex than the ordinary annuity	74	112	62	42	792	2.73	6th
Valuers mostly use the cost approach (DRC), no need for investment valuation-based models	104	135	26	29	902	3.07	3rd
Non-use of DCF, which permits easy transmission from ordinary annuity to annuity due	38	51	116	90	627	2.13	9th

This content check of NUC, NBTE, and NIESV Professional Practice Examination curricula was complemented by the response from valuation teachers across the 27 ESVARBON accredited universities and 30 polytechnics presented in table 9. The table shows that about 18% of lecturers teaching valuation are unaware of annuity modelling and therefore do not teach it. Most lecturers (45.3%) of valuation lecturers are aware of annuity due models but do not teach them because it is unpopular and not applicable in the country. A good number (31.1%) of valuation lecturers are aware of annuity due models but do not teach it because it is not captured in the school curriculum. This position supports the content examination of NUC, NBTE, and NIESV Professional Practice Examination curricula. Only about 6% of the lecturers complement the teaching of ordinary annuity models with annuity due models. No lecturers teach annuity due without referring to ordinary annuity despite its inappropriateness in Nigeria premised by rent payment pattern receivable in Arrears.

Table 10 shows that the four most important factors impeding the shift from inappropriate ordinary annuity models to more appropriate annuity models are: non-familiarity with the rent in the advance model; valuers not willing to adopt models that are not used very often due to their conservative nature; the preponderance use of cost approach (DRC) by valuers instead of the income approach to value (investment method); and absence of guidance notes and strict enforcement measures by the regulatory bodies- ESVARBON and NIESV. Some valuers attributed the continuous use of ordinary annuity to not getting valuation tables for rent in advance and being averse to annuity

due models because it is more complex than the ordinary annuity. Some valuers believe that continuous use of ordinary annuity can be linked to the perception that ordinary annuity gives the same valuation figure as an annuity due and that valuation accuracy depends more on the valuer's experience than on the model. This position constitutes irrationality in valuation as the accuracy and appropriateness of a valuation model are often preferable to a model that is accurate but is based on wrong assumptions.

5. CONCLUSIONS AND RECOMMENDATIONS

Concerns about valuation models and applications have been criticised since the mid-1970s. In an attempt to clarify several issues surrounding investment valuation-based models and cast weight on the advocacy for the use of an appropriate annuity, this paper examined how valuers in Nigeria collect rent and the annuity model they apply in practice. The paper established that Estate Surveyors and Valuers in Nigeria mostly collect rent annually in advance and use rent in arrears models in their valuation, which is inappropriate for the circumstance. There are few instances where rent is being collected monthly and quarterly in advance, which supports Tipping's (2006) position that different properties show different rent payment patterns. Valuers should establish a rent payment pattern for each property they are to value. Most Nigerian valuers are not conversant with due annuity models and cannot apply them in practice. This paper pointed out that valuers remained conservative in adopting rent-in arrears models and mostly used the cost approach (Depreciated Replacement Cost/Contractor's Method) even in circumstances where investment valuation-based models are the most appropriate. It has also been established that most lecturers in the tertiary institution of learning in Nigeria teach investment valuation based on ordinary annuity models despite rent being received in advance. Reasons for this are lack of awareness of annuity due models and its obvious exclusion in the education and training curricula.

Practitioners put forward arguments to justify the continued use of an ordinary annuity, notwithstanding its inappropriateness. The first was that if valuers in the market employ the same methods, an accurate valuation method has been developed irrespective of the inappropriateness of the adopted method. This line of thinking stemmed from the earlier observation by Crosby (1992). It is pertinent to say that it is irrational to legalise what is illegal. A situation like this leaves one to wonder if valuers are thinking men or creatures of habit! If users of valuation know that valuers use erroneous valuation models to value, the profession would be mocked and treated with contempt. The second argument was that the difference in value figure between an ordinary annuity and an ordinary annuity is insignificant. This argument lends its credence to the situation where the stream of income from the property to be capitalised is small. However, where the rental value is significant, there would be a huge difference in the capital value. The third argument was that ordinary annuities need not be changed because the comparison approach is used to check the reliability of the valuation. There is hardly any good information for using a direct comparison approach in an emerging market like Nigeria. The Valuation Standards state that there must be at least three comparable properties before this approach can be used.

This paper recommends advocacy from academia for using rent-in arrears assumptions by ensuring that NUC and NBTE review their curriculum to reflect annuity due in Estate Management education course outlines. New teaching texts on investment valuation models should emphasise rent in arrears models and give an overview of the historic background of how rent payments in arrears started in the UK. The professional regulatory bodies (ESVARBON and NIESV) should develop comprehensive guidance notes and ensure strict compliance. Awareness of the use of annuity due models should be created by the professional association (NIESV) and regulatory body (ESVARBON) through workshops and mandatory continuous professional development (MCPD).

REFERENCES

Adewunmi, Y. A. (2014). *Benchmarking Practice in Facilities Management in Selected Cities in Nigeria*, Unpublished Ph.D. Thesis of the Department of Estate Management, University of Lagos, Akoka, Yaba, Lagos, Nigeria

Adeyemi, R. A (1998): *The Appraisal Tables (Advance & Arrears Tables for Freehold Investment Valuation*), Sam-graphic Press, Ibadan.

Ajayi, C. A. (2010): *Property Investment and Analysis*. De-Ayo Publications Bodija, Ibadan.

Babawale, G. K. (2008). An Evaluation of Factors Influencing Valuation Accuracy in Residential Property Valuation in Lagos Metropolis, Unpublished Ph. D Thesis of the Department of Estate management University of Lagos, Akoka, Yaba, Nigeria

Baum, A. and Crosby, N. (1995): *Property Investment Appraisal. 2nd Edition*, Routledge, London.

Baum, A. and Mackmin, D. (1996): *The Income Approach to Property Valuation, 4th Edition*, Routledge, London.

Babcock, P. (1978): *Property Valuation Tables*, Macmillan Publishers, UK.

Crosby, N. (1992): *Reversionary Freeholds: UK market Valuation Practice*, Research Report for the Royal Institution of Chartered Surveyor, 1 – 27

Crosby, N., Newell, G., Matysiak, G., French, N., and Rodney, B. (1995). The Quality of Property Investment Valuation Reports. Paper presented at the RICS Cutting Edge Conference, 6th -8th September, Aberdeen.

Crosby, N., Davaney, S. and Wyatt, P. (2020). Performance Metrics and Required Returns for UK Real Estate Development Schemes. *Journal of Property Research, 37(2), 171-193*

Davidson, A. W. (2002): *Parry's Valuation and Conversion Tables*, 9th Edition, Estate Gazette Ltd., London.

Enever, N. (1981): *The Valuation of Property Investments*, 2nd Edition. Estate Gazette Ltd., London.

Enever, N. and Isaac, D. (2002): *The Valuation of Property Investments*, 6th Edition. Estate Gazette Ltd., London.

French, N. and Cooper, R. (2000): Investment Valuation Models, *Journal of Property Investment and Finance*, 18 (2), 225-238

Gambo, Y. L. (2014). Response of Nigerian Valuers to International Valuation Standards Application: How Far the Journey? *The Estate Surveyor and Valuer, 39 (2), 89-98*

Gambo, Y. L, (2015). Use and Enforcement of Valuation Standards in Nigeria; A PhD. Thesis Submitted to the Department of Estate Management, University of Lagos, Yaba, Nigeria

Harvad, T. (2000): *Investment Property Valuation Today*, Estate Gazette, London.

Ifediora, B. U. (2006): *Valuation Mathematics for Valuers and other Financial and Investment Analyst*, Immaculate Publications Ltd., Enugu, Nigeria.

Ifediora, G. S. A. (1993): *Appraisal Framework: Theory, Principles, Methods and Practice of Property Valuation*, 1st Edition, Snap Press Ltd., Enugu, Nigeria.

Isaac, D. and Steley, S. (1991): Property Valuation Techniques, London: Macmillan Education Ltd.

Johnson, T., Keith, D. and Shapiro, E. (2000): *Modern Methods of Valuation of Land, Houses and Building*, 9th Edition, Estate Gazette, London.

Kalu, I. U. (2001): *Property Valuation and Appraisal*, BON Publications, Owerri, Nigeria.

Krejcie, R. V. and Morgan, D. W. (1970). Determining Sample Size for Research Activities, *Educational and Psychological Measurement, 30: 607-610.*

Kuye, O. (2000): *Property Valuation: Principles and Practice in Nigeria*, Olusegun Kuye & Associates, Lagos, Nigeria

Mackmin, D. (1989). Valuation of Real Estate in Global Markets. *Journal of Property Management, 17, 353-367.*

Nnamdi, A. U and Emeka, E. E. (2020). The Non-Application of Annuity Due Assumptions in Conventiuonal Investment Method of Valuation in South-East, Nigeria. *IRE Journal 3 (12), 95-104*

Ogunba, O. A. (2004). Implementation Hurdles in the Search for Rationality in Investment Valuation in Nigeria. *Journal of Property Search and Construction (1), 19-23*

Ogunba, O. A. (2012): The Error in Ordinary Annuity Assumptions in Nigerian Investment Valuation, *The Estate Surveyor and Valuer, 37 (1), 23-34*

Ogunba, O. A. (2013): *Principles and Practice of Property Valuation in Nigeria*. Ibadan, Nigeria, Atlantis Books.

Ogunba, O. A, & Ajayi, C. A. (2007). The Response of Nigerian Valuers to Increasing Sophistication in Investors' Requirements. *Journal of Property Investment & FInance, 25* (1), 43-61.

Okoye, C, S, O, (1994): Valuation of Property Investment with Rent Payable in Advance Characteristics, *The Estate Surveyor and Valuer, 24-30*.

Richmond, D. (1985): Intriduction to Valuation (2nd Edition), London: Macmillan Publishers

Rose, J, J, (1977): Rose's Property Valuation Tables, The Freeland Press, London.

Tipping, M. (2008): The Impact of the Time Value of Money on Valuation of Practice: Shaping the Change XXIII FIG Congress Munich, Germany, October 8-13

Udechukwu, C. E. (2006): *Valuation, Investment and Conversion Tables*, (1st Edition), Lagos, Nigeria: Chika Books Prints

Udechukwu, C. E. (2009): *Principles of Valuation*, Lagos, Nigeria: Chika Books Prints

Udechukwu, C. E. (2018): *Valuation, Investment and Conversion Tables*, (2nd Edition), Lagos, Nigeria: Chika Books Prints

Udo, G. O. (2003): *Model Building in Property Valuation*, Institute of Development Studies, Enugu, Nigeria: University of Nigeria Press