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Utilization of property valuation software among estate surveying and valuation firms in Lagos state, Nigeria

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Abstract. In the era of sophistication in conducting professional assignments, there have been no study geared towards assessing the utilization of valuation software in property valuation. This study therefore investigated the application of property valuation software among Estate Surveyors and Valuers (ESVs) in Lagos Metropolis. 151 Estate Surveying and Valuation (ESV) firms represented the sample size. Data was analyzed using descriptive statistics and frequency count with the aid of Statistical Package for Social Sciences (SPSS). It was revealed that almost 70% of ESV firms do not readily use property valuation software, even the ones known to them. The study therefore encourages ESVs to utilize such software so as to ease their mode of operations.

Keywords: Estate Surveyors and Valuers, Property Valuation, Valuation Software, Nigeria

Introduction

Real Estate Valuation is one of the primary aspects of the Estate Surveying and Valuation profession, as well as one of the major roles of Estate Surveyors and Valuers (ESVs). According to the [1], valuation is a practice that involves the opinion of value of an asset or liability on a defined basis and at a specified date. Property valuation has been recognized internationally as both comprising of the process of estimating the value and the result of this estimation process [2]. It is carried out for various reasons. Among these reasons is the making of borrowing decisions as it helps the lender to make reasonable judgements on the terms of the contract with the borrower. Another purpose for valuations is comparing with current market prices, making decisions on whether a property is over or underpriced [3]. Other reasons include letting, sale and purchases of property, valuation for compensation, tax and rates, insurance, redevelopment, financial presentations amongst others.

The exercise involves processes which can be laborious and should be handled meticulously depending on the purpose, basis and methods to adopt. The processes ranges from securing the brief to the actual calculation while considering pertinent variable. Thereafter reports are conscientiously written and presented to clients. Usually valuations encompass the assessment of a lot of factors or variables that affect the value of a particular property at a given place and a certain period of time. This is in line with [4] who opined that the value estimated during the valuation exercise is based on the gathering, processing and interpretation of data on the variables that influence the value. These variables are categorized into external and internal groups as they relate to the property. The external groups comprise of state of the economy, finance, immigration, location, accessibility etc. whilst the internal group are the property size, condition, accommodation, design, type etc. These variables are heavily accounted for when performing valuations on properties, and the more the variables, the more tedious the valuation exercise.

In carrying out valuation of properties particularly where a substantial number of variables are involved, especially those that are quantifiable, it is best to operate using digital platforms [5] The digital platforms can be provided by Information and Communication Technology of which includes Property Valuation Software. These software can prove helpful in valuation activities by performing the calculations and arithmetic processes through automated computer operations, thereby easing the process, reducing the time required to perform valuations, and yielding a much better output. Some of

these property valuation software include Argus, Dyna, Cougar, Circle [6].These software have been applied in more developed economics like the US, UK, Australia and have brought about a tremendous speed and accuracy in carrying valuation exercise [7] .

Studies on the usage of Information and Communication Technology in other aspect of real estate practice in Nigeria such as property management, real estate marketing, facilities management has been carried out [8], [9], and [10]. However, it appears that most Estate Surveyors and Valuers in Nigeria still use the traditional and crude techniques of calculations which involves manual computation. This method appears to be predominantly used in the developing countries[7]). However, information concerning the level of usage of property valuation software in Nigeria is not readily available as there seems to be a paucity of studies conducted to evaluate such amongst ESV professionals. The best that has been done is the identification of software relevant estate management practice including that of valuation [11]. This study therefore aims to fill this gap by assessing the level of utilization of property valuation software among Estate Surveyors and Valuers in Lagos State.

It is paramount in this research to understand the application and use of ICTs in the real estate industry. [12] in his study discovered that ICT has a positive effect on the operations and activities of real estate firms. [11] identified some software that are useful to the professional practice of real estate. They include: Argus Valuation – DCF, Corporate Real Estate Management, Database Management Software and Apartment ManagerXP. Among the software mentioned is Argus Valuation – DCF which is useful to surveyors and appraisers in property and portfolio cash flow models using a lease by lease approach to building cash flows and valuations[11]. However, other property valuation software are available for use though not mentioned by the authors. Also, studies have been carried out as regards the use of ICT in Estate Surveying and Valuation practice, most of them include the use of general software [8], [13], [14] and [15]. [9] studied the evolution of ICT in Facilities Management focusing on Building Information Modelling (BIM) as the latest technology. The lack of publications on the evolution of software and tools used in Facilities Management until the latest technology and the variety of software and tools available in the facilities management field motivated their research, which was aimed at studying the evolution of ICT over the past 40 years and highlighting BIM as the current technology. This study was conducted in Malaysia and employed a literature review approach which included 33 materials which consisted of journals, conference proceeding, web pages amongst others. From the study, they believed that ICT in Facilities Management started from simple email to Maintenance Management Software, Computer Aided Facilities Management (CAFM) to Building Energy Management (BEM) and then Agile Software until the current technology BIM. In addition, they forecasted that most organizations in Malaysia used e-mail, while only the high capital organizations used the minority of Maintenance Management Software. [15] examined the role of technology in the real estate industry. Studying real estate organization in the United States, United Kingdom and South Africa, the study aimed at determining whether real estate organizations adopt technology to achieve best value or not, the major benefits of technology and the key factors inhibiting and encouraging the adoption of technology. He performed his study after noticing the unavailability of comprehensive and contemporary accounts describing the level of use of technology in the real estate industry and the factors that hinder and encourage the application of technology. The research employed a case-study approach. Purposive sampling technique was used to select senior IT officials in listed real estate companies in the US, UK and South Africa and semi-structured interviews were employed to gather data. The descriptive data was analyzed using thematic analysis with the aid of NVivo, a software package for qualitative analysis. The study revealed that real estate companies do adopt technology to achieve best value, however the extent of the best value achieved varies by organization and geographic regions. It was also revealed that the benefits of adopting technology was efficiency in practice and operations and the remote accessibility to real time data. The study also yielded that the major factors enabling technology adoption are consumerization of technology, affordable infrastructure, enabling economic and

legislative environment, scale as well as leadership oriented in the application of technology. It was believed that the inhibiting factors included weak infrastructure, resistance to change, poor economic conditions, lack of scale and unaffordability. It is recommended that real estate companies in developing countries learn from the experiences of their counterparts in developed economies so as to ensure relevance and improve their competitiveness. A study of the comparison amongst property valuation software, manual valuation and proprietary spreadsheet template with respect to their accuracy in determining the outcome in the property market was carried out by [6]. The property valuation software studied included Dyna, Argus, Circle and Cougar which were in use in Australia as at the time of the research. The three models were tested using two methods of property investment valuation: the capitalization approach and Discounted Cash Flow (DCF) in a hypothetical valuation exercise. In the exercise, all four-property valuation software were used. The manual approach featured the use of a special prepared Excel spreadsheet for both methods. The proprietary spreadsheet template approach was conducted by the valuation department of a major international firm in Australia, using their own proprietary software. Each model was undertaken by individuals knowledgeable and skilled in the use of that particular model. The results of the exercise yielded that the property valuation software packages produce accurate, consistent and transparent forecasts which aligned with the property management system and the portfolio management system of the institutional investor. The use of the software also ensured an additional layer of transparency that was not available in the manual or proprietary spreadsheet models. Their study concluded that the property valuation software approaches offered accuracy, consistence and transparency due to the facts that the arithmetic are standard and purely a function of the variables inputted into the software. The mathematics are always calculated the same way and is always accurate. Also, there is no capacity for subjective adjustment of results or processes and the reporting provides a substantial level of transparency.

[16] framed the usage of ICT in the real estate industry. This study was performed in the United States. The researchers observed that the rise of ICT over the past 25 years has given birth to challenges for real estate agents and allied professionals, as this rise has made them vulnerable to its consequences in terms of trying to stay relevant and maintain competitive advantage. The study was aimed at giving a clear picture of the use of ICT in real estate practice. The study was conducted using mixed qualitative approaches, including framing analysis and analysis of literature. Interviews were also conducted on staff of the National Association of Realtors (NAR) in the United States.. Spreadsheet software was used in analyzing the data. The research findings showed that real estate agents were in fact using ICT to facilitate business and position themselves as hubs of property transactions. Thus, the study revealed that they have adjusted to the advent of ICT.

[5] Studied the use of Artificial Intelligence (AI) in property valuation. The authors observed that there are many factors that would influence the values of a particular real estate, including physical and economic characteristics, environment, location, branding and more. However, the large number of factors involved makes the process of determining value very cumbersome using conventional techniques such as sales comparison method, rental method, and profit method. Market evidences from property transactions also revealed difficulties associated with analysis of real estate data over time. From this, the researchers realized the need for a value prediction model that will cater for the numerous and continuously changing factors that will determine property value. The researchers believed that soft computing techniques that possess higher data processing capabilities may be a solution. The aim of their research was therefore to assess the Artificial Intelligence (AI) techniques that are capable of predicting property value. Their study adopted a literature review approach under AI techniques that included: Artificial Neural Network (ANN), the use of fuzzy logic, the use of expert system and genetic algorithm and other techniques and compared each technique to determine the best model. The study yielded that ANN and fuzzy logic were better suited with handling real estate data for predicting property values if attributes and model parameters are selected appropriately.

[17] investigated the use of data mining software for real estate valuation. The paper frowned at the usage of comparison method of valuation which was majorly predominant amongst valuers. This is because the paper argued that the comparison with similar structures, cost and yield analysis which comparison method entails does not does not leverage on historic information of real estate, but is only concerned with market data available presently. The author therefore points out flaws in the comparison method, stating that the method is easier to manipulate by the parties involved in a valuation exercise. The study brought forward an innovative method of comparison approach where historical data called "historical price method" is made available by a data mining software. Using this method, it is believed that historical transaction data concerning a particular property that is being valued can be retrieved and used for the current valuation. The method is also capable of indicating structural and technical differences in a particular property, as well as shifts in prices of real estate in a particular location. The software used in this historical price method is EVAL, developed by the creator of the method in 2007. It gathers, analyzes and valuates price offers for real estate and as of 2015, the system had stored 650,000 records of real estate price offers. In performing a new valuation, the user is required to determine variables and gather information on the property which he will input into the software. Using set algorithms, the software makes recourse to price data based on the property descriptions entered and performs functions using the variables entered to determine current market price of the subject property, effectively providing a comparative value. The author concluded that the method is more advantageous to the currently used comparison method due to its speed in processing input data on price level in a location by drawing from EVAL's database. He surmises that the valuer has more to rely on that his own studies of the property market.

In Nigeria there are certain works on ICT and real estate practice in Nigeria which have been carried out in certain locations of the country. For instance, [13] , examined the digital divide as a problem hindering the development of 21st century estate surveyors and valuers in Nigeria. His study centered on the inadequate access to and implementation of ICT in the real estate profession. According to him, the digital divide refers to the gap between people who have access to ICT and have effective use of it and those that do not. The aim of his study was to reveal the extent to which digital divide has obstructed the development of 21st century real estate professionals. The researcher employed a survey research design with a target population of 1,653 of Individual and firms of Estate Surveyors and Valuers drawn from the membership and registered firms directory of the NIESV of 2009. A sample size of 320 respondents was drawn up, which were randomly selected and distributed questionnaires via email. 31(9.70%) questionnaires were duly completed indicating a very low response rate. However, further investigation after analysis with descriptive statistics revealed that a significant number of respondents do not check their mail, the smallest aspects of ICT. Thus, indicating a digital divide in this regard. For the general ICT Packages assessed for use among the professionals, the majority of respondents could use MS Word, a much smaller number, Excel and none could utilize CorelDraw. A significantly low number of ESV had even heard of software useful for valuation, development and appraisal and even small-scale professional services. It was also revealed that professionals use internet facilities for every transaction. However, overall, a great digital divide was discovered among ESVs who are expected to train the upcoming generation. It was recommended that capacity building through the improvement of ICT knowledge in secondary school students be enacted. More so, the digital divide can further be reduced on a larger scale by donating computers and ICT to rural communities. It is also recommended that research be conducted on societal development to reduce digital divide and facilitate digital dividend so that ESVs can take full advantage of the information and technology filled 21st century.

[14] investigated the factors influencing the use of ICT in real estate practice in Minna, Nigeria with the aim of exploring motivating factors influencing the use. They undertook their study after noticing the factors affecting ICT utilization in real estate practice. The target population for the study was ESVs domiciled in the Minna property market. The respondents were drawn from the 2011 NIESV

directory which provided a list of all ESVs in Minna, along with their firm's addresses. The sample size therefore consisted of 15 Estate Surveying and Valuation firms who were registered under ESVARBON and were drawn from the directory. Structured questionnaires were distributed to the respondent firms and the data retrieved was analyzed using Spearman's rank correlation. From the results, the authors discovered that increased enhanced quality of customer service, productivity of staff, improved decision making, knowledge sharing factors and information accessibility and time saving were the most influential motivating factors in real estate practice in Minna. The study recommended that all real estate companies in Minna tap into the power of ICT and invest in it so as to improve the quality of their services rendered. Also, professionals should be abreast in the use of GIS and LIS technologies as they are modern tools for real estate practice. [8]in their segmented interest of ICT assessed the use of social media in real estate transactions in Lagos property market, carrying out the research in Lagos Metropolis. They observed that existing property listing sites at the time do not effectively meet the real estate customers' needs. Their study was aimed to explore the use of social media in real estate agency and the response of ESVs to this development in Nigeria. The target population of their study was ESVs in Lagos Metropolis, while their sample frame consisted of the 378 members of the Lagos State branch of NIESV as retrieved from the branch directory of NIESV, 2017. The sample size therefore consisted of 194 randomly sampled ESV firms in Nigeria. Structured questionnaires were delivered to the respondents and data collected was analyzed using descriptive statistics. The study found that social media among other marketing tools is gaining popularity in terms of bringing the services of real estate professionals to clients, and more ESVs are using social media in their property services to their customers. The study recommended that the Nigerian Institution of Estate Surveyors and Valuers and the Estate Surveyors and Valuers Registration Board of Nigeria review various codes of practice to accommodate current realities and upgrade the practice of real estate in the country. Another work on ICT was geared towards its relevance in Estate Surveying and Valuation in Ogun State [11].The authors recognized that for ESVs to perform well in their fields, they need to respond to global phenomenon like ICT. Their study was aimed at examining the extent to which ICT was applied by Estate Surveyors and Valuers. The study population which also served as the sample frame included 77 ESVs in Ogun State as list of members who were in financial standing with the 2014/2015 designations of Ogun State branch of NIESV. The 77 ESV's sufficiently served as the sample size. The respondents were administered questionnaires and the data gathered via these questionnaires was analyzed with descriptive statistics (which included frequency counting and Likert scales). The study showed that ESVs are aware of the existence of various ICT devices and applications but have failed to use them optimally in their practice. The study recommended that asides general software, professionals need to learn to use real estate specialized software and tools. It is also recommended that estate management curriculums in institutions be upgraded to increase the time for ICT trainings and that these institutions set up estate management laboratories to improve e-learning and knowledge of ICT technology among students. This work which is however on ICT was on general ICT software but did not focus on the specialized ICT software applicable to property valuation. [10] in their study investigated the status of the utilization of ICT in and challenges facing the use of same in Nigerian real estate practice, focusing on Lagos Metropolis. They observed that the use of ICT in real estate was only prominent in developed economies, while most firms in Nigeria still rely on traditional methods of documentation and communication. On the part of ESV firms studied, the target population consisted of firms involved in estate management and agency transactions in Lagos Metropolis. They delineated the metropolis based on the main Central Business Districts (CBDs) which were growing focal points for real estate practice. Noting the 2 major divisions of the metropolis i.e. Lagos Island and Lagos Mainland, they selected 5 major CBDs from these divisions which included Marina and Victoria Island/Ikoyi from Lagos Island and Yaba/Ebute-metta, Ikeja and Apapa/Ijora from Lagos Mainland. The list of member firms of the Nigerian Institution of Estate Surveyors and Valuers (NIESV) was obtained from the NIESV firms' directory as at 2017 in order to determine the sample of the population. 50% of ESV firms were selected from the sample frame and from the 5 major CBDs. In total the sample size

consisted 172 firms. Questionnaires were designed and administered to the respondent firms and data acquired was analyzed using frequencies and weighted mean scores Chi test. The study revealed that general purpose software including Email, MS Word, MS Excel, MS PowerPoint and Adobe Document Reader are the most used software even though not with high proficiency. The study recommends that ESV professionals improve their investment in and knowledge of the software in a more competitive global market. In a similar work carried out by [18], the authors assessed the barriers hindering the deployment of ICT in Nigerian real estate practice. The study was conducted in Lagos Metropolis after observing the availability of impediments limiting the deployment of ICT in most firms and issues restraining people from investing and using ICT. On the part of ESV firms studied, the target population consisted of firms involved in estate management and agency transactions in Lagos Metropolis. The researchers delineated the metropolis based on the main Central Business Districts (CBDs). Taking cognizance of the 2 major divisions of the metropolis i.e. Lagos Island and Lagos Mainland, they selected 5 major CBDs from these divisions which included Marina and Victoria Island/Ikoyi from Lagos Island and Yaba/Ebutemeta, Ikeja and Apapa/Ijora from Lagos Mainland. The list of member firms of NIESV was obtained from the NIESV firms' directory as at 2017 in order to determine the sample of the population. 50% of ESV firms were selected from the sample frame and from the 5 major CBDs. In total the sample size consisted of 172 stratified sampled firms. Questionnaires were administered to the respondent firms. 143(83.14%) of responses were received. Data collected was analyzed using weighted mean score and one sample t-test analysis. The study yielded that rapid changes in ICT technology was the most significant barrier that hindered its deployment in real estate firms, other barriers being service failure and erratic/insufficient power supply. It was recommended that ESVs improve their learning culture in the use of ICT software useful for real estate practice. While recent studies on ICT applications to real estate abound, including those bordering on general purpose software, there is a paucity on up to date studies conducted specifically on the use of property valuation software. This is the gap which this study intends to partly fill.

Methods

Lagos State was chosen as the location of study. It is one of the most buoyant real estate markets in Nigeria together with Abuja and Port Harcourt [19]. Apart from being one of the most buoyant markets in the country it was selected due to the fact that majority of real estate firms in Nigeria have their head offices in the State [10], This is most likely due to the highly industrialized nature of the state, making it a focal point for real estate professional practice in Nigeria. Lagos also has a developing market for real estate, prompting the need of the services of Estate Surveyors and Valuers in caring out and overseeing real estate operations. This therefore justifies the selection of Lagos State for this study.

The study population consists of Estate Surveying and Valuation firms resident in Lagos State which has been stated in the latest NIESV firms' directory to amount to 377 firms. The study population will suitably serve as the sample frame in this study. The appropriate sample size for this study is 151 Estate Surveying and Valuation firms. This is derived as 40% of the study population, as [20] noted that 40% of a study population in a few hundred will suffice for the sample size. The respondents were selected using random sampling approach and questionnaire survey was employed in the acquisition of necessary data. The questionnaires were served to each ESV firm where a single working ESV was required to respond on behalf of the firm. 94 of the 151 questionnaires were completed and the data was recovered indicating a 62% response rate. The data was analyzed using descriptive statistics and frequency count with the aid of Statistical Package for Social Sciences (SPSS 26).

Results and Discussion

Table 1: Attributes of the respondent Estate Surveyors and Valuers of each Real Estate Firm Sampled

Category	Classifications	Frequency	Percentage
Educational Qualification	OND	4	4.3

	HND	32	34.0
	BSc	36	38.3
	MSc/MBA	22	23.4
	Total	94	100.0
Job Role	Branch manager	21	22.3
	Estate surveyor	59	62.8
	Others	14	14.9
	Total	94	100.0
Yeats of Experience	1-5 years	42	44.7
	6-10 years	13	13.8
	11-15 years	22	23.4
	16-20 years	17	18.1
	Total	94	100.0

Table 1 portrays the attributes of the sampled ESVs of each firm and reveals that 4(4.3%) of the sampled ESVs had a maximum educational qualification of OND while 32(34.0%) had an HND. 36(38.3%) of the respondents had a BSc, while 22(23.4%) had MSc/MBA as maximum qualification. From this, it can be discerned that the majority of respondents in Lagos State have the basic educational qualification. This may likely be a result of a growing interest of individuals in undergoing Estate Management or related courses in a university rather than a polytechnic or other institution. It is also revealed that 21(22.3%) of ESVs work as the firm's Branch Manager, 59(62.8%) as Estate Surveyors and 14(14.9%) as others which included 10(10.6%) of Facility Managers and 4(4.3%) of Project Managers. The inference here is that majority of ESVs in Lagos State are in the position of Estate Surveyors in their firms. This may be attributed to the fact that since attrition has been discovered in the profession [21] getting those that have sustained practice for long to get to the managerial cadre might be sparse. This reason can also be attributed to the outcome on years of experience as also revealed in the Table. It was also disclosed that 42(44.7%) of sampled ESVs have had a working experience of 1-5years, 13(13.8%) of 6-10 years, 22(23%4) of 11-15years and 17(18.1%) of 16-20. It can be deduced through this that most ESVs have had a working experience of 1-5years. While the quest for entrepreneurship forces most estate surveyors and valuers to opt for opening their own firm after some years of practicing under someone.

Table 2: Assessment of Property Valuation Practice of Firms

Category	Classifications	Frequency	Percentage
Engagement of firm in property valuation	No	13	13.8
	Yes	81	86.2
	Total	94	100.0

Table 2 represents the assessment of each firms' property valuation practice. It reveals that 13(13.8%) of ESV firm do not engage in property valuation while 81(86.2%) of firms carry out property valuation. This shows that most ESV firms in Lagos State perform property valuations and is likely due to property valuation being one of the core services offered by professionals in the real estate industry as well as one of the major areas involved in education training of the profession.

Table 3: Assessment of Knowledge and Use of Property Valuation Software

Category	Classifications	Frequency	Percentage
Knowledge of the Existence of Property Valuation Software	No	47	50.0
	Yes	47	50.0
	Total	94	100.0
Use of Property Valuation Software	Never	61	64.9
	Yes, very few times	26	27.7
	Yes, very often	7	7.4
	Total	94	100.0
Property Valuation Software Used	Argus Valuation -DCF, Argus Enterprise or any Argus Valuation Software	23	24.5
	BOE Valuer	6	6.4
	MRI Software	3	3.2
	KEL Sigma Software	0	0.0
	ValuePro	6	6.4
	Others	0	0.0
	No Response	61	64.9
Opinion on Whether Property Valuation Will Improve Firms Valuation Efficiency	Yes	54	57.4
	No	20	21.3
	I don't know	20	21.3
	Total	94	100.0

Table 3 portrays the evaluation of the knowledge and use of property valuation software among ESV firms. It reveals that 47(50%) of ESVs are aware of the existence of property valuation software while 47(50%) are unaware. This suggests that the amount of ESVs that know about the software may be somewhat equal to those that do not. This is based on the knowledge of the respondents on current technological trends in the profession. While many of the professionals are up to date on the trends, the others may not be and are therefore unaware of the use of software. It is also revealed that 61(64.9%) of ESV firms never use property valuation software for their valuations, 26(27.7%) use but very few times and 7(7.4%) often use the software. It can be surmised from this that most firms do not use the software and those who do, use them very few times while only a small number of firms use them often. This is possibly caused by the high costs associated in procuring the software as they are usually for sale. The low frequency of use can also be attributed to low knowledgeability in the utilization of computer software and lack of appropriate training on the property valuation software. The total number of firms that do use them regardless of frequency is 33(35.1%), out of the analyzed 94 firms.

It is also shown in the table that 23(24.5%) of firms that utilize the software, use Argus Valuation - DCF, Argus Enterprise or any Argus Valuation Software, 6(6.4%) use BOE Software, 3(3.2%) use MRI Software and 6(6.4%) use ValuePro. There is no recorded use of KEL Sigma or other types of software. 61(64.9%) gave no response as respondents were asked to answer the question if they agreed to using the software. The 61(64.9%) of no response equates the frequency of the ESVs who never use the software. This suggests that the most used software is Argus Valuation -DCF, Argus Enterprise or any Argus Valuation Software and the least used is MRI Software. It is possibly due to the fact that

Argus Valuation Software are more known by professions who are aware of the existence of valuation software.

It is also shown that 54(57.5%) of ESVs believe that the software will improve the firm's valuation efficiency while 20(21.3%) believed otherwise and 20(21.3%) are not sure if it will. It can be deduced that most ESVs believe that the use of property valuation software will improve their firms' property valuation efficiency as it is generally believed not only in the real estate field, but other industries, that computer technology has the potential of significantly boosting output as compared with manual labour.

Table 4: Percentage Ranking of Use of Popular Property Valuation Software

Software	Frequency	Percentage	Ranking
Argus Valuation -DCF, Argus Enterprise or any Argus Valuation Software	23	24.5	1st
BOE Valuer	6	6.4	2nd
MRI Software	3	3.2	3rd
ValuePro	6	6.4	2nd

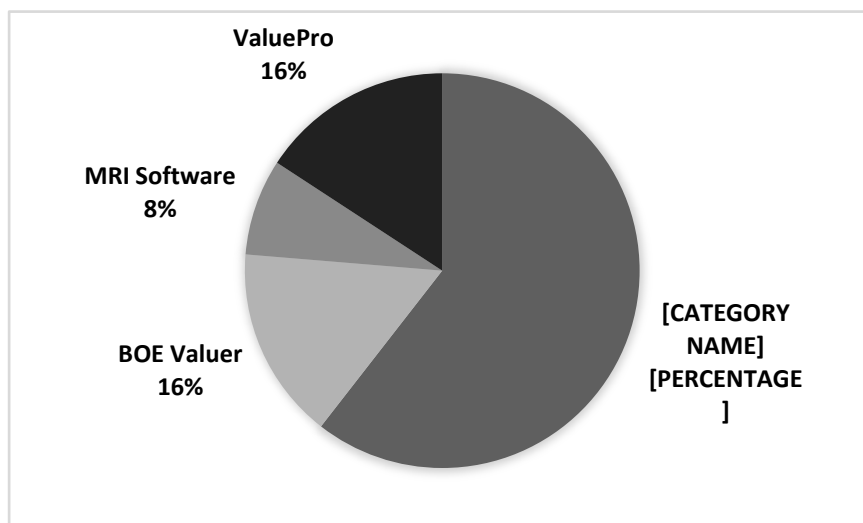Figure 1: Pie chart showing the percentage of use of each software

Table 4 represents the use ranking of software among ESVs. From Table 3, it was shown that 33 out of the 94 assessed firms use property valuation software. This ranking is limited to those 33 firms. It reveals that Argus Valuation -DCF, Argus Enterprise or any Argus Valuation Software is the most used software among ESVs and is ranked 1st. BOE software and ValuePro follows, ranked 2nd being used equally and MRI Software is ranked 3rd.

Figure 1 discloses the information of table 4 in the form of a pie chart. The largest sector of the chart represents 60% belonging to Argus Valuation -DCF, Argus Enterprise or any Argus Valuation Software. The smaller sectors represent 16% each belonging to ValuePro and BOE Valuer while the smallest sector represent 8% belonging to MRI Software.

It can be deduced from this analysis that quite low number of ESV firms utilize property valuation software. Although, half of the ESVs who responded acknowledged that they are aware of the

existence of these software, the utilization is quite limited. The measure of central tendency, mode was used to determine the most prevalently used software. The mode of the data set is the variable with the highest number of occurrences, meaning the highest rate of frequency. From this research, the mode is found to be Argus Valuation – DCF, Argus Enterprise or any Argus Valuation Software. Therefore, it is discovered that the most used property valuation software among firms is Argus Valuation – DCF, Argus Enterprise or any Argus Valuation Software, while the least used is MRI software, having the least rate of occurrence. Among firms that use the software, most firms agreed that they use them very few times. This shows that most firms do not rely on property valuation software to perform their valuations. The reason for this will require further study to be performed however a number of factors can be suggested including lack of computer software skills and financial constraints. However, most ESVs are of the opinion that property valuation software will enhance the efficiency of their valuations.

Conclusion

The unavailability of recent studies on the application of property valuation software has made it difficult to ascertain the current trend of use of the software in Nigeria. This study has been able to determine the level of use of the software and ascertain the software that is prevalently used in Nigeria. Having assessed the popularity of use among ESVs in the study area, Argus Valuation -DCF, Argus Enterprise or any Argus Valuation Software presents as the most widely utilized. This is probably attributed to the fact that the development company, Altus Group, is well known for the development of its line of real estate software and data solutions. The other software, BOE Valuer, ValuePro and MRI are ranked with less usage. This could be due to lower popularity of the software and their development companies amongst ESVs in Lagos. Unfortunately, the profession has yet to fully adopt this technology in Nigeria. Despite the fact that fairly enough professionals know about the software, the number of firms that utilize the software are considerably small. This shows that ESVs in Nigeria are missing out on the benefits of this technological shift and are still maintaining use of the traditional pen and paper arithmetic calculations models of valuation. The tediousness and meticulousness and time-consuming nature of this crude technique is still being managed. The specific reason for this will need to be determined as an area for further study on the subject matter. More so further studies can be embarked upon to determine the accuracy of the various property valuation software being utilized in the country. However, it is recommended that professionals adopt the use of property valuation software as it will not only ease the practice, but it will quicken the process and improve the quality of the valuation output.

Acknowledgement

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