Students' Perception of the Teaching and Learning of Plant and Machinery Valuation in a Nigerian University

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ABSTRACT

Plant and machinery valuation is an important aspect of valuation which is taught within the Estate Management and Valuation curriculum in Nigerian universities. This study examined the perception of students towards the teaching and learning of plant and machinery valuation in a typical Nigerian university. Data for the study were obtained through structured questionnaires administered to 500-level Bachelor of Technology (B.Tech) Degree students in the Department of Estate Management and Valuation, Federal University of Technology, Minna, Niger State, Nigeria, selected through purposive sampling technique. Descriptive and inferential statistical techniques were used in the analysis of data. It was found that the students' overall level of understanding was highest in the classification of plant and machinery assets and lowest in computer applications in plant and machinery valuation. Also, majority of the respondents strongly agreed that practical exercises in the field will facilitate understanding of plant and machinery valuation and that more time should be devoted to practical plant and machinery exercises in the field than lectures in the classroom. The study advocates for the inculcation of more practical and field exercises into the curriculum of plant and machinery valuation course and concludes that this will facilitate students' understanding of the basic topics in plant and machinery valuation at the university level.

Key words: *Teaching; Learning; Plant and Machinery Valuation; University; Nigeria*

INTRODUCTION

Plant and machinery valuation is one of the core courses taught within the Estate Management and Valuation curriculum of universities, polytechnics and colleges of technology in Nigeria. Plant and machinery valuation entails the valuation of plant and machinery assets for various purposes. These purposes include sale, purchase, compulsory acquisition and compensation, taxation, mortgage, financial statements, mergers, take-over bids, privatization and commercialization, liquidation, insurance, among others.

Plant and machinery includes installation and support facilities for processes or manufacturing which are designed to

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perform a specific predetermined function. These include all non-realty devices, in fixed or movable form, deployed in processing, manufacturing or assembling products from the stage of raw materials to finished goods (IVSC, 2010 and Maninggo, 2010). The education and training of plant and machinery valuers in Nigeria derived its origin from the United Kingdom. Generally speaking, the education and training of plant and machinery valuers in modern times originated in the United Kingdom and were of two stages. Initially, it was informal in nature and gradually developed into formal training as plant and machinery valuation became firmly established within the General Practice Division of the Surveying and Valuation profession in the UK. Derry (1985) traced the genesis of present-day plant and machinery valuation practice to the middle of the nineteenth century and narrated as follows:

> *"Although machinery appraisals have been undertaken probably from the time of the earliest civilisation, the plant and machinery valuation profession of today has its roots firmly set in the middle of the nineteenth century, when it was largely based upon the textile industry in the North of England. The specialist valuers of today have progressed a long way since those early days of insurance valuations in dark, satanic northern mills, and they now require highly specialised skills, knowledge of aspects of the insurance, accountancy, legal and real estate valuation professions, and an all-round knowledge of the plant and machinery utilised in a proliferation of industries and trades, together with a willingness to pack a suitcase and depart for any corner of the world at the shortest notice."*

Formal teaching of plant and machinery valuation started at the College of Estate Management in the United Kingdom. The teaching of the course at that time was based on the syllabus of the plant and machinery option of the professional examinations of the Royal Institution of Chartered Surveyors (RICS) London. The RICS is the foremost professional body for the surveying and valuation profession worldwide. In Nigeria, the teaching of plant and machinery valuation started at the University of Nigeria, Nsukka in 1970. At the beginning, it was taught as a component of Advanced Valuation and Rating Valuation courses and in 1987, plant and machinery valuation was introduced as a separate course in the Department of Estate Management of that institution for the first time in any Nigerian tertiary institution (Umeh, 2009). Since then, universities, polytechnics and colleges of technology in the country have reviewed the curriculum of their Estate Management programmes to include plant and machinery valuation as a separate course within the Estate Management discipline. The relevance of plant and machinery valuation in the industrial and economic development of a nation cannot be over-emphasized. With respect to the British economy, Derry (1985) reported as follows:

> *" There is no doubt that the management of British manufacturing industry is showing an increased awareness of the importance of being fully informed of the realistic worth of their plant and machinery assets. Following the asset stripping takeovers of the sixties and seventies, the adoption of the Current Cost Accounting Standard and a new awareness of the consequences of under-insurance, the advantage of sound professional advice in respect of the value of plant and machinery is now more fully appreciated and the specialist valuer can look forward to an increasingly important role in the future"*

In the context of Nigeria, these specialist plant and machinery valuers cannot be produced without effective teaching and learning of plant and machinery valuation in the nation's tertiary institutions. On this basis, this paper examines the perception of students towards the teaching and learning of plant and machinery valuation in a typical Nigerian university. Students' perception is necessary to improve the quality of knowledge in plant and machinery valuation disseminated to these future specialist valuers. As argued by Carland and Carland (1996):

> *We cannot prepare our students for the future based solely on our knowledge of the past. We must assume that our students will face challenges unknown to us. We must give them our knowledge and teach them the skills to learn without us*

Evidence from previous studies shows that students' feedback leads to improved performance (Gibbs, 1982; Mc Dowell, 1991). George and Cowan (2002) believe that students' feedback is essential to enable lecturers understand whether attempts to improve learning and educational experience lead to improvement. Based on current practice, end of module questionnaires are used to feedback levels of satisfaction and this is consistent with contemporary international practice (Kahn and Baume, 2003; Cornish, Reed and Wilkinson, 2009). This study utilised students' feedback which was focused on the students' learning experience and how such experience might be improved. According to Cornish *et al* (2009), the important aspect of students' feedback is that the educational process implemented is aware of students' perceptions, their needs and the barriers to learning. They further argued that students' views need to be fully considered and evaluated as a whole before appropriate action is taken. Ahmed and Aziz (2009) asserted that students' perception of their teacher's teaching contribute very much the improvements of the teaching and learning of the subject as it provides valuable suggestions and directions for the teacher's future improvement. Ampadu (2012) contended that students' perception of teaching provides teachers with new ideas in encouraging and stimulating students' active participation in the teaching-learning process. With regards to the teaching and learning of plant and machinery valuation in a typical Nigerian university, this study is important as it evaluates the perception of the students with a view to taking appropriate action to improve the teaching and learning of the course in the university. The study was designed to achieve two specific objectives. These objectives are:

(a) To examine students' perception of the teaching and learning of plant and machinery valuation at the Federal University of Technology, Minna, Nigeria
(b) To assess the students' level of understanding of the basic topics in plant and machinery valuation at the University.

METHODOLOGY

Research Design

The respondents for the study were 500-level Bachelor of Technology (B.Tech) degree students in the Department of Estate Management and Valuation, Federal University of Technology, Minna, Niger State, Nigeria, selected through purposive sampling technique. These students were selected because they have been taught plant and machinery valuation as a course in the university for a whole semester. Purposive sampling technique was used due to the smallness of the study population. The population of the students was 104, out of which only 90 students properly completed and returned the

research instrument administered for the purpose of the study.

Research Instrument

The instrument used for collecting data for the study was structured questionnaire. The questionnaire was designed to elicit information from the students on their perception of the teaching and learning of plant and machinery valuation in the University. The questionnaire was developed specifically for the study. Questions in the questionnaire were measured using a 5-point Likert scale format. Concerning the respondents' level of understanding of the basic topics in plant and machinery valuation, the format was *(Very Good = 5; Good =4; Fair =3; Poor =2 and Very Poor =1).* Similarly, the weights attached to the respondents' opinions on the teaching and learning of plant and machinery valuation in the University were: *Strongly Agree (5); Agree (4); Undecided (3); Disagree (2) and strongly Disagree (1)*. The questionnaire was designed with 12 closed-ended questions, arranged in four segments. The first segment comprised four questions intended to elicit information on the respondents' demographic characteristics. The second segment comprised a question and the respondents' assessment of their level of understanding of the basic topics in plant and machinery valuation. These basic topics were distilled from the contents of the plant and machinery valuation course in the current curriculum of Estate Management and Valuation Degree programme of the University, approved by the National Universities Commission (NUC).The NUC is the sole agency of the Federal Government of Nigeria charged with the responsibility for regulating university education in the country in all its aspects and ramifications. The third segment of the questionnaire comprised a question, made up of nine opinion statements on the teaching and learning of plant and machinery valuation in the university. The last segment of the questionnaire comprised five questions intended to elicit information on the career prospects of the respondents in plant and machinery valuation after graduation. The questionnaire was administered to each respondent at a time and the responses were treated in strict confidentiality. The initial draft of the questionnaire was given to some senior academic colleagues for scrutiny to ensure the validity of the contents of the questionnaire. This resulted in the restructuring of the questionnaire to reflect the knowledge content required for plant and machinery valuation in Nigeria. The reliability of the questionnaire, particularly its internal consistency was measured to ensure that the scale used for this study consistently reflect the construct it is measuring. The Cronbach's Alpha Reliability Coefficient was used to achieve this. This Reliability Coefficient ranges between 0 and 1(Cronbach, 1951; Cronbach, Gleser, Nanda and Rajaratnam, 1972 and Cronbach, 2004). According to George and Mallery (2003) as adopted by Gliem and Gliem (2003), the rules of thumb for the interpretation of Cronbach's Alpha are: > 0.9 (Excellent), > 0.8 (Good), > 0.7(Acceptable), >0 .6 (Questionable), >0 .5(Poor), and <0 .5(Unacceptable). Thus, a Cronbach's Alpha of 0.87 was obtained for the study, an indication of good internal consistency of the items under study. Based on the population of the respondents, a total of 104 structured questionnaires were administered, out of which 90 were properly completed and returned, representing a response rate of 86.5%.

Data Analysis Techniques

A 5-point Likert scale was used to determine the mean of the respondents' responses for each of the opinions. The respondents' opinions regarding their level of understanding of the basic topics in plant

and machinery valuation were analysed to determine their overall level of understanding. Also, their opinions on the teaching and learning of plant and machinery valuation in the University were analysed to determine their consensus opinion and rank based on the respondents' mean response and Relative Importance Index (RII) respectively. In the ranking of the opinions, the opinion with the highest RII was ranked first while the one with the lowest RII was ranked last. A one-way Analysis of Variance (ANOVA) was used to determine whether differences in the level of understanding of the basic topics in plant and machinery valuation between the male and female respondents are significant statistically while the Spearman's Rank-Order Correlation Model was used to determine whether the male and female respondents under study relate significantly in their opinions regarding the teaching and learning of plant and machinery valuation in the University. Where appropriate, absolute frequency and simple percentages were used to describe the data obtained for the study. A minimum of 70% was adopted as a benchmark to describe the degree of agreement of the respondents on a particular opinion. A consensus agreement was used to describe the total number of respondents who strongly agree or agree with an opinion. The cut-off points for the interpretation of the mean of the respondents' level of understanding of the basic topics in plant and machinery valuation were: Very Good (4.50-5.00); Good (3.50- 4.49); Fair (2.50-3.49); Poor (1.50-2.49) and Very Poor (1.00-1.49). Similarly, the cut-off points for the interpretation of the mean of the respondents' opinions on the teaching and learning of plant and machinery valuation in the University were: Strongly Agree (4.50-5.00); Agree (3.50- 4.49); Undecided (2.50-3.49); Disagree (1.50-2.49) and Strongly Disagree (1.00-1.49).

RESULTS

Data collected for the study include the demographic characteristics of the respondents as presented in Table1, respondents' opinions regarding their level of understanding of the basic topics in plant and machinery valuation as well as their opinions on the teaching and learning of plant and machinery valuation in the University as presented in Tables 2 and 3 respectively, among others.

Table 1: Demographic Characteristics of the Respondents

Characteristics	Frequency
Gender	
Female	34(37.8%)
Male	56(62.2%)
Total	90(100%)
Age Group	
15 – 20 years	1(1.1%)
21 – 25 years	47(52.2%)
26 – 30 years	37(41.1%)
31 – 35 years	3(3.3%)
36 years +	1(1.1%)
No Response	1(1.1%)
Total	90(100%)
Marital Status	
Divorced	1(1.1%)
Married	9(10.0%)
Single	79(87.8%)
Widowed	1(1.1%)
Total	90(100%)

Source: *Field Survey (2011)*

Based on the mean of the respondents' responses on their level of understanding of the basic topics in plant and machinery valuation as presented in Table 4, the respondents performed better in the classification of plant and machinery assets (95.4%) than in any other topic. Also, the respondents' overall level of understanding was lowest in computer applications in plant and machinery valuation (14.8%) than in any other topic. The respondents unanimously agreed (about 98.9%) that plant and machinery valuation has high practical content and should be taught with practical exercises. This opinion was ranked first by the respondents with a RII of 0.93 as presented in Table 5.

Table 2: Respondents' Responses on their Level of Understanding of the Basic Topics in Plant and Machinery Valuation

Basic Topics	Level of Understanding														
	Very Good			Good			Fair			Poor			Very Poor		
	M	F	All	M	F	All	M	F	All	M	F	All	M	F	All
Definition of plant, machinery and equipment	22	11	33 (36.7%)	33	21	54 (60%)	1	2	3 (3.3%)	-	-	-	-	-	-
Classification of plant and machinery	20	18	38 (43.7%)	29	16	45 (51.7%)	4	-	4 (0.46%)	-	-	-	-	-	-
Basis, methods and purposes of plant and machinery valuation	17	6	23 (26.4%)	27	15	42 (48.3%)	12	8	20 (23%)	-	2	2 (2.3%)	-	-	-
Industrial revolution	2	1	3 (3.4%)	11	4	15 (17.2%)	31	16	47 (54.02%)	10	9	19 (21.8%)	-	3	3 (3.4%)
Evolution of plant and machinery valuation	2	2	4 (4.5%)	14	4	18 (20.5%)	30	19	49 (55.7%)	8	5	13 (14.8%)	1	3	4 (4.5%)
Categories of plant and machinery valuation	14	4	18 (20.9%)	33	24	57 (66.3%)	8	3	11 (12.8%)	-	-	-	-	-	-
Insurance valuation of plant and machinery	12	4	16 (18.2%)	28	20	48 (54.5%)	15	9	24 (27.3%)	-	-	-	-	-	-
Compilation of plant and machinery inventory	7	5	12 (14%)	27	10	37 (43%)	18	16	34 (39.5%)	2	1	3 (3.5%)	-	-	-
Methods of depreciation of plant and machinery assets	12	4	16 (18.2%)	27	16	43 (48.9%)	17	12	29 (32.9%)	-	-	-	-	-	-
Determination of insurable value of plant and machinery on the basis of reinstatement with new	13	7	20 (22.2%)	24	18	42 (46.7%)	19	9	28 (31.1%)	-	-	-	-	-	-
Determination of insurable value of plant and machinery on the basis of indemnity	15	7	22 (24.4%)	24	15	39 (43.3%)	17	10	27 (3%)	-	2	2 (2.2%)	-	-	-

Table 3: Continued: Respondents' Responses on their Level of Understanding of the Basic Topics in Plant and Machinery Valuation

Basic Topics	Level of Understanding														
	Very Good			Good			Fair			Poor			Very Poor		
	M	F	All	M	F	All	M	F	All	M	F	All	M	F	All
Capitalisation of incomes from plant and machinery assets	2	-	2 (2.4%)	11	7	18 (21.2%)	35	17	52 (61.2%)	5	7	12 (14.1%)	1	-	1 (1.1%)
Valuation of plant and machinery for compulsory acquisition and compensation	2	2	4 (4.6%)	18	5	23 (26.4%)	23	19	42 (48.3%)	6	5	11 (12.6%)	6	1	7 (8%)
Valuation of plant and machinery forming part of a continuing business	6	4	10 (11.1%)	28	11	39 (43.3%)	20	18	38 (42.2%)	2	1	3 (3.3%)	-	-	-
Determination of net current Replacement cost of plant and machinery	8	4	12 (13.5%)	22	11	33 (37.1%)	23	18	41 (46.1%)	2	-	2 (2.2%)	-	1	1 (1.1%)
Indexing of replacement cost of plant and machinery assets	6	1	7 (8.1%)	17	13	30 (34.9%)	27	13	40 (46.5%)	4	5	9 (10.5%)	-	-	-
Sources of cost information for plant and machinery valuation	16	5	21 (23.9%)	22	13	35 (39.8%)	15	10	25 (28.4%)	2	5	7 (7.9%)	-	-	-
Computer applications in plant and machinery valuation	1	1	2 (2.5%)	6	4	10 (12.3%)	21	9	30 (37%)	15	10	25 (30.9%)	8	6	14 (17.3%)
Plant and machinery valuation report	9	2	11 (12.5%)	19	16	35 (39.8%)	26	15	41 (46.6%)	1	-	1 (1.1%)	-	-	-

Note: M= Male Respondents' Responses; F= Female Respondents' Responses; All= Responses of all Respondents **Source:** *Field Survey (2011)*

Table 3: Respondents' Opinions on the Teaching and Learning of Plant and Machinery Valuation in the University

Opinion	Respondents' Responses														
	Strongly Agree			Agree			Undecided			Disagree			Strongly Disagree		
	M	F	All	M	F	All	M	F	All	M	F	All	M	F	All
Plant and machinery valuation has high practical content and should be taught with practical exercises	37	24	61 (67.8%)	19	9	28 (31.1%)	-	1 (1.1%)	1	-	-	-	-	-	-
Quantitative skills are necessary for solving plant and machinery valuation problems	23	15	38 (43.7%)	31	16	47 (54%)	2	-	2 (2.3%)	-	-	-	-	-	-
Practical exercises in the field will facilitate understanding of plant and machinery valuation	42	18	60 (67.4%)	11	13	24 (27%)	3	1	4 (4.5%)	-	1	1 (1.1%)	-	-	-
More time should be devoted to practical plant and machinery exercises in the field than lectures in the classroom	16	6	22 (24.7%)	22	19	41 (46.1%)	10	3	13 (14.6%)	8	5	13 (14.6%)	-	-	-
Most examples in plant and machinery valuation given by lecturers in the classroom are abstract	5	6	11 (12.5%)	13	8	21 (23.9%)	11	7	18 (20.5%)	20	10	30 (34.1%)	7	1	8 (9%)
Plant and machinery valuation is difficult to understand	3	-	3 (3.4%)	6	5	11 (12.4%)	1	8	9 (10.1%)	39	17	56 (62.9%)	7	3	10 (11.2%)

Note: M= Male Respondents' Responses; F= Female Respondents' Responses; All= Responses of all Respondents **Source:** *Field Survey (2011)*

Table 4: Continued: Respondents' Opinions on the Teaching and Learning of Plant and Machinery Valuation in the University

Opinion	Respondents' Responses														
	Strongly Agree			Agree			Undecided			Disagree			Strongly Disagree		
	M	F	All	M	F	All	M	F	All	M	F	All	M	F	All
Lecturers with practical experience teach plant and machinery valuation better	25	13	38 (42.2%)	27	14	41 (45.6%)	3	5	8 (8.9%)	1	2	3 (3.3%)	-	-	-
Students should be given real live problems in plant and machinery valuation to solve in the classroom	23	11	34 (37.8%)	32	17	49 (54.4%)	1	2	3 (3.3%)	-	4	4 (4.4%)	-	-	-
Only lecturers with a minimum of master's degree and professional qualifications should teach plant and machinery valuation	20	15	35 (38.9%)	19	15	34 (37.8%)	6	2	8 (8.9%)	1 0	2	12 (13.3%)	1	-	1 (1.1%)

Note: M= Male Respondents' Responses; F= Female Respondents' Responses; All= Responses of all Respondents **Source:** *Field Survey (2011)*

Similarly, 94.4% of the respondents unanimously agreed that practical exercises in the field will facilitate understanding of plant and machinery valuation. This opinion was ranked second by the respondents with a RII of 0.92. In terms of the consensus opinion, the respondents agreed on all the opinions, but disagreed that plant and machinery valuation is difficult to understand. This opinion was ranked last by the respondents with a RII of 0.47. Analysis of Variance (ANOVA) in the level of understanding of the basic topics in plant and machinery valuation between the male and female respondents produced an F-ratio of 0.39 at p-value greater than 0.05 as presented in Table 6. This implies that although there are differences in the level of understanding of the basic topics in plant and machinery valuation between the male and female respondents, such differences are not significant statistically. The correlation analysis of opinions of male and female respondents regarding the teaching and learning of plant and machinery valuation in the University produced a strong positive correlation coefficient of 0.82 at p-value less than 0.05. This was found to be significant at both 0.05 and 0.01 levels as the p-value is 0.0072 (2-tailed) as presented in Table 7. The implication of this is that, the male and female respondents under study relate significantly in their opinions regarding the teaching and learning of plant and machinery valuation in the University. Respondents were also asked if they would undergo post- graduate studies after their first degree programme.

About 79% of the respondents answered in the affirmative as shown in Figure 1.

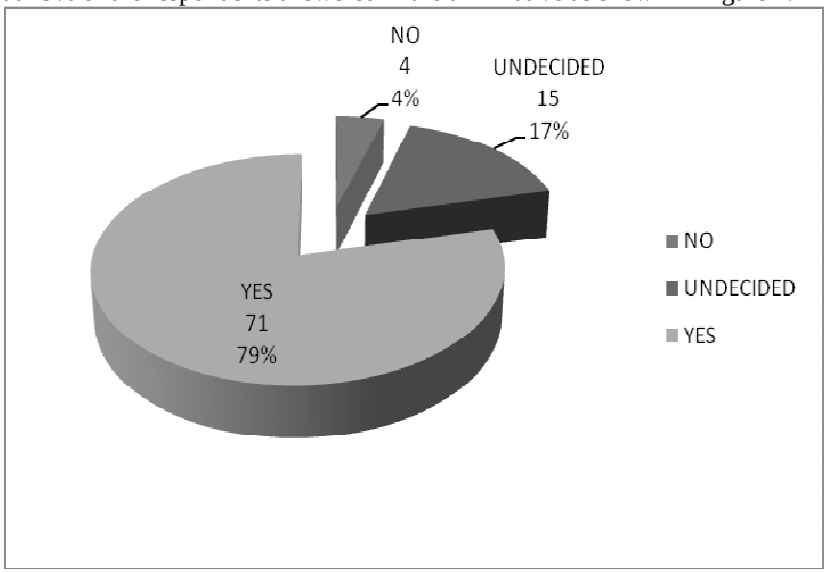

Figure 1: Respondents' responses on their willingness to undergo post-graduate studies after first degree

However, only 15% of the respondents are willing to specialise in plant and machinery valuation at the postgraduate level as shown in Figure 2.

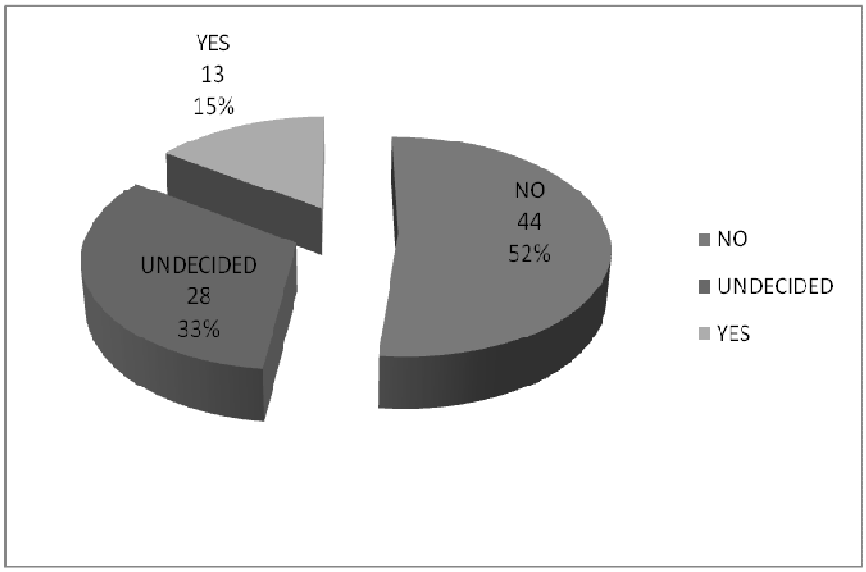

Figure 2: Respondents' responses on their willingness to specialise in plant and machinery valuation at the postgraduate level

Furthermore, the majority of the respondents (about 73%) are willing to seek for professional registration in the estate surveying and valuation profession after graduation as shown in Figure 3.

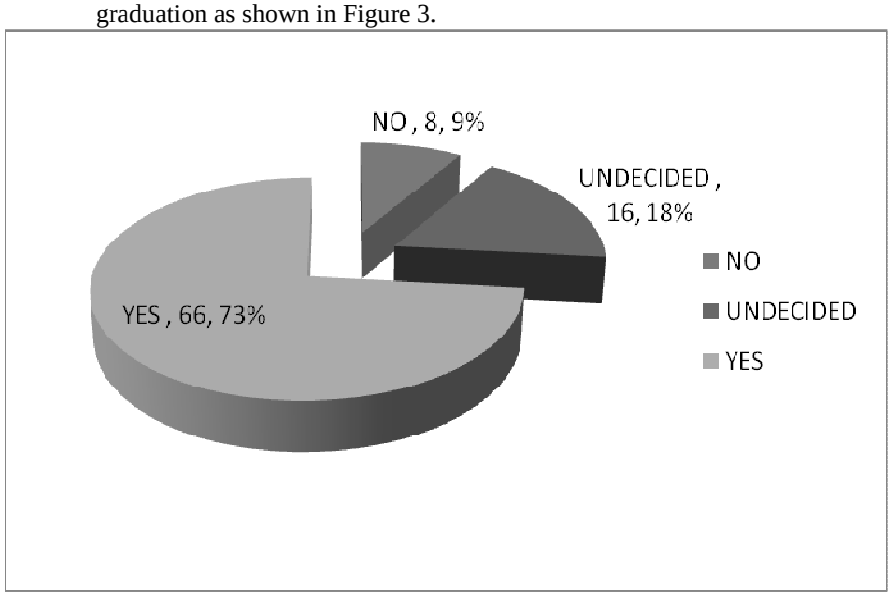

Figure 3: Respondents' responses on their willingness to seek for professional registration in the estate surveying and valuation profession after graduation

Table 4: Respondents' Overall Level of Understanding of the Basic Topics in Plant and Machinery Valuation

Basic Topics	Mean		
	Male	Female	All
Definition of plant, machinery and equipment	4.38	4.26	4.33
Classification of plant and machinery	4.30	4.53	4.39
Basis, methods and purposes of plant and machinery valuation	4.09	3.81	3.99
Industrial Revolution	3.09	2.73	2.95
Evolution of plant and machinery valuation	3.15	2.91	3.06
Categories of plant and machinery valuation	3.51	4.03	4.08
Insurance valuation of plant and machinery	3.95	3.85	3.91
Compilation of plant and machinery inventory	3.72	3.59	3.67
Methods of depreciation of plant and machinery assets	3.91	3.75	3.85
Determination of insurable value of plant and machinery on the basis of reinstatement with new	3.89	3.94	3.91
Determination of insurable value of plant and machinery on the basis of indemnity	3.96	3.79	3.90
Capitalization of incomes from plant and machinery assets	3.15	3.00	3.09
Valuation of plant and machinery for compulsory acquisition and compensation	3.09	3.06	3.07
Valuation of plant and machinery forming part of a continuing business	3.68	3.53	3.62
Determination of Net Current Replacement cost of plant and machinery	3.65	3.50	3.60
Indexing of replacement cost of plant and machinery assets	3.46	3.31	3.41
Sources of cost information for plant and machinery valuation	3.95	3.55	3.80
Computer applications in plant and machinery valuation	2.55	2.47	2.52
Plant and machinery valuation report	3.65	3.61	3.64

Table 5: Respondents' Consensus Opinion on the Teaching and Learning of Plant and Machinery Valuation in the University

Opinion	Mean			Respondents' Consensus Opinion	Relative Importance Index	Rank
	Male	Female	All			
Plant and machinery valuation has high practical content and should be taught with practical exercises	4.66	4.68	4.67	Strongly Agree	0.93	1
Quantitative skills are necessary for solving plant and machinery valuation problems	4.38	4.48	4.41	Agree	0.88	3
Practical exercises in the field will facilitate understanding of plant and machinery valuation	4.70	4.45	4.61	Strongly Agree	0.92	2
More time should be devoted to practical plant and machinery exercises in the field than lectures in the classroom	3.82	3.79	3.81	Agree	0.76	7
Most examples in plant and machinery valuation given by lecturers in the classroom are abstract	2.80	3.25	2.97	Undecided	0.59	8
Plant and machinery valuation is difficult to understand	2.27	2.45	2.34	Disagree	0.47	9
Lecturers with practical experience teach plant and machinery valuation better	4.36	4.12	4.27	Agree	0.85	4
Students should be given real live problems in plant and machinery valuation to solve in the classroom	4.39	4.03	4.26	Agree	0.85	4
Only lecturers with a minimum of master's degree and professional qualifications should teach plant and machinery valuation	3.84	4.26	4.00	Agree	0.80	6

Table 6: Result of the Analysis of Variance in the level of understanding of the basic topics in plant and machinery valuation between the male and female respondents under study

Source of variation	Sum squares	DF	Mean square	F statistic	p
Groups	0.096	1	0.096	0.39	0.5372
Residual	8.903	36	0.247		
Total	8.999	37			

Table 7: Result of correlation analysis of opinions of male and female respondents regarding the teaching and learning of plant and machinery valuation in the University

rs statistic	0.82	
95% CI	0.33	to 0.96
t statistic	3.74	
DF	7	
2-tailed p	0.0072	

DISCUSSION

The majority of the students (about 98.9%) unanimously hold the opinion that plant and machinery valuation has high practical content and should be taught with practical exercises. The overall level of understanding of the students in the classification of plant and machinery assets was higher than that in any other topic while the students' overall level of understanding was lowest in computer applications in plant and machinery valuation. Also, the students unanimously agreed (about 94.4%) that practical exercises in the field will facilitate understanding of plant and machinery valuation. Other opinions agreed by the students include that more time should be devoted to practical plant and machinery exercises in the field than lectures in the classroom (70.8%), lecturers with practical experience teach plant and machinery valuation better (87.8%), students should be given real live problems in plant and machinery valuation to solve in the classroom(92.2%) and only lecturers with a minimum of master's degree and professional qualifications should teach plant and machinery valuation(76.7%). However, the students disagreed that plant and machinery valuation is difficult to understand. Also, although there are differences in the level of understanding of the basic topics in plant and machinery valuation between the male and female students, such differences are not significant statistically. The relevance of the findings of this study are consistent with those of similar studies such as George and Cowan (2002); Cornish *et al.* (2009); Ahmed and Aziz (2009) and Ampadu (2012). Most importantly, the study revealed lack of practical and field exercises as the major barrier to effective learning of plant and machinery valuation in the university. It also revealed the basic topics in the plant and machinery course

which require improvement in terms of the quality of teaching delivered by the lecturers. The findings of this study can help the university authorities in creating an enabling environment for students and lecturers for the purpose of achieving effective teaching and learning of plant and machinery valuation. Such conducive teaching and learning environment is highly necessary for the production of specialist plant and machinery valuers for the Nigerian economy. Although the study was limited to a single Nigerian university, it provides the foundation for further research into students' perception of effective teaching and learning of plant and machinery valuation in other tertiary institutions in Nigeria.

CONCLUSION

The implication of these findings on the teaching and learning of plant and machinery valuation in the University is that, there is an urgent need to inculcate more practical and field exercises into the curriculum of plant and machinery valuation course in this university in particular, and other universities offering this course in the Nigerian university system in general. This will in no small measure facilitate students' understanding of the basic topics in plant and machinery valuation.

RECOMMENDATION

Modern instructional materials should be provided for effective teaching of plant and machinery valuation in the country. These should include computer programs that could improve the proficiency of university students in the application of computers to the valuation of plant and machinery assets. As a matter of policy, the Federal Government of Nigeria should build capacity in plant and machinery valuation education to develop higher level manpower for the teaching of plant and machinery valuation in the polytechnics and universities in the country, given the relevance of plant and machinery valuation in the industrial development of Nigeria. Furthermore, the Federal Government of Nigeria through the National Universities Commission should develop strong synergy between universities offering courses in plant and machinery valuation and manufacturing industries in the country. This will enhance the exposure of the university students to adequate practical experience in plant and machinery valuation through regular field trips to such industries.

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