International Journal of Multidisciplinary Research and Development
www.allsubjectjournal.com
ISSN Online: 2349-4182 ISSN Print: 2349-5979
Received: 25-08-2022, Accepted: 12-09-2022, Published: 28-09-2022
Volume 9, Issue 9, 2022, Page No. 83-92

A study of the compliance of estate surveying and valuation practitioners with the practice of plant and machinery valuation in Ondo state, Nigeria

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Abstract
Plant and Machinery valuation is a complex practice which requires multi-disciplinary approach. It can make up to 80% of the total asset of a company hence very important to the company's annual financial reporting. This study examines the compliance of Estate Surveying and Valuation Firms to the practice of plant and machinery valuation in Ondo State. Data was collected from primary sources. 60 questionnaires were administered out of which 40 were retrieved from Practicing Estate Valuers: this response rate represents 67% of the total number of questionnaires administered. The study reveals that Estate Surveyors and Valuers are familiar and knowledgeable in plant and machinery valuation task and that the professionals follows the plant and machinery valuation process. It was also found out that most of the problems that Valuers face during plant and machinery valuation assignments include; lack of database, expert bias, customers pressure, problems relating to confidentiality of customers information and methodological difference in the appraisal process. The research concludes by making recommendations to the Nigerian Institution of Estate Surveyors and Valuers (NIESV) and Estate Surveyors and Valuers Registration Board of Nigeria (ESVARBON) to ensure that relevant data are made available at finger tips so as to improve the quality of the report that will be produced by practitioners in this field and that will make their reports more reliable to the public and the regulatory bodies ESVARBON and NIESV.

Keywords: plant and machinery, valuation, practitioners, compliance

Introduction

Professional Valuers - who are also known in Nigeria as Estate Surveyors and Valuers - perform several occupational functions to the society across Nigeria (Nigerian Institution of Estate Surveyors and Valuers, 2019). Some of these functions include: property management; feasibility and viability studies; property development; mineral valuation; environmental valuation; plant and machinery valuation; facilities management; property rating; compensation assessment; expert witnessing; land valuation; valuation of buildings and valuation of artwork (Nigerian Institution of Estate Surveyors and Valuers, 2019).

Plant and Machinery Valuation as one of the specialized valuations entails the estimation of the monetary worth of a class of tangible assets that are held by an entity for use in the production or supply of goods and services (Ifediora, 2009) [13]. There is plethora of reasons for commissioning plant and machinery valuation, these include: rental, lease, insurance, taxation, mergers, insolvency, disposition, financial reporting, mortgage among others (America Society of Appraisers, 2001; Otegbulu, 2019). Ogunba (2013) [16] emphasised that companies or owners of plant and machinery investments usually request to know the value of the assets of their companies from time to time, in order to make sound investment and financial decisions.

Due to the dexterity of Valuers in this field, they are often commissioned by their clients to value such investments which is full of imperfection, heterogeneity, complex legal interest and complicated laws (Otegbulu and Babawale, 2011) [7].

By virtue of their training, professional Valuers are expected to report accurate value opinions as misleading figures or opinions of value can cause a company to record a negative profit margin, perform below expectation or even liquidate (Otegbulu, 2019). Professional Valuers must therefore value plant and machinery transparently, accurately, objectively, and impeccably as this will control the risk of inaccuracy. Otegbulu and Babawale (2011) [7] opined that accurate plant and machinery valuation has the potentials to promote reliability and confidence in the Valuers' advice and professional report. This in-turn will create more jobs for estate firms who are competence in plant and machinery valuation.

The professional Valuers' ability to determine accurate value is not a simple task. He relies on impeccable market knowledge for his operations. This is unlike what is obtainable in money and capital markets where needed information are easy to come by. Professional Valuers must have to follow client's instructions, make judgments concerning depreciation, collect other relevant data, analyse the data collected and respond to various forces and pressure from the client. The outcome of this appraisal typically mirror in the final plant and machinery valuation figure (Otegbulu and Babawale, 2011; Otegbulu, 2019) [7] which is further supported in Otegbulu (2019) which opined that plant and machinery valuation is imprecise and an inexact activity.

Consequently, the imprecise nature of property valuation can lead to some degree of valuation inaccuracy. Plant and machinery valuation inaccuracy is a phenomenon that occurs when the valuation performed by a Valuer goes outside of the acceptable margin of error. Thus, 100% accuracy cannot be achieved, rather an opinion of value which must be within acceptable margin of error (Royal Institution of Chartered Surveyors, 2003; 2008). Otegbulu (2019) opined that inaccuracy exists in plant and machinery

valuation in Nigeria which are generally far beyond industry acceptable standards. This implies that professional Valuers do not perform this excercise based on international best practices. For professional Valuers to be relevant in plant and machinery valuation in Nigeria, they need to have full knowledge of the process involved.

From the foregoing, the main objectives of this paper are to;

- investigate the principles behind the practice of plant and machinery valuation
- examine the standard procedure to the process involved in the practice of the valuation
- determine the extent of compliance of practitioners in the study area to the process involved
- identify challenges being encountered in this valuation process by Valuers in the study area.

Literature Review

According to Advanced Oxford Dictionary, the term Plant is defined as "the machinery or equipment used in industrial or manufacturing process." It goes on to define it as "any fixture, implants, machinery and apparatus used in carrying on any industrial process". Plant according to International Valuation Standard Committee IVSC (2003) [15] is also defined as "an assemblage of assets that may include specialized non-permanent buildings, machinery and equipment". On the other hand, Machine according to Advanced Oxford Dictionary is defined as "an apparatus with several moving part and designed to perform particular task: machine may be driven by electricity, gas, steam, or by human power". Machine also can be interpreted as "an apparatus for applying mechanical power consisting of interrelated part with separate function, used in performance of some kind of work such as a mechanical apparatus or contrivance. In order to achieve a plausible understanding of the interpretation or definition of plant and machinery therefore, more definitions in literature are considered. Plant and Machinery has been defined by Smith (1971) as "machinery and equipment that comprises all facilities fixed or moveable, other than real property, used in manufacturing, processing or assembling of finished product from raw or fabricated material".

According to the International Valuation Standards Council (IVSC, 2010) [14], a plant is an asset that is inextricably combined with others and that may include specialized structures, machinery and equipment, while a machinery is an apparatus used for a specific process in connection with the operation of an entity. On the other hand, equipment is defined as other assets that are used to assist the operation of an enterprise or entity (IVSC, 2010) [14]. In simple terms, plant and machinery valuation entails the valuation of plant, machinery and equipment for various purposes. These purposes have been classified by Umeh (2009) [25] as either transaction-driven or non-transaction-driven.

According to Ifediora (2009) [13], plant and machinery refers to the apparatus, machinery, equipment and fixtures, etc. used in industrial and manufacturing process or a factory or place where an industry is conducted inclusive of the machines and instrumentalities therein contained. Otegbulu and Babawale (2011) [7] opined that investment in plant and machinery is not, however, limited to the manufacturing sector. The authors opined there is indeed huge investment in machinery and equipment in the mining oil and construction industry: in transport undertakings and telecommunication establishment in the information system.

Therefore, from the previous definitions and interpretations, plant and machinery can be defined as all the mechanical equipment or supporting facilities for manufacturing process and fix asset of a company other than land and building.

1. Concept of Plant and Machinery Valuation

Several definitions have been accorded to valuation by plethora of scholars and institutions or organized professional bodies and associations. For instance, Millington (2006), defines the term valuation as "the art or science of estimating the value for a specific purpose of a particular interest in property at a particular moment in time, taking into account all the features of the property and also considering all the underlying economic factors of the market, including a range of alternative investment". The process of estimating market values is referred to as valuation (Ekenta, 2014) [11]. Property valuation can also be defined as "a procedure aimed at determining the value of a property" (Tojanek, 2010) [24]. Valuation is the process of estimating the market value, investment, insured or other properly defined value of a specific parcel or parcels of real estate or of an item or items of personal property as of a given date (International Association of Assessing Officers IAAO, 2013). Valuation by itself is a process that goes a certain step to estimate the value of a property. Valuation of any type, whether undertaken to estimate market value or a defined non-market value, require that the Valuer apply one or more valuation approaches (International Valuation Standard Committee IVSC, 2003) [15]. The term valuation approach refers to generally accepted analytical methodology that are in common use (IVSC, 2003) [15]. The appropriate approach, method and technique of real estate valuation are selected by a professional Valuer with regard to; purpose of the valuation, type and location of the real estate, intended use of the real estate according to the local area development plan, accessibility of technical infrastructure, stage of development etc., availability of data concerning characteristics, prices and income gained from similar real estates.

2. Factors Affecting the Value of Plant and Machinery

According to Ogunba (2013) [16], the following factors affects the value of plant and machinery:

a. The purpose and basis of valuation: This affects the method of valuation and the variables included in the valuation.
b. Type of holding: Some plant and machinery investments are fully owned by the company, some on financial leases while others are held on operating leases. Assets held on financial leases are assets being purchased over a period of time, though the Leasee assumes all the rights and risks of ownership. Operating leases are hiring agreements under which the assets would revert to the Lessor at the end of the lease. This implies that engineering assets held under operating leases are not the property of the client and at best should be included only as wasting (leasehold) assets for the duration of the lease.
c. Items comprised: Items comprised in the plant and equipment must be separated into operational, surplus, and investment property. These items are then valued on different bases.
d. Costs to make the asset(s) productive: These costs are called make-ready and/or indirect costs. Often included

in these costs are associated expenses such as engineering, interest during construction, transportation (costs of freight, import duty, port charges etc), installation, attachment to utilities and start-up. Where the costs involved are very high, they could substantially increase the valuation relative to similar plant installed at lower costs.

e. The degree of obsolescence: The level of physical deterioration, functional obsolescence and economic obsolescence would affect the value through deductions on replacement cost new.
f. Profitability: The profitability of the company owning the engineering assets could affect value through the test of adequate profitability.

3. Who are the Professional Plant and Machinery Valuers?

Ogunba (2013) [16] opined that in general terms, one may define a professional Valuer as Chartered Valuation Surveyor (UK), Appraiser (US), Valuator (Canada) or Estate Surveyor and Valuer (Nig.) as a licensed or certified professional who carries out valuations of landed property or real estate for specific purposes in a manner that is autonomous, unbiased, and neutral. Ogunba (2013) [16] further opined that Valuers must have met laborious tests of education, training, competence and established skills. Valuers are also anticipated to work in line with codes of conduct (ethics and competency) and standards of professional practice. IVSC (2007) refers to a Valuer as a person who holds the basic qualifications, capability and knowledge to accomplish a valuation. More explicitly, a Valuer is a person of respectable personality who has obtained an appropriate degree at a recognized institution of higher learning, suitable experience over the years in practice and has become competent in valuing in the market, capable of classifying the assets and is conscious of and can comprehend and use appropriately those recognized methods and techniques that are needed to produce credible valuations; he must be a member of a recognized national proficient body; pursued a programme of certified education all over his or her career and follow all the requirements of the IVSC code of conduct (IVSC, 2007)

Ogunba (2013) [16] opined that in Nigeria, a license to practice as a Valuer is obligatory by law. Thus, the country specific legal definition of the Estate Surveyor and Valuer is often cited: a Valuer is a person duly registered to practice the profession of Estate Surveying and Valuation under the provisions of the Decree No. 24 of 1975, which set up the Estate Surveyors and Valuers Registration Board of Nigeria. The registration to valuation practice under the Decree comes after a minimum two-year apprenticeship program with a practicing Estate Surveyor and Valuer and the passing of professional examinations and interviews.

4. Accuracy of Plant and Machinery Valuation

Plant and equipment valuation is a generic specialization within the valuation discipline, just as we have specialization in other fields such as Medicine, Engineering and Pharmacy (Otegbulu, and Babawale, 2011, Otegbulu, 2019,) [7]. By consequence, the valuation of plant and equipment requires a high level of competency among practitioners in the industry. It is not an all-comers affair. In addition to this, there is a need to practice standardization to avoid methodological lapses and subsequent valuation inaccuracy (Otegbulu, 2019,). Looking at the contents of most valuation reports, it is easy to notice high level of inconsistencies in the valuation process and in most cases, the necessary information for value determination is lacking. Some of the reports do not include critical information like purpose and basis of valuation, make and capacity of machines, model and serial numbers, etc. (Otegbulu, 2018, Nasir, 2013, Josiah, 2016) [20].

Valuation accuracy deals with the discrepancy between previous independent valuation and transaction price of property. In effect and according to Nasir (2006), it is the ability of a valuation to correctly identify the target. Where the basis of valuation is the market value, which is often the case, valuation accuracy is the measure of the ability of valuation to identify subsequent sale price transacted in the market place. Valuation accuracy is therefore the measure of proximity of the valuation to actual transaction prices (Otegbulu, 2019). Valuation variance, on the contrary, refers to the difference between the valuations produced by different Valuers working on the same asset at the same time. It is essentially a theoretical measure used to indicate the reliability of a valuation or the robustness and potential accuracy of the valuation (Abidoye and Chan, 2017) [2]. Although inaccuracy in valuation may be commonly accepted as inevitable, the repercussion is nonetheless extensive and fraught with danger. Inaccurate valuation could be or is a threat to the credibility and relevance of the valuation profession, as the whole basis of professional advice relies on the assumption that valuations are good proxies for prices (Babawale and Omirin, 2011) [7]. In effect, if valuation has only a limited likelihood of accuracy, clients may begin to question the need for expert valuation opinion and it could imply that performance measurements for investment assets would be a fruitless exercise (Otegbulu and Babawale, 2011) [7].

5. The Process of Plant and Machinery Valuation

Valuation process is a systematic procedure used by Valuers to provide answers to the client's question about value and value-related issues. It begins when the Valuer understands and identifies the appraisal problem and concludes when the appraisal (valuation) report provides or reports the solution to the client. The number and manner of steps taken to resolve the problem depends on the nature of valuation engagement and data availability. This is why International Financial Reporting Standards (IFRS) provides three levels of value hierarchy in asset measurement, depending on the type and quality of available data. In any appraisal assignment, the goal of the valuation process is to produce a well-supported value opinion, which shows that the Valuer has considered all material facts that affect the value of the asset being appraised (American Society Appraiser, 2011). In summary, valuation process is the way of carrying out valuation. It is the same sequence of procedures adopted for all categories of valuation. This includes the following:

a. establishing the instruction, the scope and basis of valuation
b. compiling a schedule of assets to be valued through a survey and inspection of the plant and machinery, for identification of the assets condition, particulars and production capacity
c. carrying out a market survey for the prices of new and used machinery and equipment and other socio -

economic and environmental factors that may have influence on the asset value.

d. valuing the asset on the appropriate basis and method and produce a report for the client (Otegbulu and Babawale, 2011, Ifediora, 2009) [7, 13].

Research Methodology

The research design is survey research design while source of data is from primary and secondary sources. The study population is the practising Estate Surveyors and Valuers domiciled in Ondo State. There are 60 Valuers domiciled in Ondo State which are mainly found in Akure, the State capital. In the choice of Valuers, three basic classifications of Estate Surveyors and Valuers were identified namely private-sector Estate Surveyors and Valuers (i.e. those Estate Surveyors and Valuer working in private practice), public-sector Estate Surveyors and Valuers (i.e. Estate Surveyors and Valuers working in Government establishments such as Ministries, Corporations etc) and the academicians. The study focused on professional Valuers in private practice because they are in the majority and are actually the people mostly engaged in plant and machinery valuation assignments by various stakeholders.

Sampling frame refers to the whole list of all units in the population under study. It determines the organization of enquiries (Asika, 2001). Thus, the sample frame for this study is the registered Valuers who are operating in Akure, Ondo State. Among these, 60 Valuers have registered real estate firms according to the 2021 data of Ondo State branch of the Institution. This figure is therefore adopted as the sample frame for this study.

In the context of this study, the simple random sampling probability technique was used. The importance of the simple random sampling technique is that, each estate surveying firm is chosen entirely by chance and each estate surveying firm has an equal chance of being included in the sample. Thus, the element of bias is eliminated. There are many types of data collection instrument in research (Asika, 2001), the questionnaire is the data collection instrument for this study.

The study use both descriptive and inferential statistics to describe and test the hypothesis posited on the practice of plant and machinery valuation in the study area. Frequency and percentage distribution tables and measure of central tendency were used in describing the data along with Mean Item Score [MIS] for the responses on the Likert scale. The MIS is appropriate for ranking the performance of a variable among various competing variables. The ranking is useful in determining the most important variables among these competing variables and the Likert scale was found appropriate to be applied when determining Valuers' level of compliance with procedures involved in plant and machinery valuation and challenges that Valuers encounter in the practice of plant and machinery valuation.

For the test of hypothesis posited, the chi-square was used to establish the relationships between Valuers' profiles and compliance with the procedures involved in plant and machinery valuation. Data was analysed with the aid of the Statistical Package for Social Sciences (SPSS for Windows) version 22.0.

Discussion of Data

1. Introduction

This is based on the analysis of data gathered from the field by the means of various statistical techniques earlier discussed in this study. The discussion has been arranged into three major sections. The first section presents the response rate to questionnaires administered to Valuers in which the frequency table was used in the analysis. Section two presents the profiles of the respondents in terms of academic qualifications, professional qualifications and year of industry experience; also the frequency tables were used to present the selected profiles. The final section presents the practice of plant and machinery valuation from the view point of practicing Estate Surveyors and Valuers in Ondo State. The frequency tables and mean item score were used to present the results. The chi-square was used to test the hypotheses posited in the study.

2. Response Rate

Table 4.1 provides response rate to questionnaires administered to practicing Estate Surveyors and Valuers in Akure, Ondo State. From this Table, a total of 60 questionnaires were administered; out of the questionnaires administered, 40 were retrieved. Thus, the response rate represents 67% of the total number of questionnaires administered. This response rate is adequate, as previous studies have established (Abidoye and Chan, 2016) [1].

Table 1: Response Rate to Questionnaire Administered on practicing Estate Surveyors

S/No	Questionnaires	Frequency	Percentage
1.	Questionnaires retrieved	40	67
2.	Uncollected questionnaires	20	33
	Total	60	100

Source: Field Survey, 2021

3. Profile of Responding Valuers

This section presents the profile of the sample respondents in terms of their academic qualifications, professional qualifications and year of industry experience.

3.1 Academic Qualification of the Respondents

The information presented in Table 4.2 shows the highest educational qualification of the Valuers. Two of the respondents are PhD holders, 15 of the respondents possess a Master's degree and 23 of the respondents are Bachelor/Higher National Diploma Degree holders.

Table 2: Academic Qualification of the Respondents

S/No	Academic Qualification	Frequency	Percentage
1.	Doctorate Degree	2	5
2.	Master's Degree	15	37.5
3.	Bachelor's Degree/HND	23	57.5
	Total	40	100

Source: Field Survey, 2019

3.2 Professional Qualification of the Respondents

The statistics presented in Table 4.3 shows that 39 respondents are either Fellow or Associate members of NIESV representing 97.5% and 1 respondent is still a probationer representing 2.5%.

Table 3: Professional Qualification of Respondents

S/No	Professional Qualifications	Frequency	Percentage
1.	Associate of Nigerian Institution of Estate Surveyors and Valuers (ANIVS)	35	87.5
2.	Fellow of Nigerian Institution of Estate Surveyors and Valuers (FNIVS)	4	10
3.	Graduate/Probationer of the Nigerian Institution of Estate Surveyors and Valuers	1	2.5
	Total	40	100

Source: Field Survey, 2021

3.3 Experience of the Respondents in Practice

The information presented in Table 4.4 shows that 15 of the respondents, representing 37.5% have acquired an industry experience of between 16-20 years; while 6 respondents, representing 15% have acquired industry experience of over 20 years. Furthermore, 10 respondents, representing 25% have acquired industry experience of between 11-15years; while 6 of the respondents, representing 15% have acquired industry experience of between 5-10 years; finally, 3 of the respondents, representing 7.5% have acquired industry experience of less than 5 years.

Table 4: Industry Experience of the Respondents

S/No	Industry Experience	Frequency	Percentage
1.	Less than 5 years	3	7.5
2.	5-10 years	6	15
3.	11-15 years	10	25
4.	16-20 years	15	37.5
5.	Above 20 years	6	15
	Total	40	100

Source: Field Survey, 2021

4. Plant and Machinery Valuation Practice

This section of the study assesses the practice of plant and machinery valuation from the views of Estate Surveyors and Valuers practicing in Ondo State. This assessment provides comprehensive analysis on how Valuers have been faring in the practice of plant and machinery valuation in the study area.

4.1 Involvement of Valuers in Plant and Machinery Valuation

This part of the study presents the Valuers' involvement in plant and machinery valuation. As presented in Table 4.6; all the responding Valuers have been involved in plant and machinery valuation prior to this study. This perfect result is attributed to the fact that questionnaires retrieved were from Valuers who have been involved in plant and machinery valuation.

Table 5: Involvement of Valuers in Plant and Machinery Valuation

S/No	Involvement of Valuers in Plant and Machinery Valuation	Frequency	Percentage
1.	Yes	38	95
2.	No	2	5
	Total	40	100

Source: Field Survey, 2021

Table 4.7 shows the involvement of Valuers in plant and machinery valuation in the study area. 9 of the responding Valuers representing 22.5% opined to practice plant and machinery valuation "very often"; 17 respondents, representing 42.5% opined to carry out plant and machinery valuation "often"; 14 representing 35% opined to "rarely" carry out plant and machinery valuation.

Table 6: Extent of Valuers' Involvement in Plant and Machinery Valuation

S/No	Extent of Valuers' Involvement in Plant and Machinery Valuation	Frequency	Percentage
1.	Very Often	9	22.5
2.	Often	17	42.5
3.	Rarely	14	35
	Total	40	100

Source: Field Survey, 2021

4.2 Number of Plant and Machinery Valuation Assignments Undertaken in the Last 5 Years

The approximate number of plant and machinery valuation assignments undertaken in the last 5 years by respondent Valuers is reported in this section. As shown in Table 4.8; 12 of the Valuers, representing 30% undertook between 1 to 5 plant and machinery valuation; 10 representing 25% had undertaken between 6 to 10 plant and machinery valuation, 9 representing 22.5% had undertaken between 11 to 15 plant and machinery valuation while 9 of the responding Valuers, representing 22.5% had undertaken above 15 plant and machinery valuation in the last 5 years.

Table 7: Number of Plant and Machinery Valuation Undertaken in the Last 5 Years

S/No	Number of Plant & Machinery Valuation Undertaken in the Last 5 Years	Frequency	Percentage
1.	1-5	12	30
2.	6-10	10	25
3.	11-15	9	22.5
4.	Above 15	9	22.5
	Total	40	100

Source: Field Survey, 2021

4.3 Purposes for Valuers' Instruction in the Last 5 Years

The information presented in Table 4.9 reveals the purposes that Valuers' were commissioned to carry-out plant and machinery assignments in the last 5 years. As shown, insurance is the main reason for engagement. Mortgage, financial reporting, sales, purchases, and balance sheet were other prominent reasons that Valuers were engaged to conduct plant and machinery assignments in the last five years. All these purposes fell in the "often" category of the Likert scale classification. Valuers are "rarely" engaged to carry-out plant and machinery valuation for purposes such as obsolete equipment, specialized equipment, share flotation and market value removal.

Table 8: Purposes for Valuers' Instruction to value Plant and Machinery in the Last 5 Years

S/N	Purposes of Plant and Machinery Valuation	Mean Score	Rank	Remarks
1	Insurance valuation	2.9552	1st	Often
2	Mortgage	2.7298	2nd	Often
3	Probate valuation	2.2809	9th	Rarely
4	Financial reporting	2.7119	3rd	Often
5	Sale	2.7004	4th	Often
6	Purchase	2.6915	5th	Often
7	Balance sheet	2.6616	6th	Often
8	Privatization	2.5915	7th	Rarely
9	Damage Equipment	2.5661	8th	0ften
10	Obsolete Equipment	2.5550	10th	Rarely

Source: Field Survey, 2021

4.4 Basis of Plant and Machinery Valuation

This part of the study presents the bases that Valuers usually adopt in plant and machinery valuation. This is shown in Table 4.10. The respondents opined that the Open Market Value was the most used, they ranked this basis 1st with a mean score of 3.1809; indemnity basis was ranked 2nd with a mean score of 3.1432; reinstatement was ranked 3rd with a mean score of 3.0982 and 4th was forced sale value with a mean score of 2.3933. The ranking of the bases suggests that responding Valuers responses under the purposes of plant and machinery valuation correspond with the result of the bases of valuation.

Table 9: Basis of Plant and Machinery Valuation

S/N	Basis of Plant and Machinery Valuation	Mean Score	Rank	Remarks
1	Indemnity	3.1432	2nd	Often
2	Reinstatement	3.0982	3rd	Often
3	Open market value	3.1809	1st	Often
4	Forced sales value	2.3933	4th	Rarely

Source: Field Survey, 2021

4.5 Methods for Plant and Machinery Valuation

Table 4.11 presents the methods that Valuers mainly used while valuing plants and machineries It revealed largely that the Sales Comparison Method is the most used with a mean score of 3.2905, followed by the Cost Method which is ranked 2nd with a mean score of 3.0098 and the Income Approach which is ranked 3rd with a mean score of 2.1143.

Table 10: Methods of Plant and Machinery Valuation

S/N	Methods of Plant and Machinery Valuation	Mean Score	Rank	Remarks
1	Income/Investment	2.1143	3rd	Often
2	Sale Comparison	3.2905	1st	Often
3	Cost	3.0098	2nd	Often

Source: Field Survey, 2021

4.6 Valuers' Understanding of the Relationships between Purposes and Methods of Plant and Machinery Valuation

Result from Table 4.12 assesses the Valuers' understanding of the relationships between purposes and methods of valuing plant and machinery. As shown, majority of the Valuers responded favouring Cost Method for the purpose of Insurance Valuation, favours Sales Method for Mortgage, prefers Sales Method for Probate Valuation and favours Income Method for Financial Reporting. Other preferences are as shown in the table for different purposes. The table further revealed that Valuers in Ondo State are very conversant with the practice of plant and machinery through access to important materials such as International Valuation Standard [IVS], ESVARBON Valuation Template with the Green Book and RICS Standards.

Table 11: Valuers' Understanding of the Relationships between Purposes and Methods of Plant and Machinery Valuation

			Methods	
		N (%)	N (%)	N (%)
S/N	Purposes	Cost	Sales	Income
1	Insurance valuation	32(80)	6(14)	2(6)
2	Mortgage	3(7)	28(71)	9(22)
3	Probate valuation	10(23)	26(66)	4(11)
4	Financial reporting	3(7)	3(7)	34(86)
5	Sale	4(11)	33(82)	3(7)
6	Purchase	4(11)	32(78)	4(11)
7	Balance sheet	3(7)	9(23)	28(70)
8	Privatization	5(12)	20(50)	15(38)
9	Damaged equipment	8(21)	17(41)	15(38)
10	Obsolete equipment	15(38)	18(46)	7(16)

Source; Field Survey, 2021

4.7 Importance of Market Survey and Inventory in Plant and Machinery Valuation

Table 4.13 ranked the importance placed by practitioners on details of market survey/inspection and physical inventory in plant and machinery valuation. Machine condition, cost and capacity of machine, operating expenses, and maintenance history ranked topmost with mean score over 4.5000. Furthermore, all the other factors are important considerations in the valuation process, except pictures of the plant and machinery that was ranked fair by the responding Valuers. Thus, the omission of any of them would lead to inaccuracy in valuation (except pictures). For example, knowledge of machine condition will assist in the determination of physical deterioration, whereas the capacity of the machines in relation to installed capacity and operating capacity will assist in the determination of functional and economic obsolescence. If the plant is operating below installed capacity due to machine poor maintenance history, it will result in functional obsolescence, whereas if the capacity underutilization is due to external factors, it will lead to economic obsolescence. The responses shows good knowledge of factors to be considered in the valuation process. There is a need to confirm if this knowledge is translated into practice through content analysis. This will confirm the difference between Valuers perception of what should be done and what they actually do in practice. This will be captured by other researchers in future.

Table 12: Market Survey and Inventory in Plant and Machinery Valuation Practice

S/N	Market Survey and Inspection Plant and Machinery Valuation	Mean Score	Rank	Remarks
1	Maintenance history	4.5644	5th	Very Important
2	Country of origin	4.0001	11th	Important
3	Cost of plant and machinery	4.6095	2nd	Very Important
4	Purchased new or old	3.5002	19th	Important
5	The manufacturer	4.0003	10th	Important
6	Serial number and model	4.0844	9th	Important
7	Year of manufacture	4.4498	6th	Important
8	Year of purchase or fabrication	3.5984	13th	Important
9	Year of installation	3.5098	15th	Important
10	Cost index in the year of purchase	4.1183	8th	Important
11	Cost index on the date of valuation	4.2091	7th	Important
12	Lease terms	3.5000	20th	Important
13	Number of years of post-installation usage	3.5093	16th	Important
14	Operating expenses	4.5733	4th	Very Important
15	Import duties at the time of purchase	3.5084	17th	Important
16	Import duties at the date of valuation	3.5754	14th	Important
17	Exchange rates at the time of purchase	3.6046	12th	Important
18	Exchange rates on the date of valuation	3.5081	18th	Important
19	Picture	2.5095	21st	Fairly Important
20	Condition of machine	4.6900	1st	Very Important
21	Capacity of machine	4.5874	3rd	Very Important

Source: Field Survey, 2021

5. Data Analysis in Plant and Machinery Valuation

This aspect of the study presents the result of the data analysis as performed by Valuers in plant and machinery valuation. To perform this task, an investigation into how Valuers apply the three approaches in the valuation of plant and machinery is assessed.

5.1 Valuers' Level of Compliance with the Procedures Involved in Sales Comparison Approach to Plant and Machinery Valuation

As indicated in Table 4.14, respondent Valuers opined to total compliance with research transactional data into recently sold and similar plant and machinery from various sources, with a mean score of 4.8909. The respondents complied with the rest of the procedures as indicated in their mean rating analysis. It should be noted that, this result should not be taken as having high level of accuracy; this is because the result is not backed up by content analysis of plant and machinery valuation reports. Thus, acceptability of this result is still subject to content analysis which is outside of the scope of this study. However, the conclusion derived from this result is that Valuers comply with the process involved in sales approach when valuing plant and machinery.

Table 13: Valuers' Level of Compliance with the Procedures Involved in Sales Comparison Approach to Plant and Machinery Valuation

S/N	Sales Comparison Method Procedures	Mean	Standard Deviation	Rank	Remarks
1.	Researching transactional data into recently sold and similar plant and machinery from various sources	4.8909	1.0063	1st	Total compliance
2.	Verifying transactional data of the comparable plant and machinery	3.5543	0.8445	4th	Compliance
3.	Selecting units of comparison from the comparable plant and machinery (i.e price per unit of output capacity)	3.7112	1.2829	5th	Compliance
4.	Making adjustment from the comparable sale of plant and machinery with subject plant using qualitative and quantitative adjustment techniques	3.6430	0.6456	2nd	Compliance
5.	Reconciling value indication from the entire plant and machinery valuation process	3.6100	0.7652	3rd	Compliance

Source: Field Survey, 2021

5.2 Valuers' Level of Compliance with the Procedures Involved in Cost Approach to Plant and Machinery Valuation

As indicated in Table 4.15; respondent Valuers opined they observe total compliance with the procedures involved in the application of the cost approach to plant and machinery valuation. As all the computed mean scores were within the range of 4.5000 - 5.000. This result equally needs the backing of the content analysis from collected plant and machinery report for it to be dependable. However, this result indicates that Valuers may have been engaging in plant and machinery valuation jobs that warranted the use of the cost approach.

Table 14: Valuers' Level of Compliance with the Procedures Involved in Cost Comparison Approach to Plant and Machinery Valuation

S/N	Cost Method Procedures	Mean	Standard Deviation	Rank	Remarks
1.	Determine the reproduction cost new of the plant and machinery	4.8819	1.1212	1st	Total compliance
2.	Determine the excess capital cost of the plant and machinery	4.8650	1.0952	2nd	Total compliance
3.	Deduct the excess capital cost from the reproduction cost new to arrive at the replacement cost new	4.8339	0.7764	3rd	Total compliance
4.	Determine physical deterioration, functional obsolescence and	4.8314	0.7333	4th	Total compliance

	economic obsolescence				
5.	Deduct physical deterioration, functional obsolescence and economic obsolescence to arrive at depreciated replacement costs of the plant and machinery.	4.8943	0.8864	5th	Total compliance

Source: Field Survey, 2021

5.3 Valuers' Level of Compliance with the Procedures Involved in Income Approach to Plant and Machinery Valuation

As indicated in Table 4.16; respondent Valuers harangued they adhere to the standards involved in the application of the income approach to plant and machinery valuation. As indicated all the computed mean scores were within the range of 4.5000 - 5.000.

Table 15: Valuers' Level of Compliance with the Procedures Involved in Income Comparison Approach to Plant and Machinery Valuation

S/N	Income Approach Procedures	Mean	Standard Deviation	Rank	Remarks
1.	Determine the future benefits from the plant and machinery	4.7813	0.9932	3rd	Total compliance
2.	Determine the operating expenses for the plant and machinery	4.7532	0.7320	4th	Total compliance
3.	Deduct the operating expenses from the future benefits from the plant and machinery to arrive at the net income	4.8762	0.8187	2nd	Total compliance
4.	Determine the capitalization rate	4.6567	0.6334	5th	Total compliance
5.	Capitalize the net income with the capitalization rate to arrive at the capital value of the plant and machinery.	4.8899	1.2836	1st	Total compliance

Source: Field Survey, 2021

5.4 Valuers' Level of Compliance with Reporting in Plant and Machinery Valuation.

This section of the study assesses the Valuers' level of compliance with reporting in plant and machinery valuation reporting. As indicated in Table 4.17, Valuers harangued they adhere to the standards involved in report of plant and machinery valuation. As indicated, 9 out of the 12 reporting content recorded total compliance as their mean score rating were within the range of 4.5000 - 5.000. Valuers complied with the remaining three items, but not as the other 9 as depicted in the table.

Again, it must be reiterated that the result is limited to the opinions of the responding Valuers, content analysis of some of the valuation reports produced by these Valuers still needed to examine. A comparison from the findings from the structured questionnaire and content analysis must be examined to show the extent to which Valuers are consistent with their perception as indicated in this study.

Table 16: Valuers' Level of Compliance with the Reporting Plant and Machinery Valuation

S/No	Report	Mean	Standard Deviation	Rank	Remarks
1.	Title page	4.8990	1.0533	5th	Total compliance
2.	Cover letter	4.9110	1.1104	3rd	Total compliance
3.	Index or table of content	4.8554	1.0053	7th	Total compliance
4.	Executive summary	4.3209	1.1320	10th	Compliance
5.	Limiting conditions/ Assumptions	4.5508	1.2089	9th	Total compliance
6.	Definition/premise of value	4.8794	1.3342	6th	Total compliance
7.	Identification and description of the plant and machinery to be valued	4.9344	0.8611	2nd	Total compliance
8	Purpose of the valuation	4.9105	0.6212	4th	Total compliance
9.	Effective date of the valuation	4.9983	1.1099	1st	Total compliance
10.	Methodology	4.2330	1.0062	11th	Compliance
11.	Approaches to value	4.6790	1.3029	8th	Total compliance
12.	Summary of conclusion	4.1135	0.7838	12th	Compliance

Source: Field Survey, 2021

5.5 Valuers' Perception of the Overall Compliance with Plant and Machinery Processes

This section assesses the Valuers' perceptions of the overall level of compliance with the plant procedures involved in plant and machinery. As indicated in Table 4.4.5, respondents rated their compliance very high.

Table 17: Valuers' Level of Compliance with the Reporting Plant and Machinery Valuation

S/No	Overall Compliance	Mean	Standard Deviation	Rank	Remarks
1.	Instruction	4.9123	1.1188	1st	Total compliance
2.	Determination of the basis of valuation	4.8099	1.0063	3rd	Total compliance
3.	Data collection	4.8990	1.1214	2nd	Total compliance
4.	Data analysis	4.7178	1.0453	4th	Compliance
5.	Reporting	4.6609	1.2100	5th	Total compliance

Source: Field Survey, 2021

6. Challenges Affecting Plant and Machinery Valuation

This section measures the extent of seriousness of the challenges affecting plant and machinery valuation process. Table 4.4 indicated "lack of data" as being ranked 1st with a mean score of 4.3308; ranked 2nd is the "dishonesty on the information supplied by clients pertaining to the plant and machinery in question", it commands a mean score of 3.7643. Ranked 3rd is "client apathy" with a mean score of 3.6783; in 4th position is "fluctuation of the naira on weekly basis" with a mean score of 3.6113; rated 5th is "second hand plant and machinery are usually brought in refurbished and painted invoice" with a mean score of 3.4040; ranked 6th is "methodological lapses on the process of plant and machinery" with a mean score of 2.9984. "Inexperience of valuers in property data collection for plant and machinery" is rated 7th with a mean score of 2.9983 while problems of accounting for depreciation is rated 8th with a mean score of 2.6652; in 9th position is the "problems of accounting for physical depreciation and obsolescence of suffered plant and machinery" with a mean score of 2.5673 and in 10th position is "unwillingness of local suppliers to give their price list with a mean score of 1.4609.

Table 18: Challenges Affecting Plant and Machinery Valuation

S/No	Challenges Affecting Plant and Machinery Valuation	Mean	Standard Deviation	Rank	Remarks
1.	Lack of data	4.3308	1.0863	1st	Serious
2.	Methodological lapses on the process of plant and machinery	2.9984	1.1134	6th	Fairly Serious
3.	Problems of accounting for physical depreciation and obsolescence of suffered plant and machinery	2.5673	1.3206	9th	Fairly Serious
4.	Inexperience of valuers in property data collection for plant and machinery	2.9983	1.1489	7th	Fairly Serious
5.	Client apathy	3.6783	1.0067	3rd	Serious
6.	Unwillingness of local supplier to give their price list	1.4609	1.1198	10th	Highly Unserious
7.	Second hand plant and machinery are usually brought in refurbished and painted invoice	3.4040	1.2892	5th	Fairly serious
8.	Fluctuation of the value of national currency on weekly basis	3.6113	0.777	4th	Serious
9.	Dishonesty in the information supplied by the client	3.7643	1.0245	2nd	Serious
10.	Problems of depreciation	2.6652	1.6655	8th	Fairly Serious

Source: Field Survey, 2021

7. Test of Hypothesis

This section presents result of the test of hypothesis posited in this study. The following null hypotheses are posited for the study:

H_{01}**:** Level of professional experience has no significant relationship with professional Valuers' compliance with the process involved in plant and machinery valuation in the study area.

H_{02}: Level of education has no significant relationship with the professional Valuers' compliance with the process involved in plant and machinery valuation in the study area.

From Table 4.5.1, it can be established that significant relationships exist between Valuers' level of professional experience and educational attainments and compliance with plant and machinery valuation, as all the p-values are 0.00. This implies that professional experience and education achievements of the Valuers contributed to their knowledge of plant and machinery valuation.

Table 19: Chi-Square Test to Establish the Relation between Valuers' Professional Experience and Education and Compliance with the Procedures Involved in Plant and Machinery Valuation

S/No	Process of Plant and Machinery	χ^2-value	Df	*p*-value
1.	**Level of Professional Experience**			
	Instruction	0.00[a]	13	0.00[a]
	Determination of the Basis of Valuation	0.00[a]	13	0.00[a]
	Data Collection	0.00[a]	13	0.00[a]
	Data Analysis	0.00[a]	13	0.00[a]
	Preparation and Submission of Report	0.00[a]	13	0.00[a]
2.	**Level of Professional Experience**			
	Instruction	0.00[a]	13	0.00[a]
	Determination of the Basis of Valuation	0.00[a]	13	0.00[a]
	Data Collection	0.00[a]	13	0.00[a]
	Data Analysis	0.00[a]	13	0.00[a]
	Preparation and Submission of Report	0.00[a]	13	0.00[a]

Note: χ^2 means chi-square. [a]No statistics are computed because the process of plant and machinery valuation are a constant
Source: Field Survey, 2021

Summary of Findings, Conclusion and Recommendations

1. Summary of Findings

The study carefully evaluated the assessment to the practice of plant and machinery valuation by practicing Estate Surveyors and Valuers in Ondo State, Nigeria.

The findings are summarized as follows:

1. Estate Surveyors and Valuers are familiar and knowledgeable in plant and machinery valuation tasks.
2. Estate Surveyors and Valuers follows the plant and machinery valuation process.
3. Estate Surveyors and Valuers observed that the most appropriate bases for plant and machinery valuation are Open Market Value and Indemnity Value for insurance purpose.

4. Estate Surveyors and Valuers acknowledge the fact that income, cost and direct comparison method are best suited for evaluating plant and machinery valuation exercise. The cost method is said to be more appropriate.
5. Most of the problems that Valuers face during plant and machinery valuation assignment include; lack of database, expert bias, customers pressure, problems relating to confidentiality of customers information, methodological difference in the process of valuing plant and machinery.
6. There is significant correlation between Valuers' level of professional experience and his educational status going by the result of the hypothesis. This means that professional experience and level of education is a factor that enables Valuers to complying with the process of plant and machinery valuation.

Conclusion

This research work evaluates the practice of plant and machinery valuation in Ondo State, Nigeria. From this findings, it can be concluded that professional Valuers understand the practice of plant and machinery valuation which helps them to face and respond to practical problems that emanates from the process of carrying out any plant and machinery assignment.

Recommendations

Based on the findings from this study, the following recommendations are suggested:

1. The regulatory professional bodies (NIESV and ESVARBON) should ensure that relevant data are made available at finger tips so as to improve the quality of the Valuers report which will ultimately make Valuers work more reliable.
2. The regulatory bodies should also ensure sharpening the intellects of their members through periodical seminars, conferences and MCPD programs which should become a regular occurrence. At such seminars, training on how to accommodate depreciation in plant and machinery can be handled, erring members must be made to face penalties.
3. Estate Surveyors and Valuers at individual levels should be equipped themselves with necessary skills that will enable them deal with any pressure that emanates from plant and machinery assignments.
4. The regulatory bodies which serves as guardians of the profession should liaise with manufacturers of plant and machinery or sales representatives on how they can equip Valuers with relevant data and Valuers should be involved anytime they want to organise trade fares to make Valuers closer to the market.

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