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SWOT Analysis of Land Area-Based and Value-Based Property Rating

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Abstract: *The property rating can be on Value-based rating Assessment (VbRA) or Area-based Rating Assessment (AbRA). This study examined the suitable assessment of Bauchi metropolis, Nigeria. The materials used were published books and journal articles, and SWOT technique was applied to analyse the identified variables, then the strengths, weaknesses, opportunities and threats were sorted out. The facts from the SWOT matrix were assimilated into existing local scenario to strategically decide the appropriate assessment procedure for raising the local revenue for financing the provision and maintenance of municipal infrastructure and facilities. The study found Area-based Rating Assessment (AbRA) as the most appropriate rating assessment procedure for the study area.*

Keywords: *Area-Based Rating, Value-Based Rating, Municipal Revenue, Infrastructure, Bauchi*

INTRODUCTION

Property rating as a tax has been levied to raise finance for providing and maintaining existing neighbourhood facilities at municipal level (Kuye, 2002; Ogbuefi, 2004; Johnson *et al.,* 2005; Eti *et al.,* 2006; Nwachukwu & Emoh, 2010; Ahmad *et al.,* 2014), the tax has been *ad valorem*, and it has been calculated on the basis of the value of the property, this therefore has given the impression that, the higher the value of a property liable for rating, the higher the payable tax (Jacobus, 2010). Thus, the tax was *value-based property taxation* (Bird & Slack, 2002; Connolly & Bell, 2009; Plimmer & McCluskey, 2010). On the other hand, the same tax can be *non-ad valorem* when the tax is calculated on the basis of land area (in say m^2), called *land area based property rating* (Bird & Slack, 2002; Bahl & Martinez-Vazquez, 2007; Bahl, 2009; Connolly & Bell, 2009; Plimmer & McCluskey, 2010; Mangioni, 2010).

A point of concern about the area-based assessment, is that the process of calculating rate has not satisfied both horizontal and vertical equity, in other words it failed to recognize people at the same level of income to pay the same amount of tax, thus, horizontal equity was violated; also those with higher income were not made to pay tax higher than those with lower income, therefore vertical equity was violated; this was due to the fact that, the land area based taxation focused on bare land only to determine the rate liability and not

the improvement thereon (Bird & Slack, 2002). Another important issues about the area-based assessment was that it failed to consider the fertility of the land and other locational attributes that may enhance the value.

The system tended to distort the land market by parity taxation on a land that was put on its highest and best use, and another land that was not put on the highest and best use; this in turn may discourage the productivity and best use of land (Plimmer & McCluskey, 2010). However, according to Dye & England (2009), tax on land can curb unnecessary urban sprawl. In Plimmer & McCluskey (2010), the application of land area assessment was the best assessment method where the property market was not very active and comprehensive; the area assessment was simple to administer, had low cost of management and needed few experts to operate. It could be discerned that the periodic reassessment was therefore obviated.

The value-based taxation focussed on levying property rate on the basis of the market value of the land as well as the market value of any improvement thereon the land (Bird & Slack, 2002; Mangioni, 2010; Babawale, 2013); The ad valorem nature of the property taxation made the exercise to look like a tax on housing or improvement; this tended to discourage the real property development and improvement because that could enhance the property value and hence increase the tax liability (Kuye, 2002), hence the two-rate property taxation system also called 'graded land-improvement tax' applied dual rates, in this system, the heavy tax was charged on 'land' and less tax rate was applied on the 'improvement' (Anderson, 1999; Schaaf, 2001; Kwak & Mak, 2009).

The choice for suitable rating assessment system should reflect the factors that were envisaged to have impeded the implementation of rating in the study area, Muhammad & Ishiaku (2013) have reported the 'lack of political will', however, in (Baba et al., 2016) based on the empirical data collected and analysed, the 'lack of political will' was said to have been repudiated, and the 'over-reliance on crude oil revenue' and 'poor taxation system' were accepted as the most significant factors that impeded the implementation of property rating in Bauchi metropolis of Nigeria; it could be discerned that since the taxation system was faulty, the rating assessment to be adopted should not be as complex as the value-based rating, rather a less rigorous, inexpensive assessment pattern should be implemented as pilot test before advancing the complex system. This study was poised to determine the suitable rating assessment system for the study area.

Literature Review

Property rating has been the most important and potential internally generated revenue for the municipal councils (Cozmei & Onofrei, 2012), and countries across the world have keen interest on this local tax, and over 130 countries levied tax on the real property (Drebbia *et al.,* 2002). Dillinger (1991) earlier argued that, in reality, property taxation would hardly generate a significant revenue needed to fund the development and maintenance of neighbourhood facilities. In addition to the other problems associated with rating exercise, it has been particularly unviable in inflationary period, in some instances, the cost out-weigh the expected revenue, also the rigorous assessment and re-assessment coupled with administrative hindrances makes has made it slower and very unpopular in most developing countries. Ogbuefi (2004) added that the tax is only feasible in municipal areas where it is viable in terms of cost and revenue relationship. The overall success of the exercise is also dependent on the extent at which the local inhabitants enjoy existing neighbourhood facilities.

The value-based can be capital value or rental value, in the former, the property rate is levied according to the open market value of the subject property, usually after calculating 5% of the capital value as *assessed value* or *rateable value* upon which the *Rate Nairage* can be applied (Kuye, 2002; Bahl, 2009; Babawale, 2013); in the latter, the property rate is charged on the basis of rental value converted to the capital value; however, in case of commercial investment, the annual value served as the basis upon which the rate is applied (Kuye, 2002) these are being practiced in Australia, China, Tunisia (Bird & Slack, 2002). The area based assessment,

widely practiced in Central and Eastern Europe, has to do with the rating of the real estate on the basis of the total land area (in m^2); While, the self-assessment, which is seldom practiced, requires the property owner to determine the value of his or her property, and upon the owner's assessment, the tax can be computed; this type of assessment was found to be relatively good in Colombia and Bolivia (Bird & Slack, 2002).

Even though, the low-income countries may opt for the area-based assessment, but the value-based approach, where the higher tax rate is applied on land, and the lower rate is applied on improvements, has the advantage of encouraging the highest and best use of land, however it is an expensive exercise (Bahl, 2009); value-based assessment requires adequate information on the improvement, market situation in addition to the skilled team of valuers (Slack, 2011). In Sepulveda & Martinez-Vazquez (2009) and Grover (2015), the value-based taxation is mainly the predominant approach, and it is difficult and expensive compared to the area-based assessment, it requires well-trained Valuers to perform the task (Hefferan & Boyd, 2010; Slack, 2011), which involves entry into the properties, restrictions due the religious and traditional believes, may affect the smooth running of the exercise given the fact that rating in developing nations is unpopular and underutilized, and contributes less than 0.6% of GDP (Baba, Kasim, Alhaji & Maje, 2016). The consideration of the best pattern for rating valuation may be dependent on some local realities. Table 1 indicates the condition to be considered as appropriate to a given tax base

Table 1: Property Tax Base (Author's Literature Survey, 2017).

	Tax Base	Description	Condition
1	Area-based assessment	Non - Ad valorem	In the absence of active property market, comparable property; simple, can pave way to value-based rating valuation
2	Capital Value (Land and Building)	Ad valorem	Applicable when there is good property market and records of previous transactions
3	Capital Value (Land)		Uses as a tool to encourage real estate development, closely related to area-based rating, being tax on land only
4	Rental Value		Where rental is form of housing tenure
5	Self-assessment		In financially weak and impoverished countries

The application of single rate property rating or two-rate property rating is dictated by the existing circumstances in any given community, but initially, a single tax rate is used to charge on the cumulative value of land and its improvement (England & Zhao, 2004; Cohen & Coughlin, 2005). The property rating on the basis of land value becomes less attractive especially in the United States and many advanced nations (Mangioni, 2010); apparently, the land area tax may not be a good option for generating local revenue, given the complexities in large scale real estate investment, because in this area, the rating which is done on the land that accommodates complex and high storey buildings, may be regarded as inadequate, and requires a more robust scheme, that could bring the best out of the whole property

Demerits and Merits of Land Area-based Taxation

One of the major disadvantages of land area-based system of rating valuation is that this process of determining the rate liability does not seem to satisfy both horizontal and vertical equity (Plimmer & McCluskey, 2010), in other words, the system failed to recognize people on the same level of income to pay the same amount of tax, thus, horizontal equity is violated; also those with higher income were not made to pay tax higher than those with lower income, therefore vertical equity is violated; this is due to the fact that, land area based taxation focused on bare land only to determine the rate liability and not the improvements, yields, soil fertility or locational attributes and so on (Bird & Slack, 2002). In a nutshell, the system does not consider differences in terms of fertility of land due to the locational attributes and topographical features; also property/land located in closed proximity to important features like schools, shopping centres are likely to attract higher capital or rental value, all of which are not considered in area-based taxation.

The system tends to distort the land market by parity taxation on land that is put on its highest and best use, and another land that is not put on the highest and best use; this in turn may discourage the productivity and

best use of land (Plimmer & McCluskey, 2010). However, political economist Henry George argued that the tax on land could promote fairness since land value is determined by the whole local community but not by a single individual; he further argued that tax on land does not distort the individual choice of investment; and does not influence the timing of the development but curb the unnecessary urban sprawl (Dye & England, 2009).

The application of land area assessment is the best recommended assessment method where the property market is not very active and comprehensive; it is simple to administer, has low the cost of management, and needs few experts to operate, and periodic reassessment is eliminated (Plimmer & McCluskey, 2010), furthermore, the land area assessment can easily be converted to land value based assessment (Bird & Slack, 2002). The land area-based assessment approach entails only total area measurement, disregarding any improvement thereon (Bird & Slack, 2002; Connolly & Bell, 2010). In the realm of rating valuation, the approach is simple, faster and cost-effective than the value-based approach (Plimmer & McCluskey, 2010; Connolly & Bell, 2010) in that, the parcel of land is taxed at a given rate per unit of land area (Bahl, 2009; Plimmer & McCluskey, 2010); about 44 developing nations have adopted land area assessment for rating; and it was found to be compatible in Vietnam, Central and Eastern Europe mainly due to weak property market (Bahl, 2009).

The area-based assessment is not costly because it does not require full-scale valuation of real properties, as the process focusses on the total land area as the basis for rating, and discards any building infrastructures thereon. This made it to be easily understood by the ratepayers, and easily administered by the municipal authority, thus, is not really an *ad valorem* tax, because it is area-based not value-based (Bahl, 2009). In other words, the tax is imposed on occupied physical areas, irrespective of the value.

The point of concern is how fast and precise an area of land can be established, Hu & Dai (2013) discussed the potentials of Google Earth/Map to remotely carry out the reconnaissance survey and identify, enumerate and measure any given land area in m^2 or any chosen scale of measurement; thus, provides headway to land appraisers to apply the tax rate [*Rate Nairage as in Nigeria* (Kuye, 2002); or Rate Poundage as in United Kingdom (Johnson *et al.* 2005)] to arrive at the rate liability for a property. According to Hu & Dai (2013), Google Earth/Map is equipped with tools of measurement that can remotely establish the total land area of any subject property, anywhere in the world without physical visit to the site. In (Kumar, *et al.,* 2015) remote sensing tools can measure and collect detail information on vast land area in short time, at lower cost, hence make it suitable for land area assessment for rating. Moreover, real properties in the study area were demarcated with beacon points at each angle as well as building fence.

The reconnaissance survey of all neighbourhoods can be conducted faster and more effective with Google Earth or Google Map at lower costs (Kamel Boulos, 2005; Kamadjeu, 2009; Tailor, *et al.,* 2011) and desired information on location of subject properties can be collected remotely (Kamadjeu, 2009; Tailor, *et al.,* 2011), without entry into the property, thus, require less personnel, time, equipment and cost. Remote sensing tool like Google Earth/Map has been proven to be faster, cheaper and provides relatively high level of resolution (Tailor, *et al.,* 2011); according to Bahl (2009) it is suitable in developing nations. Google Earth/Map can be operated by relatively few experts, effectively (Kamadjeu, 2009; Tailor, *et al.,* 2011).

This system is advantageous over the value-based rating in that land area assessment can curb down unnecessary urban sprawl and encourage real estate development (Anderson, 1999; Dye & England, 2009; Kwak & Mak, 2009); while manual rating, which is mainly value-based inevitably requires assessing lands and building infrastructures for rating valuation, this must involve a number of valuation activities by relatively high number of skilled personnel, (Kuye, 2002). The computation of the rate liability is costly and often time taking in comparison with the land area assessment, where only the land area is measured (Bahl & Martinez-Vazquez, 2007). A clear distinction is shown in Table 2 below.

Table 2: The distinction between Area and Value-Based Rating Assessment. (Author, 2015: Literature Survey).

Area-based Property Rating using Remote Sensing Tools	Value-based Property Rating Manual Assessment
Assessment by area	Assessment by value
No need for periodic reassessment	Require periodic reassessment
Suitable in the absence of property market	Need property market to operate well
Consider only land	Consider both land and building
No full-scale valuation	Must carry out full-scale valuation
Purely non-ad valorem	Ad valorem tax
Less task	More task
Less costly	Costly
Curb down unnecessary urban sprawl	Allow urban sprawl
Inspire real estate development	Not much
Require data on land area	Require data on both land and improvement
Easily understood and transparent	Complex
Stay away from some valuation problem	Employ all aspects of valuation
Suitable in developing countries	Unviable in developing countries
Google Map measured land instantly	Land and building measured manually
Data can be obtained remotely	Need physical valuation
Done in short time	Relatively long time
Few personnel needed	Needs many skilled personnel

The Laws of Bauchi State,since 2006, were enacted under the subsidiary legislation of the Federal Acts, delegated Bauchi State in collaboration with the Municipal Council to make and gazette tenement edict for internal revenue generation; in Chapter 156 of the Tenement Rating Law, the legal instrument for rating (Bauchi State Ministry of Justice, 2007) has been provided; however the instrument is arbitrarily value-based approach without regarding the local scenarios, hence the need to revisit the assessment approach is deemed imperative due to the issues mentioned earlier and specifically restricted due to the religious and traditional believes which may affect the smooth running of the exercise in the study area being part of the developing world where active property market necessary for value-based rating is lacking, as posited in (Bahl, 2009; Plimmer & McCluskey, 2010).

Materials and Methods

The materials used were published books and journal articles that elucidated the concepts and provisions of both value-based and area-based assessments; SWOT analysis was adopted as a technique to analyse *Strengths*, *Weaknesse*s, *Opportunities* and *Threats* of the two assessment procedures, following a comprehensive review of the literature and in-depth data analysis. The SWOT technique can indicate the internal capabilities and advantages as well as the external opportunities that can yield benefits and circumstances that can affect the assessments. The technique is used to analyse the level of performance of the farming system (Ommani, 2011); it enables making strategic decisions and policies (Team FME, 2013); the analysis operates on the existing internal and external knowledge, and the characteristics and provisions of a system in order to formulate appropriate strategy, though, critics alleged that the analysis does not determine the causes and effects of any characteristics (Sammut-Bonnici & Galea, 2015).

The analysis entailed collecting and sorting out key variables and characteristics of both value-based rating assessment and area-based rating assessment separately, and identified the internal capabilities (strengths and weaknesses); as well as the external ones (opportunities that can boost rating, and threats that can harm rating). In depth literature survey was the most essential ingredient used in collecting and sorting out of variables according to (SWOT). This was followed by SWOT matrix for each rating assessment pattern, then the SWOT analysis was assimilated into decision making strategy to determine which alternative can satisfy municipal requirements for raising local revenue meant to develop and maintain community infrastructures.

SWOT analysis is a precursor to the strategic planning and execution of action. Table 3 presents an objective analysis of the value-based pattern of the assessment together with corresponding sources of the variables.

Table 3: SWOT Matrix (Value-based rating) Key Variables.

Value-based Rating Assessment (VbRA)				
Internal Variables	**Strengths (S)** S_1 Levy base on OMV yields high revenue. S_2 Can levy separate rate on land. S_3 Separate rate on improvements. S_4 Can make the levy on capital value. S_5 Levy on rental value/annual value. S_6 Inspires highest & best use of land. S_7 satisfy horizontal equity. S_8 Satisfy vertical equity. S_9 Consider land/soil fertility. S_{10} Consider all locational attributes.	**Sources**	**Weaknesses (W)** W_1 Is an expensive exercise. W_2 Needs adequate information on improvements & other market situations. W_3 Needs skilled team of Valuers. W_4 Difficult Task: Intensive process of data collection: - Reconnaissance survey, Physical Inspection, Enumeration, Measurement & Valuation. W_5 Requires periodic revaluation. W_6 Affected by volatility in value. W_7 Difficult for tax payers to comprehend calculation processes. W_8 Tax payers are not willing to comprehend and accept the purpose of the exercise easily.	**Sources**
External Variables	**Opportunities (O)** O_1 Good in active and functional property market (Database exist). O_2 Recent records & comparable properties are essential for value-based approach. O_3 Has many tendencies to yield high revenue, due large investment properties. O_4 Property value appreciates, thus tends to generate huge revenue. O_5 Can be used to control urban sprawl. O_6 CAMA serves as a useful tool. O_7 Rates Tribunal offers remedy to any dispute in assessment. O_8 Intensive awareness campaign & judicious use of national resources can boost the acceptability of the exercise.	Bird & Slack, 2002. Kuye, 2002. Bahl, 2009. Mangioni, 2010. Babawale, 2013. Plimmer & McCluskey, 2010. Connolly & Bell, 2009 & 2010.	**Threats (T)** T_1 Not popular among people. T_2 Cultural/religious limitation (rating assessment will defy privacy) T_3 Lack of adequate technical staff. T_4 Cost might outweigh revenue. T_5. Complex valuation process. T_6 Complexities may lead to litigation.	Bahl, 2009. Slack, 2011. Sepulveda-Vazquez, 2009. Olawande & Ayodele, 2011. Salmaso, 2014. Grover *et al.* 2015. Plimmer & McCluskey, 2010. Connolly & Bell, 2009 & 2010.

OMV: Open Market Value
CAMA: Computer Assisted Mass Appraisal

As in Table 3 above, the identified strengths and opportunities have the potentials to leverage the weaknesses and threats, however, its application in the Bauchi metropolis may not be feasible due to the weak property market as well as the cultural, socio-economic and political impediments. The helpful and harmful variables have been matched in Table 4 below to see the extent of potentiality in the system.

Table 4: SWOT Matrix Matching and Converting Variables in VbRA.

Internal (micro) Factors / External (macro) Factors	Strengths (S)	Weaknesses (W)
	S1 Levy base on OMV yields high revenue. S2 Can levy separate rate on land. S3 Separate rate on improvements. S4 Can make the levy on capital value. S5 Levy on rental value /annual value S6 Inspires highest & best use of land. S7 satisfy horizontal equity. S8 Satisfy vertical equity. S9 Consider land/soil fertility. S10 Consider all locational attributes. Strengths to maintain Suggested Strategies SO	W1 Is an expensive exercise. W2 Needs adequate information on improvements & other market situations. W3 Needs skilled team of Valuers. W4 Difficult Task: Intensive process of data collection: - Reconnaissance survey, Physical Inspection, Enumeration, Measurement & Valuation. W5 Requires periodic revaluation. W6 Affected by volatility in value. W7 Difficult for tax payers to comprehend calculation processes. W8 Tax payers are not willing to comprehend and accept the purpose of the exercise easily.
Opportunities (O) O1 Good in active and functional property market (Database exist). O2 Recent records & comparable properties are essential for value-based approach. O3 Has many tendency to yield high revenue, due large investment properties. O4 Property value appreciates, thus tends to generate huge revenue O5 Can be used to control urban sprawl. O6 CAMA serves as a useful tool. O7 Rates Tribunal offers remedy to any dispute in assessment. O8 Intensive awareness campaign & judicious use of national resources can boost the acceptability of the exercise. Opportunities to leverage Suggested Strategies SO	Strategies to maintain strengths and leverage opportunities SO1 Levy base on OMV yields high revenue (S1) plus huge real estate investment (O3) plus real properties appreciates with time (O4) all can leverage high cost of the task and the intensity of the exercise. SO2 Ease of levying the tax separately esp. on land (S2) plus encouraging highest & best use of land (S6) can both control unnecessary urban sprawl (O5). SO3 the flexibility to levy on either land, improvement, capital value, rental value or annual value (S2, S3, S4, & S5) and satisfying horizontal/vertical equities (S7,S8) are elements focused on meeting taxpayers demand for justice. And also to solve problems in W7 W8 & T5 & T6. Both S9 & S10 as well as O1 O2 O6 O7 & O8 are internal and external qualities that can leverage complexity, high cost and unpopularity of the exercise.	To improve upon Suggested Strategies WT
Threats (T) T1 Not popular among people. T2 Cultural/religious limitation (rating assessment will defy privacy) T3 Lack of adequate technical staff. T4 Cost might outweigh revenue. T5. Complex valuation process. T6 Complexities may lead to litigation.	To minimize Suggested Strategies WT	Strategies to overcome WT WT1 Expensive task (W1): tendency of real estate to appreciate can recoup cost (O4); levy base on OMV favours ad valorem tax (S1). Hence high revenue. WT2 Need adequate information (W2): In active real estate market, database exists (O1). WT3 Need skilled team of Valuers (W3): CAMA tends to expedite and enhance the process (O6). WT4 Difficult Task (W4): Existing database (O1), CAMA (O6) & recent records of comparable

		properties can boost the assessment (O2). WT5 Requires periodic revaluation (W5): An up to date database (O1) & CAMA can help (O6). WT6 Affected by volatility in value (W6): Periodic revaluation with the help of updated database (O1) & CAMA (O6), allows VbRA to take note of appreciation in property value hence more revenue since the tax is ad valorem (O4). WT7 Difficult for taxpayers to comprehend calculation process (W7): Rates Tribunal adjudicates any disputes in assessment (O7). WT8 Taxpayers not willing to comprehend and accept purpose of the exercise easily (W8): Intensive awareness campaign & judicious use of national resources can boost the acceptability of the exercise, and win public confidence (O8). WT9 Not popular (T1): As in WT8 above. See (O8). WT9 Cultural & religious limitation (T2): Call for proper approach plus WT8 above. See (O8). WT10 Lack of adequate technical staff (T3): Application of CAMA can supplement existing staff strength (/O6). WT11 Cost exceeding revenue (T4): Not likely possible in large volume of real estate investment (O3); real estate value appreciation (O4) and computer assisted program (O6). WT12 Litigation (T6): Rates Tribunal decides (O7).

OMV: Open Market Value
CAMA: Computer Assisted Mass Appraisal
VbRA: Value-based Rating Assessment.

Results of the SWOT analysis on value-based rating (Table 4) has paved the way for matching the strengths to opportunities in Value-based Rating assessment (VbRA) in order to determine how far can VbRA improve municipal revenue; and convert the existing threats and weaknesses into strengths or opportunities that can boost the capability of VbRA in generating local finance. VbRA is costly, but the tendency of real estate to appreciate in value can recoup the extra cost expended in rating assessment (the tax being ad valorem) and is levied based on OMV or annual value in case of commercial properties, thus high revenue can be realized to leverage the cost. The need for adequate information, experts, and application of CAMA remain in bleak. Periodic reassessment equally remains inevitable even with the frequent volatility in real property value.

Cooperation and Compliance to rate payment are easily achievable by adequate awareness campaign. The cultural/religious barriers are serious impediments, and the lack of adequate technical staff and complexities in the task will continue to post problems in this rating. The fact that, this tax can be levied separately especially on land, and the fact that it encourages the highest & best use of land, will go a long way in controlling unnecessary urban sprawl. The

flexibility in levying the tax and the tax inherent system in meeting the horizontal and vertical equity adds to the credibility of VbRA, as analysed in Table 5.

Table 5: SWOT Matrix (Area-based rating) Key Variables.

Area-based Rating Assessment (AbRA)				
Internal Variables	Strengths (S) S1 Less vigorous S2 relatively cheaper (less of cost of administration) S3 Requires less information from payers. S4 Required limited data S5 Easy to collect data S6 Google map enable fast data collection. S7 Data can be collected remotely, as only land is considered. S8 No periodic revaluation. S9 No need for: Reconnaissance survey, Physical Inspection, Enumeration, Measurement & Valuation. S10 Not affected by volatility in value.	Source Bahl, 2009 Plimmer & McCluskey, 2010 Connolly & Bell, 2009 & 2010. Olawande & Ayodele, 2011. Salmaso, 2014. Grover et al. 2015. Kamel Boulos, 2005. Lisle, 2006. Kamadjeu, 2009. Zhang et al. 2010 Tailor et al 2011. Hu & Dai, 2013. Kumar et al. 2015.	Weaknesses (W) W1 Relied on land area only. W2 Levied on land area per m2 W3 Disregards any improvement. W4 Disregards both capital & rental value. W5 Disregards the concept of highest & best uses. (parity taxation). W6 Can generate low revenue. W7 Does not satisfy horizontal equity. W8 Does not satisfy vertical equity. W9 Does not consider land/soil fertility. W10 Does not consider all locational attributes.	Source Bahl, 2009 Plimmer & McCluskey, 2010 Connolly & Bell, 2009 & 2010. Olawande & Ayodele, 2011. Grover et al. 2015 Bukohwo & Emmanuel, 2014. Plimmer & McCluskey, 2010 Connolly & Bell, 2009 & 2010. Bahl, 2009
External Variables	Opportunities (O) O1 Suitable where property market is not active. O2 Where recent records, comparable properties etc are not available. O3 Tax payers can comprehend the process easily. O4 Required data can be obtained Remotely. O5 provide hedge against cultural/religious barriers. O6 Can operate with few experts.		Threats (T) T1 Boundaries not well demarcated. T2 Most properties are not numbered/registered (no cadastral data). T3 Ground truthing may require house to house visitation. T4 Unsuitable in highly advanced nations. T5 Data collected by Google Map with a computer software can be vulnerable to viruses. T6 Ignoring all improvements may result to low revenue	

In Table 5, the key variables under strengths and opportunities are inherent factors that can overcome the weaknesses and threats, some of the characteristics of AbRA made its application in the study area very feasible in that the property market is not active, and the property transaction data are not readily available, AbRA is simple as it focussed on land area only, it's fast and can be achieved with remote data collection (using Google Earth/Map), it can be managed by few experts, it requires no periodic reassessment, and all of these are cost-effective elements. It can control unnecessary urban sprawl and most importantly it is not affected by the cultural and religious barriers in that required data are collected remotely without entry into the subject properties, and so the exercise does not appear to defy any privacy. Table 6 has examined how weaknesses and threats can be converted into strengths and opportunities.

Table 6: SWOT Matrix Matching and Converting Variables in AbRA

Internal (micro) Factors / External (macro) Factors	Strengths (S) S1 Less vigorous S2 relatively cheaper (less of cost of administration) S3 Requires less information from payers. S4 Required limited data S5 Easy to collect data S6 Google map enable fast data collection. S7 Data can be collected remotely, as only land is considered. S8 No periodic revaluation. S9 No need for: Reconnaissance survey, Physical Inspection, Enumeration, Measurement & Valuation. S10 Not affected by volatility in value. Strengths to maintain Suggested Strategies SO	Weaknesses (W) W1 Relied on land area only. W2 Levied on land area per m2 W3 Disregards any improvement. W4 Disregards both capital & rental value. W5 Disregards the concept of highest & best uses. (parity taxation). W6 Can generate low revenue. W7 Does not satisfy horizontal equity. W8 Does not satisfy vertical equity. W9 Does not consider land/soil fertility. W10 Does not consider all locational attributes.
Opportunities (O) O1 Suitable where property market is not active. O2 Where recent records, comparable properties etc are not available. O3 Tax payers can comprehend the process easily. O4 Required data can be obtained Remotely. O5 Provide hedge against cultural/religious barriers. O6 Can operate with few experts. Opportunities to leverage Suggested Strategies SO	Strategies to maintain strengths and leverage opportunities SO1 Levy base on OMV yields high revenue (S1) plus huge real estate investment (O3) plus real properties appreciates with time (O4) all can leverage high cost of the task and the intensity of the exercise. SO2 Ease of levying the tax separately esp. on land (S2) plus encouraging highest & best use of land (S6) can both control unnecessary urban sprawl (O5). SO3 the flexibility to levy on either land, improvement, capital value, rental value or annual value (S2, S3, S4, & S5) and satisfying horizontal/vertical equities (S7, S8) are elements focused on meeting taxpayers demand for justice. And also to solve problems in W7 W8 & T5 & T6. Both S9 & S10 as well as O1 O2 O6 O7 & O8 are internal and external qualities that can leverage complexity, high cost and unpopularity of the exercise.	To improve upon Suggested Strategies WT
Threats (T) T1 Boundaries not well demarcated. T2 Most properties are not numbered/registered (no cadastral data). T3 Ground truthing may require house to house visitation. T4 Unsuitable in highly advanced nations. T5 Data collected by Google Map with a computer software can be vulnerable to viruses. T6 Ignoring all improvements may result to low revenue	To minimize Suggested Strategies WT	Strategies to overcome WT WT1 Relied and levy tax based on land area only (W1 W2), disregards all improvements (W3). Less vigorous (S1) Not expensive (S2) Data are obtained remotely-Google Earth/Map (S6 S7 O4) operate with few experts (O6) WT2 Disregards both capital & rental value in assessment (W4): Require limited data (S4) & less information from taxpayers (S3) thus easy to collect (S5). WT3 Disregards the concept of highest & best uses. (parity taxation) (W4): Less vigorous

		(S1), No need for intensive inspection (S9) AbRA is not affected by volatility in value (S10), Does not care about to soil fertility and other locational attributes that may affect value and utility.
		WT4 Generate low revenue (W6): Has less cost of administration (S2), No need for periodic revaluation (S8) plus advantages from (S3 S4 S5 S7 & S9).
		WT5 AbRA tends to ignore horizontal and vertical equities (W7 W8): Due to (W! W5 S7). However, due to inactive property market (O1) lack of recent records from comparable properties (O2) made the approach suitable in the study area.
		WT6 Boundaries not well demarcated (T1), properties not consistently numbered (T2): Google earth/map enable fast data collection remotely (S6 S7), furthermore collaboration with relevant agencies is necessary.
		WT7 Ground truthing (T3): Not necessary ***
		WT8 Unsuitable in advanced countries (T4): Tax payers can comprehend the process easily (O3), It provide hedge against cultural & religious barriers (O5)
		(W9): Data collected by Google Map with a computer software can be vulnerable to viruses (T5) Easy to collect data (S5) faster (S6) with few experts (O6) plus more back ups
		WT10 Addressed in WT3 above.

OMV: Open Market Value
CAMA: Computer Assisted Mass Appraisal
AbRA: Area-based Rating Assessment.

The results of the SWOT analysis on the area-based rating (Table 6) converted weaknesses and threats by the way of matching their variables with strengths and opportunities so as to determine the capability of AbRA in enhancing local revenue; this will go a long way in establishing the potent AbRA for implementation in Bauchi metropolis. This assessment process is relying on the land area, and disregards the improvements that made AbRA less vigorous, relatively not expensive, and the data on the land area are collected remotely in short time and with few experts, thus cost-effectively (Plimmer & McCluskey, 2010); it needs no periodic reassessment, and this tends allowing revenue to exceed the cost. In addition to that, AbRA can operate with limited data, and requires less information from the tax payers. For the issue of groundtruthing of data collection remotely, the collaboration with relevant agencies is necessary.

A total disregard to the concept of the highest and best use, OMV, real estate value appreciation, soil fertility, locational attributes as well as ignoring horizontal and vertical equities, and disregards to volatility in property value indicates a harm to AbRA; the lack of transaction records of comparables, and the lack of active and functional property market suggested AbRA as the most suitable rating approach for the study area. In addition to that, the remote data collection offers a hedge against the cultural and religious barriers. However, the tax based on the land area inspires the optimum uses of the taxed land area.

Gap Analysis

To augment and update the existing legal instruments that have been provided for property rating in Bauchi metropolis, the identified gap and element that are lacking in the instrument should be provided. The instrument adopted the value based assessment without establishing the feasibility and viability of this assessment system in relation to the area based assessment. This paper has meticulously examined the provisional and operational procedure of the two assessment systems of the property rating practice for financing the community infrastructure and facilities. The alternatives of VbRA or AbRA were subjected to SWOT analysis in order to refine a choice for the appropriate system of rating for the study area.

The decrepitude condition of community infrastructure, facilities and services is glaringly obvious, yet the existing policy and strategy (of property rating) for maintaining as well as providing more infrastructures and facilities in Bauchi has not been implemented (Muhammad & Ishiaku, 2013), as a result of lack of routine maintenance, there was a backlog of maintenance issues across many sectors in the economy Udo (2007). The poor condition of the public buildings, roads, drainages, and uncontrolled littering, and poor sanitation and stockpiled of refuses on the roads and streets posed the health risk in the metropolis. In (Baba, Kasim, Aliyu & Mammadi, 2017) based on the empirical data analyzed for the study area, the property rating did not directly influence the community healthcare, but funds raised by the rating practice could defray the cost of sewage cleaning and sanitation, which in turn influenced public healthcare services. As observed elsewhere across the world, the practice of property rating was envisaged to provide a panacea to this phenomenon (McCluskey *et al.,* 2002; McCluskey & Franzsen, 2005; Slack & Bird, 2014).

As a source of IGR, the municipal authority needs to implement rating, but the choice of appropriate assessment procedure is a factor to reckon with, so that the local socio-economic and political settings in the study area should guide the strategy for decision making. The two main alternatives (VbRA & AbRA) came with the internal strengths and weaknesses, as well as the external opportunities and threats analysed in Tables 3 and 5, respectively. VbRA may be a good option due to the tendency of real property to appreciate in value, and as *ad valorem* tax is levied based on OMV or annual value, this can leverage some of the weaknesses and threats, and then recoup the high cost of the administration, hence the high revenue. But this approach is suitable where the property market is functional and active, also where the market data is readily available (Plimmer & McCluskey, 2010), but the study area could not satisfy this requirement, besides, the cultural and religious barriers in the study area would make VbRA not feasible.

Area-based rating Assessment (AbRA) on the other hand, failed to satisfy the horizontal and vertical equity, did not consider the soil fertility and other locational attributes; volatility in value was equally not a factor in AbRA; while this assessment process has encouraged the highest and best use of land, ironically it does not consider the highest and best use in assessing the property for rating. Hence, it is not suitable in advanced nations.

AbRA is particularly operational in developing nations like Tunisia and countries in Central and Eastern Europe; its application in Nigeria and specifically in the study area where the property market is not active, and the property transaction data are not readily available, is recommended; in addition to that, it focuses on land areas only, it's fast and involves remote data collection managed by few experts, no periodic reassessment, can control the unnecessary urban sprawl, and most importantly it is not affected by cultural and religious barriers in that the required data are collected without entry into the subject properties, and so,

the exercise does not defy the privacy of people. This will inspire the acceptability of the practice by the local people.

To sieve and refine these analyses even further, the gap analysis was performed to determine where the deficiencies exist in the assessment processes, and how they can be leveraged by the strengths and the opportunities, so as (1) promoted a better understanding of the barriers that impeded the positive change, innovation, and possible transfer of knowledge to the practice; (2) improved the outcomes (local revenue generation); and (3) improved the community infrastructure, facilities and services.

Results and Discussion

The existing legal instrument that has been provided for property rating in Bauchi (though not implemented), has inclined towards the value based assessment without establishing the feasibility and viability aspects of both the area and the value based assessment systems in relation to the local setting of the study area. As a source of the local revenue, the municipal authority needs to implement rating, but the choice of the appropriate assessment procedure is a factor to reckon with. The local socio-economic and political settings in the study area should guide the strategy for decision making. The existing assessments (VbRA & AbRA) have internal strengths and weaknesses, as well as the external opportunities and threats which have been analysed in Tables 3 and 5; respectively.

Earlier in (Baba *et al.,* 2016) based on the analysed empirical data, 'over-reliance on crude oil revenue' and 'poor taxation system' were accepted and reported as the most significant factors that impeded the implementation of property rating in the study area; as the existing taxation system was reported to be faulty. The proposed rating assessment to be adopted should not be so complex like the value-based assessment, rather a less rigorous, inexpensive pattern should be implemented as a pilot test before advancing a complex system.

This study has examined the strengths, weaknesses, opportunities and threats of each rating assessment system in relation to the study area, and found the area-based assessment as the most appropriate for implementation in Bauchi metropolis, Nigeria due to the following reasons: The approach (AbRA) is suitable where the property market is not functional and active, also where the market data is not readily available (Plimmer & McCluskey, 2010), the study area did not satisfy this requirement, besides, the cultural and religious barriers in the study area would trigger vehement resistance, by not allowing the valuers, and it carried out the inspections and measurements in their properties, and this would impede the implementation of VbRA, thereby halting the provision and maintenance of the community infrastructure, facilities and services.

Conclusion

Area-based assessment was chosen as an appropriate approach in the most developing countries for reasons associated with high cost of the value-based approach, as well as the lack of the active property market and market data, it can be discerned that the value-based system inevitably requires in-depth measurement and analysis of the subject property (both internally and externally) in order to determine the rates. This particular requirement may not be accepted by the local residents due to the cultural and religious barriers and thus, the scenario suggested for AbRA has been focussed on the land area only, and the assessment data can be collected in short time using tools like Google Earth/Map without entry into the subject properties, and so the exercise does not defy the privacy of the residents. The fact that the exercise can be managed by few experts, and requires no periodic reassessment like VbRA, will reduce cost and inspire compliance by the local people Therefore, the area-based assessment has been the appropriate rating assessment procedure recommended for the study area. These results could inform the rating authority on a sound and strategic assessment system compatible to the local setting.

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