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Full Length Research Paper

Estate surveyors and valuers' perception and methods of wetland valuation in Lagos metropolis

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The study examined the relationship between Estate Surveyors and Values' perception and wetland valuation method(s). A total of 267 questionnaires were administered on the respondents out of which 163 (representing 61%) were retrieved and used for the study analysis. Both descriptive and inferential statistical tools were used in the analysis of the data. The study hypothesis was tested, using regression analysis, analysis of variance (ANOVA) and coefficient of determination. The hypothesis showed that, there is no statistically significant relationship between Estate Surveyors and Value's perception and the method(s) used in wetland valuation. With R^2 value of 0.026, F-ratio of 0.084 and P>0.05 indicates that Estate Surveyors and Value's perception does not really affect the approaches used in valuing wetlands. This could have emanated from the fact the respondents neither have any training in environmental valuation either in school or at the professional examinations. It is thereby recommended that NIESV and ESVARBON should encourage more workshops on wetland (environmental) valuation in addition to its inclusion in the professional syllabus as it is the current practice in higher institutions offering estate management courses.

Keywords: Compensation, environment, perception, valuation, wetlands, Lagos.

INTRODUCTION

It was generally thought according to observations by Dahl and Allord, (1990) that wetlands create obstacles for development and that wetland sites should be used for other purposes. In addition, wetlands were also regarded by the society at large, as swampy lands that bred diseases, restricted overland travel, impeded the production of food and fiber, and generally were not useful for frontier survival. They noted that as a result of diverse range of animals including water birds, frogs, invertebrates and fish species, as well as water-loving plants such as sedges, rushes and various trees provided, society's views about wetlands changed considerably during the middle of the twentieth century and since then awareness of the need to preserve wetlands has increased. Tracing the history of wetlands in the Conterminous United States, they (Dahl and Allord 1990) opined that wetlands are highly productive and valuable ecosystems but the public good characteristics of many of the functions, or products and services they provide often results in wetlands being undervalued in decisions relating to their use and conservation.

There is now growing concern worldwide about the destruction and degradation of natural ecosystems and the attendant loss of biodiversity. On the average, almost 15 million hectares of forest were lost every year during the 1990s, mostly in the tropics (Food and Agricultural Organization, FAO, 2001). Thirty-five (35) percent of mangrove forests have been lost in the last two decades

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(Valiela, Bowen and York, 2001). According to Wilkinson (2000), an estimated 11 percent of the world's coral reefs have been lost, and an additional 16 percent was severely damaged. Managed ecosystems such as wetlands have also become increasingly degraded (Wilkinson, 2000). The import of all these is that there is need for proper pricing of wetland ecosystems and this can be achieved by using appropriate techniques to determine the value of these important ecosystems.

Robinson (2001), opined that, the values associated with wetland functions can be categorized into distinct components of the total economic value according to the type of use namely; direct use, indirect use and option values. Direct use values are derived from the uses made of a wetland's resources and services, for example wood for energy or building, water for irrigation and the natural environment for recreation. Indirect use values are associated with the indirect services provided by a wetland's natural functions, such as storm protection or nutrient retention. Option value is related to the preference or willingness to pay, to maintain the possibility of future use. The concept of option value includes preferences for preserving an environmental asset for possible future use by current (philanthropic value) or future generations (bequest value).

Conceptually, therefore, the total economic value (TEV) of an environmental resource consists of its use value (UV) and non-use value (NUV). Use values may be broken down further into the direct use value (DUV), the indirect use value (IUV) and the option value (OV) which can also be referred to as potential use value. In order to account for their importance, a diverse range of valuation methods are available for valuing wetland functions/services, attributes and products (Turpie, Lannas, Scovronick and Louw, 2009). Such methods include: the contingent valuation, hedonic pricing, travel cost, production function, net factor income, total revenue estimation, opportunity cost and replacement cost. The application of each of these methods depends largely on the wetland function being valued, the type of value and the purpose of valuation.

Nigeria is blessed with a lot of environmental (natural) resources dotting the whole of the southern part of the country (Agbi, Abang, and Animashaun 1995). For proper management and maintenance of these natural goods and services, there is the need, like in other nations such as Australia, Canada, UK and USA, to ascribe values to them, as doing this will help decision/policy makers to really understand the implication(s) of their decisions on these important natural resources within human environment. The study of wetland valuation practice encompasses an understanding of the purpose of valuation, perception, element (duty) of care, methodology, basis of valuation, market survey and analysis. However, the focus of the present study is limited to the relationship between perception (i. e. awareness, opinion or insight) about wetlands ecosystem and methodology (approaches adopted in assigning value to them). A study of these two aspects of wetland valuation practice is very important in the light of the need to include the value of natural resources in the green account of the nation taking adequate cognizance of this natural resource in decision/policy making. This study, therefore, was embarked upon to assess how the perception of wetlands affect the method(s) adopted in their valuation by Estate Surveyors and Values.

STUDY AREA

Nigeria landscape is dotted with wetland resources both in the North and the South. Nigeria wetlands fall into two major categories to wit; the Saline Coastal Mangrove Swamps (MS) and, and the Freshwater Floodplains (FF). The freshwater wetlands (floodplains) cover an area of 9,000km^2 in the coastal States of Akwa Ibom, Cross River, Delta, Edo, Lagos, Ondo, and Rivers (Agbi, Abang, and Animashaun 1995). Also, mangrove swamps with a land size of 858 km^2 are found in States such as Rivers, Cross Rivers, Imo, parts of Edo and Lagos States (Eregha and Irughe 2009).

Until 1991, Lagos was the seat of the Federal government of Nigeria, and till date, the metropolis remains the commercial nerve centre of the nation. Sixteen (16) out of the twenty (20) Local Government Council Areas of Lagos State fall within Lagos Metropolis. The State lies in South-Western Nigeria, on the Atlantic coast in the Gulf of Guinea, West of the Niger River delta, located on longitude 3° 24' E and latitude 6° 27' N. The Southern boundary of the State is formed by a 180 kilometre Atlantic Coastline, while its Northern and Eastern boundaries are shared with Ogun State. Lagos has a tropical savanna climate that is similar to that of the rest of Southern Nigeria. There are two rainy seasons, with the heaviest rains falling between April and July and a lighter rainy season around October and November. Lagos is Nigeria's most prosperous city and much of the nation's wealth and economic activities are concentrated there. Most commercial, financial and business centers of Lagos and of Nigeria remain within the Central Business District in Lagos Island. This area is dotted with high rise buildings. This is also where most of the country's mega banks, financial institutions and headquarters of big corporations are located. Lagos has one of the highest standards of living as compared to other cities in Nigeria as well as in Africa at large. Lagos is also home to many of Nigeria's Financial Institutions, Banks and Insurance Companies. Lagos State is the smallest State in Nigeria, with an area of 356,861 hectares of which 75,755 hectares (about 21%) are wetlands (Oshundeyi and Babarinde, 2003).

Lagos metropolis houses the highest number (267 or 46%) of the Estate Surveying and Valuation firms in Nigeria (Nigerian Institution of Estate Surveyors and Valuers – NIESV Directory, 2009).

Wetlands and their Classifications

Mitsch and Gosselink (1993) observed that there is no consistent method developed to classify wetland. They are of the opinion that the easiest way to differentiate wetlands is to divide wetlands between natural and constructed types. In another classification of wetland, Gren and Soderqvist (1994) base their approach on the total production output of a wetland and this is divided between three different uses: (i) for its own development and maintenance; (ii) for export to other ecosystems; and/or (iii) for export to human society. The U.S. Fish and Wildlife Service (Shaw and Fredine, 1956) develop the first classification scheme in 1956. In this classification, twenty types of wetlands were described under the following four categories; inland fresh areas, inland saline areas, coastal freshwater areas and coastal saline areas. The classification scheme used in the United States, as part of the National Wetlands Inventory (Cowardin, Carter, Golet, and LaRoe, 1979) is very formal and all encompassing. The classification system is based on a taxonomic separation scheme, in which all wetland and deep-water habitats are divided into five systems (marine, estuarine, riverine, lacustrine, and palustrine), and further subdivided into various subsystems and classes. Mitsch and Gosselink (1993) group wetland types into two initial systems (coastal and inland).

In the study conducted in Nigeria Agbi, Abang, and Animashaun (1995), identify two major types of wetlands in Nigeria; they are freshwater wetlands and coastal wetlands. Freshwater wetlands include swamps, marshes, bogs and similar areas that are inundated or saturated by surface or groundwater at a frequency and for duration sufficient to support. Coastal wetlands means all tidal and sub-tidal lands, including all areas below any identifiable debris line left by tidal action; all areas with vegetation present that is tolerant of salt water and occurs primarily in a salt water or estuarine habitat; and any swamp, marsh, bog, beach, flat or other contiguous lowland which is subject to tidal action during the maximum spring tide level as identified in tide tables published by the National Ocean Service. Coastal wetlands may include portions of coastal sand dunes. Nigeria wetlands fall into two major categories to wit; the Saline Coastal Mangrove Swamps (MS), and the Freshwater Floodplains (FF). Eregha and Irughe (2009) noted that the mangrove swamps covers an area of 9,000km^2 in the coastal States of Akwa Ibom, Cross River, Delta, Edo, Lagos, Ondo and Rivers while floodplains covers an area of 2,585 km^2 mostly along Niger/Benue River system.

Effects of Economic Activities on Wetlands

Many wetland losses, the world over, are direct result of economic activities engaged in by man. These activitiesrange from agriculture, construction, water diversion and a host of others. It is estimated that around 5 percent of agricultural land globally (264 million ha) is irrigated, with South Asia (35%), Southeast Asia (15%) and East Asia (7%) showing a high dependency on irrigation. China and India have 39 percent of the global irrigated area and Western Europe and United States have 13 percent, while sub-Saharan Africa and Oceania have less than 1 percent of their agricultural land irrigated (Pilot Analysis of Global Ecosystems P.A.G.E, 2000). Irrigation accounts for approximately 70 percent of the water withdrawn from freshwater systems for human use. Only 30 – 60 percent is subsequently used downstream, making irrigation the largest net user of freshwater. Estimates also show that the share of cropland that is irrigated has grown by 72 percent from 1996. Some of the established effects of agriculture on wetlands, as identified by Mironga, (2005), include:

i. Direct loss of wetlands due to draining and conversion to agricultural land.
ii. Indirect loss of wetlands area due to water withdrawal from rivers and streams for irrigation.
iii. Loss of wetland area and function due to damming for water storage.
iv. Loss of seasonal wetlands due to changed hydrologic cycle from water storage.
v. Loss of wetland functions due to salinisation, sediment deposition, erosion, eutrophication.
vi. Pollution from use of pesticides and other chemicals.
vii. Creation of wetland.

The effects of livestock grazing on species composition have been found to ultimately affect the structure and function of wetland vegetation. In a study conducted in Southern Wisconsin, Middleton (2002) found that sedge meadows that were recovering from cattle grazing structurally changed into a dense shrub Carr while sedge meadows that had never been grazed had a different species composition to grazed madows but were still similar structurally. Several other studies report the effects of livestock grazing on wetland birds. In the same vein, Mironga (2005), in a study conducted on Kisii District of Kenya, points out that drainage and other forms of disturbance associated with agriculture are the main contributors to wetland loss. In a study conducted in Zimbabwe, Madebwe and Madebwe (2005) conclude that growth in population, high drought incidence rates, national and economic developmental challenges resulted in many gardens being established on the fringes and within wetlands. Wetlands are exploited more during the dry months. Households take advantage of the wetlands' moist conditions to grow a variety of vegetables and root crops for sale or for own consumption.

Conducting a study in Delhi, India, Kumar, Love, Sharma and Rabu (2003) concluded that, the pressure for conversion of wetlands for developmental purposes is very high especially in case of urban riparian wetlands.

These wetland ecosystems provided many tangible and intangible benefits on a sustainable basis not only to the urban society, but also to the associated dependent ecosystems. Wetland areas on the fringes of river channels in a city are looked upon as a precious property resource with different potential land uses such as agriculture, site for human settlements, industries, civic construction and waste dumping sites, to mention just a few. All the literature sited above, showed that economic activities such as grazing and draining wetlands for agricultural purposes have great effect on wetland ecosystems.

Approaches to Valuing Wetlands

Arguing in favor of valuation generally, Blight (2003) describes valuation as a vital element in the efficient functioning of modern economies and of modern society. He further asserts that without accurate valuations, scarce resources may be allocated incorrectly. For an economy and therefore the society to function properly, market participants need to correctly identify the marginal utility of a product such that the correct market price may be established.

The above statement is also true of wetland valuation, because without proper determination of the value both the individual and decision/policy makers will continue to underestimate the importance of this God given resource that makes life worth living for man. Estimating the value of wetlands in monetary terms goes back at least as far as 1926 when Percy Viosca, Jr. estimated that the value of fishing, trapping and collecting activities from wetlands in Louisiana was worth $20 million annually (Vileisis, 1997). A landmark early valuation study by economists was by Hammack and Brown (1974), who focused on wetlands as waterfowl habitat and estimated the value that wetlands provided in terms of hunting with a contingent valuation method (C.V.M).

There are now a number of studies attempting to value the partial or total economic value of wetlands. Brander, Florax, and Vermaat (2006) collects 190 wetland valuation studies, and found that, a diverse range of valuation methods had been applied to value wetlands. These includes: Contingent Valuation Method (C.V.M), Hedonic Pricing, Travel Cost, Benefits Transfer, Production/Net Factor Income (N.F.I), Replacement Cost, Participatory Valuation Approach, Cost-Benefit Analysis (Trade-Off Analysis) and Market Prices.

Costanza et al. (1997) provides a well known example of benefits transfer in which wetland values play a key role. Benefits transfer approach infers the value of wetland benefits by transferring the value derived elsewhere for another wetland benefits, which may not necessarily be from the same neighborhood or region? In using benefits transfer method, Woodward and Wui (2001) apply meta-analysis technique to value wetland services provided by Lake Ontario in Northern US region. Also, Breunig (2003) apply benefits transfer approach in valuing ecosystem services from Massachusetts freshwater wetlands by applying the results of studies conducted on 16 different wetlands. Using the results of de Zoysa (1995), Hushak (2001) conducts a benefits transfer study on wetlands in Saginaw Bay, Michigan. The main finding of the study is that benefits transfer results vary tremendously depending on the assumptions made about the relevant population of people willing to pay for wetland services and the method used to translate per acre values to the programmed being valued. Making generalizations about wetland values is difficult because, wetlands are not a homogeneous commodity (different types of wetland provides very different services), location (distance) plays important role in the value placed on wetland, demographic characteristics and tastes of the people whose values are being measured will affect wetland values.

Graves, Murdoch, Thayer and Waldman (1988) used the hedonic analysis of housing markets to measure the benefits of various environmental amenities and other studies had been conducted on the use of hedonic approach to determine the value of environmental amenities (including wetlands). Such studies include Brown and Pollakowski (1977), Lansford and Jones (1995). Hedonic models value environmental attributes associated with housing locations by estimating consumer preferences for these attributes, that is, linking tradeoffs between environmental attributes and housing prices. It assumes a continuous functional relationship between the price of a house and its attributes; it models the price that people pay for a house by equating the marginal utility of each house attribute to its marginal price. Earnhart (2001) in conducting a valuation of the Pine Creek Marsh, Fairfield, Connecticut, applied the hedonic analysis using mailed survey approach whereby 464 homeowners (respondents) were used. Various studies had used hedonic technique to examine how the sale price of a property is related to air quality (Anderson and Crocker 1971, Beron, Murdock and Thayer, 2001; Chattopadhyay 1999) and water quality (Leggett and Bockstael 2000). Other studies include the effects of amenities such as proximity to a golf course (Do and Grudnitski 1995) and views of oceans, lakes, and mountains (Benson, Hansen and Schwatz, 1998) as well as disamenities such as, proximity to a smelter (Dale, Murdoch, Thayer and Waddell, 1999), an airport (Espey and Kaufman 2000) and to highways that are used to transport nuclear waste (Gawande and Jenkins-Smith 2001).

Brown and Henry (1989) use contingent valuation method (CVM) to estimate the value of Kenya's elephants with a view to putting them under a protected area. In carrying out the study, a survey was administered on the visitors to major national parks and lodges asking questions on how much they will be willing

to pay ($100 or more, or less) to contribute towards elephant conservation or by how much would the cost of safari be reduced, if elephant populations decreased by half. The study revealed that, visitors attached more importance to the existence of elephants and are willing to pay more to ensure that the elephants are well protected. This method (CVM) is usually used to quantify environmental benefits that have no market and whose value simultaneously incorporates multiple components. The approach is not based on any observed market behavior or prices; rather, it infers the value that people place on wetland goods by asking them questions directly. Such questions are meant to elicit information on what people would be willing to pay (Willingness-To-Pay) to conserve important and threatened environmental resources, or what they would be willing to accept (Willingness-To-Accept) as compensation for the loss of right to any environmental resources.

In valuing wetland utilization in Sacred Lake in Kenya, Emerton (1998) adopts participatory valuation approach whereby respondents were asked to indicate the importance attached to wetland benefits in terms of other locally important products or categories of value. This approach allows the respondents to choose a numerâire, commonly used, marketed and valued, for valuation, to express the worth of different wetlands products by using techniques such as ranking or proportional piling. Such numerâire include cattle, radio, and sack of maize, to mention a few. Since the era of trade by barter is over, this approach would not be explored in this study. The rhetorical language of participation and participatory methods obscures a great deal of ambiguity about the nature of participation and its different forms. The extent to which it is achieved in practice remains a contested issue. It can be difficult to achieve local participation from harder to reach sections of the community, and especially in genuinely involving them in analysis and use of information. A participatory process, requires greater coordination, administrative effort and long term commitment. Evaluators or investigators need skills of facilitation, negotiation and conflict resolution, as well as a range of personal qualities, attitudes and behaviours appropriate to evaluation as an empowering process.

Beaumis, Laroutis and Chakir (2007) use Cost-Benefit Analysis in assessing the people's WTP for conserving Seine Estuary Wetlands in France. In carrying out the study, they identified 576 establishments on Seine Estuary Wetlands employing about 57,000 people and providing direct jobs. They sampled 300 respondents using face-to-face interviews. Their study showed that about 9,000 hectares of wetlands were destroyed as a result of the conversion. On aggregate, each hectare is an equivalent of £182,360 (income). The outcome of their study shows that, residents around Seine Estuary Wetlands, considered the wetlands as an important natural asset. Ninety-two percent (92%) of the respondents were favorably disposed to conservation programmed for the wetlands, with a revealed median of between £14.50 and £43.77. This approach presumes that the respondents know much about the benefits derivable from the existence of the wetland. The cost-benefit analysis method of decision-making results in projects and policies that are likely to do harm to the environment, because it lays emphasis on economic returns, undervalues the benefits of the environment, and the negative consequences to the environment, and cannot take into account the risk of man's actions having unintended or irreversible results.

Travel Cost Method (TCM) is an indirect method used for estimating user benefits from visits to recreational sites such as beaches, parks and heritage site (Liston-Heyes and Heyes, 1999). Iamtrakul, Teknomo, and Hokao, (2005) used travel cost method to estimate the economic value of a public park in Saga City, Japan. The study found that park users spent time to visit Shinrin Park approximately 1.7 times and 1.2 times more frequent than Saga Castle Park and Kono Park. The same trend for travel distance, visitors took longer distance to travel to Shinrin Park than others that was about 2.8 times and 1.3 times as much as Saga Castle Park and Kono Park. They concluded that this fact might influence travel cost incurred on travel to park, since it could be implied that the longer distance, resulted to the higher expense to park users. The cost generated from transportation to park has direct relationship with travel distance and travel time. It shows that, the expense for travel to Shinrin Park was in average more than Saga Castle Park (2.9 times) and Kono Park (1.6 times). Also, Karen, Sue and Richard (2007) apply TCM in assessing the monetary value of the recreational use of Irish Forests. The study establish that the mean WTP results range between IR£1.07 and IR£1.65 per trip per adult equivalent. Thirty-five (35%) percent of responses are protest bids or zero bids and consequently the mean WTP measure is skewed. It went further to state that, even when protest bids are excluded from the sample, the mean WTP remains in the region of one (or two) pounds per trip. Most simple models of TCM assume that, individuals take a trip for a single purpose – to visit a specific recreational site. However, this is not usually the case, a trip may have more than one purpose and once this happens, the value of the site may be overestimated. Also, there is the problem of defining and measuring the opportunity cost of time, or the value of time spent travelling can be problematic, since such time may be used for other purposes different from the visit to the site. TCM is limited in its scope of application because it requires user participation. It cannot be used to assign values to onsite environmental features and functions that users of the site do not find valuable. Most importantly, it cannot be used to measure nonuse values. Thus, sites that have unique qualities that are valued by nonusers will be undervalued.

Wetland Valuation in Nigeria

Literature has not shown that any research on wetland valuation has been conducted in Nigeria, in general and in Lagos metropolis in particular. The Nigerian Institution of Estate Surveyors and Valuers' annual conference in Port Harcourt in 2005 focus mainly on wetland development.

Adegoke (2005) examines wetland loss and degradation, identifies the causes of wetland loss and degradation which he grouped as direct loss and degradation that occurs to the wetland itself, and the indirect loss and degradation which occur as a result of changes outside (upstream) of wetland. He went further to identify the consequences of wetland loss and degradation which result in the deprivation of humankind of the valuable services of the natural/biological capital stored up in wetlands. It also reduces the ability of wetlands to provide goods and services to support biodiversity. All through the work, the author did not make mention of wetland valuation not to talk of the approaches for conducting the valuation. It need be pointed out that there cannot be any meaningful remediation to wetland loss and degradation without detailed valuation stating the monetary consequences of the loss and degradation; this can only be achieved by applying the appropriate wetland valuation technique(s). On his own part, Akujuru (2005) identifies the major categories of wetlands to include; Marine, Estuarine, Riverine, Lacustrine and Pauline Systems. He went further to identify the inadequacy of the current valuation methods in their application to wetland valuation, since they could not capture the non-use value of wetland ecosystems. In resolving the impasse, he suggested the adoption of Total Economic Value concept, where both use and non-use values of wetland ecosystems are properly captured. However, he did not mention the method(s) appropriate for doing this. Otegbulu (2005) canvassed for the adoption of Total Economic Value concept but did not explain the approaches to determining this. It will be apt to state that it will be near impossible to determine the Total Economic Value without adopting appropriate method(s) to ascertain, in monetary terms, the loss to the owner or the cost implication of any action, in respect of wetland resources since they are mostly not traded in the open market. As can be seen from the above, the papers presented at the Port Harcourt conference of the Nigerian Institution of Estate Surveyors and Valuers, did not pay any attention to the techniques of wetland valuation.

MATERIALS AND METHODS

The Data used for this study was collected between the months of August and September 2010. The various responses were subsequently coded and analyzed between November and December 2010, using Statistical Package for Social Scientists (SPSS version 17.0). The sample frame and sample size for the study were made up of the Principal Partners of the 267 Estate Surveying and Valuation firms in Lagos Metropolis.

Preliminary survey carried out on Lagos Metropolis using Lagos Map, as guide, revealed that, there are 16 Local Government Council Areas in Metropolitan Lagos (with 1000.2 km2 land size). Based on the current NIESV National Directory 2009, (7th Edition), there are two hundred and sixty-seven (267) registered Estate Surveying and Valuation firms in Lagos metropolis. There are only three (3) higher educational institutions in Lagos State offering Estate Management; these are University of Lagos (20 Lecturers), Lagos State Polytechnic (7 Lecturers) and Yaba College of Technology (12 Lecturers), and finally, NIESV.

In achieving the aim of this study, a hypothesis was set thus:

Ho: There is no significant relationship between Estate Surveyors and Valuers' perception and the methods used in wetland valuation.

In analyzing the data collected, both descriptive and inferential statistical tools were employed. Statistical tools such as frequency distributions and percentages and Chi Square to determine the relationships between selected variables. The hypothesis was tested using Regression Analysis, Analysis of Variance (ANOVA) and Coefficient of Determination.

RESULT AND DISCUSSION

This section contains the analysis of the data collected, using both descriptive and inferential statistical tools. The results are as contained in tables 1 – 9 below, with the discussion following each of the tables.

Table 1 shows the years of experience of the respondents. Respondents with more than 15 years of experience accounted for 45.4% of the total respondents, while the others followed a downward trend (28.2%, 20.9%, and 5.5%) according to the categories of years of experience in the Table. An in-depth interview disclosed that those respondents with less than five years of experience are people with M. Sc. who had worked for many years before applying to the Institution for Corporate Membership. With more than fifteen (15) years of experience coupled with good academic and professional qualifications, it can be deduced that majority of the respondents have requisite experience for carrying out valuation assignments and their opinion of value can be relied upon.

Table 2 shows that, the highest proportions of the respondents described wetland either as marshland (68.7%) or swampy land (68.1%). Other descriptions used for wetland includes, wet land (46.0%), wasteland (44.8%) and infested land (21.5%). This position could

Table 1: Working Experience as Estate Surveyor and Valuer

	Experience	Frequency	Percentage
	Above 15 years	74	45.4
	11 - 15 years	46	28.2
	5 - 10 years	34	20.9
	< 5 years	9	5.5
	Total	**163**	**100.0**

Table 2: Estate Surveyors and Valuers' Perception about Wetland

		Responses	
	Description	**No**	**Yes**
	Wasteland	90 (55.2%)	73 (44.8%)
	Poorly drained land	88 (54.0%)	75 (46.0%)
	Swampy land	52 (31.9%)	111 (68.1%)
	Infested land	128 (78.5%)	35 (21.5%)
	Marshland	51 (31.3%)	112 (68.7%)

Table 3: Environmental Valuation as part of School Curriculum in Higher Institution

	Curriculum	Frequency	Percentage
	Yes	0	0
	No	163	100
	Total	**163**	**100**

possibly have given rise to the way wetland resources are being treated in the study area, that is, parcels of land to be converted to uses, that can only be supported by economic activities (residential, commercial and industrial uses).

The result as contained in Table 3 shows that, none of the respondents took any course in environmental valuation during their undergraduate school days. This result is not unexpected in view of the fact that environmental matters in general, and their valuation in particular is at its infancy in the country and hence in institutions of higher learning, where Estate Management courses are being offered.

Results as contained in Table 4 whereby only 11% of respondent Estate Surveyors and Valuers claimed to have participated in wetland valuation, so far are not unexpected in view of the fact that governments at both Federal and State levels do value compulsorily acquired sites using in-house Estate Surveyors and Valuers. The high rate (89%) of non-participation in wetland valuation by Estate Surveyors and Valuers in the study area is a pointer to the fact that environmental valuation, in general, and wetland valuation, in particular is not regularly required by individuals or policy/decision makers.

Table 5 shows that only 5.5% of the respondents used Replacement Costs and Market Prices for wetland valuation. Table 5 further shows that none of the respondents used such methods as Contingent Valuation, Hedonic Pricing, Travel Costs, Benefits Transfer, Production Function and Participatory Approach. This result could be taken as an indication of not being aware of how to properly apply the methods to wetland valuation. The low proportions could also be adduced to the fact that very few wetland valuation assignments, in its naturalness had been carried out by respondent Estate Surveying and Valuation firms within the study area.

Table 6 shows that the valuation assignments carried out were basically for Loan Facility (Mortgage) purposes. No

Table 4: Involvement in Wetland Valuation Exercises

	Valuation Exercise	Frequency	Percentage
	No	145	89.0
	Yes	18	11.0
	Total	**163**	**100.0**

Table 5: Methods Adopted for Wetland Valuation

		Responses	
	Methods Used	**No**	**Yes**
	Contingent Valuation	18 (100.0%)	0 (0.0%)
	Hedonic Pricing	18 (100.0%)	0 (0.0%)
	Travel Costs	18 (100.0%)	0 (0.0%)
	Replacement Cost	17 (94.4%)	1 (5.5%)
	Market Prices	17 (94.4%)	1 (5.5%)
	Benefits Transfer	18 (100.0%)	0 (0.0%)
	Production Function	18 (100.0%)	0 (0.0%)
	Cost-Benefit Analysis (Trade-off Analysis)	18 (100.0%)	0 (0.0%)
	Participatory Approach	18 (100.0%)	0 (0.0%)

Table 6: Purposes for Which Wetland Valuations Were Carried Out

		Responses	
	Purposes of wetland valuation	**No**	**Yes**
	Compensation	18 (100.0%)	0 (0.0%)
	Conservation	18 (100.0%)	0 (0.0%)
	Loan Facility	1 (5.6%)	17 (94.4%)
	For policy/decision making	18 (100.0%)	0 (0.0%)

valuation was carried out for compensation, conservation and for policy/decision making. The high proportion of valuation for Loan Facility is possible because of the use of some constituents of wetland (land and buildings) as collateral for financial assistance. None valuation of wetland resources for compensation emanates from non use of Estate Surveyors and Valuers for such assignment except for compensation claims, as already determined by government in-house Estate Surveyors and Valuers. The inference from this is that wetlands are yet to be fully assessed, in their naturalness, in the study area.

Hypothesis Testing

The hypothesis set for the achievement of the objective of the study is restated as follows:

Ho: There is no significant relationship between Estate Surveyors and Valuers' perception and the method used in wetland valuation.

This hypothesis was set to ascertain whether the understanding of wetland, by Estate Surveyors and Valuers have any bearing on the approach (es) used in the valuation of wetland ecosystems. The findings from the analysis carried out are shown in Tables 7 – 9.

The result of the hypothesis set for the study as shown in Table 7 reveals that, the correlation coefficient "R" (linear relationship) is 0.162 while the coefficient of determination "R^2" (i.e. the strength or magnitude of the relationship) is 0.026. With R value of 0.162 and R^2 value of 0.026 it is evident that there is no significant relationship between Estate Surveyors and Valuers' perception and the method used in wetland valuation. It is evident from Table 7 that the strength or magnitude of the relationship (R^2) is only 2%. This situation can be inferred from the fact that other important components of wetland ecosystems were not considered in their valuation assignments.

Table 8 shows that, the between-group mean square

Table 7: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.162	.026	-.005	.11070

Table 8: ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.052	5	.010	.843	.521
	Residual	1.924	157	.012		
	Total	**1.975**	**162**			

Table 9: Coefficients of Determination

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.060	.099		20.786	.000
	Wasteland	-.006	.026	-.028	-.243	.808
	Poorly drained land	.020	.023	.091	.868	.386
	Swampy land	-.018	.023	-.076	-.798	.426
	Infested land	-.025	.030	-.093	-.828	.409
	Marshland	-.019	.023	-.082	-.853	.395

(the variation explained by the model or regression) is 0.010 (0.052÷5), and the within-group mean square (the variation unexplained or residual) is 0.012 (1.924÷157). The F-ratio is 0.84 (0.010÷0.012) and the P-value > 0.05. In other words, Table 8 shows F(5,157) = 0.84, P > 0.05 that is, F tabulated (2.2141) is greater than F calculated (0.843) and this further shows that there is no statistically significant relationship between Estate Surveyors and Valuers' perception and the method used in wetland valuation.

In calculating the effect size i.e. $R^2 = MS_M \div MS_T$

$= 0.052 \div 1.975$

$= 0.026$

Where:

MS_M = sum of squares for model (regression) and
MS_T = total sum of squares (sum of squares for model [regression] and residual]).
This conforms to the value of R^2 in Table 7 and shows that there is a weak relationship between Estate Surveyors and Valuers perception about wetland and the choice of method(s) adopted in wetland valuation.

The Coefficient of Determination as shown in Table 9 further reveals that there is no statistically significant relationship between Estate Surveyors and Valuers perception about wetland and the choice of methods adopted in wetland valuation. From Table 9, it is evident that P-Values are greater than 0.05 (P > 0.05) for all the variables describing Estate Surveyors and Valuers perception about wetland. With P > 0.05, the import from Table 9 is that the way the Estate Surveyors and Valuers perceive wetland does not affect the choice of method adopted for valuing wetland ecosystems. In other words, there is no statistically significant relationship between Estate Surveyors and Valuers' perception and the method used in wetland valuation and this could possibly be a fall out of lack of academic and profession training in environmental valuation.

CONCLUSIONS AND RECOMMENDATIONS

This study examined the relationship between Estate Surveyors and Valuers' perception and the method(s) adopted for wetland valuation in Lagos Metropolis. Major highlights of the results obtained from the analysis

include: only 11% of respondent Estate Surveying and Valuation firms claimed to have carry out wetland valuation exercises for mainly for mortgages. None of them had conducted any valuation for compensation, wetland conservation, reservation or policy/decision making purposes. 68.7% of respondent Estate Surveyors and Valuers described wetland as marshland; swampy land (68.1%); wet land (46.0%), wasteland (44.8%) and infested land (21.5%). This negative perception about wetland could probably be the reason behind the spate of wetland conversion to other uses within the study area. The hypothesis tested for the study revealed that there is no statistically significant relationship between Estate Surveyors and Valuers' perception and the methods adopted in wetland valuation.

In line with the findings by the study, the following recommendations are hereby put forward for consideration. NIESV should include environmental valuation in the curriculum for professional examinations (training). In addition, NIESV should organize mandatory training/workshop/seminar on wetland valuation and similar topical issues as they may arise from time to time to keep members up-to-date with the appropriate techniques available. ESVARBON should mandate Institutions offering Estate Management courses to teach environmental valuation as a Course, as it is done in developed countries, rather than treating it as a topic, as is presently done. This is to ensure a detailed coverage of the various aspects of environmental valuation. In addition to NIESV and ESVARBON efforts, Estate Surveyors and Valuers should, individually and collectively Endeavour to be current through embarking on further readings to broaden the professional base and by making Internet searches on topical issues such as environmental valuation and the likes.

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