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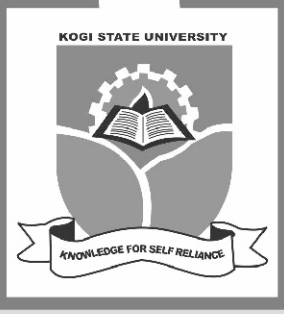

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Economics of Electricity Consumption, Billing and Payment Systems in Igbesa-Agbara Development Area of Ogun State, Nigeria

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Abstract

The paper examines economics of electricity consumption, billing and payment systems in Igbesa-Agbara Local Council Development Area (LCDA) of Ogun State using Primary and secondary data respectively. The core objectives of the study were to evaluate relationship between electricity consumption and tariffs charged by power distribution companies (DisCos) and effectiveness of revenue collection and remittances by the companies The data were analysed using Pearson correlation analysis. The results upheld the null hypotheses of the study as computed Pearson r (0.024) was lower than the critical table value (0.217) and revenue collection and remittances methods by the DisCos were found sub-optimal. The paper identified contrived scarcity of prepaid meters and rent-seeking by field staff of the DisCos as the core challenges of power supply and consumption in the LCDA. To overcome these challenges, the paper recommends that all electricity users in the LCDA should be identified and registered to avoid revenue leakage; prepaid meters should be provided to customers to stem rent-seeking by marketing officers of the Discos; and regular customer relationship management trainings should be organized for all Discos staff that interface with customers and the public.

Keyword: Electricity consumption, billing, payment system, rent-seeking behaviour, arbitrary tariffs.

1.0 Introduction

The Nigeria electric power sector has witnessed several reforms since the mid-1980s designed to promote free market economics in production, distribution and utilization of electric energy. This is in recognition of the important role that the private sector can play in production and consumption efficiency and welfare improvements. The policy thrust has been to break the unrivalled government monopoly in the sector. Consequently, private power generating companies (GenCos) and distribution companies (DisCos) were created to actualize the reform agenda. But in recent times, there have been hues and cries by all categories of consumers who felt short-changed by the reforms; and the disaffections appear to be growing rather than reducing, despite numerous government interventions.

Electricity has become the core source of energy worldwide since the advent of the 21st century. It is used to power industrial production and distribution machines and equipment as well as home and office appliances. There is hardly any household in Nigeria that does not depend on electric power for light and lightening, electronic gadgets, processing of foodstuffs, and ICT related activities, particularly in charging batteries of cell phones. Ours is a digital age that is highly dependent on electric power generation, distribution and consumption. Households that do not have access to electric power often approach business centres to charge batteries of their cell phones, laptops and torch lights. Electric power is also used extensively in charging batteries of motor vehicles and trucks. Firms and households that can afford it, out source through independent power set like generator or solar panel.

The costs of acquiring and maintaining electric generators have been monumental on the Nigerian economy in terms of foreign exchange depletion and health hazards to both man and partly animals (ThisDay, 2019, Egwu, 2018, Anyaganfu, 2014, & Igboeroteonwu, 2008). Because of these and related costs and the avoidable loss of human lives, most households and businesses prefer to source their electric power from the national grid formerly controlled by the Nigeria Electric Power Authority (NEPA) that has since metamorphosed into the Power Holding Company of Nigeria (PHCN) in 2005 to pave way for private sector participation. Subsequently, private electric power generating companies (GenCos) and distribution companies (DisCos) emerged to consolidate on government's effort towards efficient power generation, transmission and consumption

In the Igbesa-Agbara Local Council Development Area of Ogun State, the electricity reforms agenda was enthusiastically embraced by households, small and medium enterprises (SMEs) and large scale industrial firms which dominate the area; because of proximity to Lagos - the commercial nerve centre of Nigeria and bordering towns to Seme-Benin Republic via Idiroko. All these advantages have combined to make the Igbesa-Agbara area to become the hob of industrial cum commercial businesses requiring steady supply of electricity to grow and prosper. However, it soon became evident that PHCN could not install electric poles and transformers in several localities and State Government effort has not yielded development. Realizing their fate, local communities organized themselves into associations to purchase and installed electric poles and transformers, which enabled them to access electricity from the national grid.

I[1] the joy of most of the communities and their associations was short-lived. Because soon after connecting to the national grid, PHCN officials started bringing extremely high electricity bills which some residents described as 'crazy bills' in addition to non-formality and transparency in payment system. This development created a lot of disaffection among the consumers, thus leading to protest, prompting the State Government and senior PHCN officials introducing palliatives measures, which probably did not go far enough to consolidate the effort of the local communities.

Disaffection is still widespread especially in areas controlled by the Ibadan Electricity Distribution Company (IBEDC) while areas controlled by Ikeja Electricity Distribution Company (IKEDC) appear to record very little disaffection among consumers. What modalities do the Discos use in determining electricity consumption and billing rates in the Igbesa-Agbara area of Ogun State? What methods do they use in remitting payments made by consumers of electric power in the area? How can consumer disaffection be eliminated or reduced to the barest minimum in the area? These are the issues addressed in this research work.

1.0 Literature and Theoretical Review

Nigeria's power sector and other institutions witnessed a gale of reforms in recent times anchored on what can best be described as the supply-side economics model, of which the Structural Adjustment Programme (SAP) implemented in 1986 was a variant. It is a theoretical paradigm that emphasizes the use of taxation and deregulation to shift society's production frontier to the right signifying economic growth; the benefits of which 'trickle-down' to all members of the society (Gwartney, 2016, and Henderson, 2019). Although first used in the late 1970s by Professor Herbert Stein, it became most closely associated with the free market policies of US President Ronald Reagan (1981-1989). It was later dubbed as Reaganomics. The policies are of the radical right and part of a wider neo-classical revival and intellectual onslaught against the previously dominant Keynesian (demand-side) economics that was popular with governments of developing and socialist countries.

Core supply-side economic policies include the following: (i) industrial policies such as privatization, commercialization, and creation of internal markets whereby government only provide basic social services such as healthcare and education; (ii) tax reforms to reduce overall burden of income tax and replacing taxation of income with expenditure taxes; (iii) welfare reforms to reduce state welfare benefits and eliminate price subsidies; (iv) labor market reforms that curtails the power and rights of trade unions, introduction of private pension schemes and short-term contracts to replace *jobs for live*; and (v) financial market deregulation to promote competition, share-ownership, enterprise culture and entrepreneurship. In sum, market forces rather than government intervention holds the key to growth and development in stagnating economies. These policies which were collectively referred to as '*The Washington Consensus*' (Contrarera, 2016) have underlined the electricity power sector reforms in Nigeria.

Although electricity was introduced into Nigeria as far back as 1896 by the British colonial powers, the country has hardly produced up to 40% of the electric power needs of the population (Gbadebo & Okonkwo, 2009). The historical and institutional development of the electricity sector has also remained largely chequered. The Nigeria Electric Supply Company (NESCO) started hydroelectric power generation in Nigeria

at Kurra Falls near Jos in Plateau State in 1929 while the Electricity Corporation of Nigeria (ECN) was formed in 1951. This was followed in 1962 with the establishment of the Niger Dams Authority (NDA) to produce hydroelectricity. Both the NDA and ECN were merged in 1972 to form the National Electricity Power Authority (NEPA), which operated as a state monopoly. The performance of NEPA was dismal, as Nigeria had the largest gap between electricity demand and supply worldwide (Jesuovie & Edafe, 2014). The inefficiency of NEPA has been attributed to use of out-dated equipment, poor maintenance culture, inefficient billing and collection systems, and canalization and pilfering of NEPA equipment (Central Bank of Nigeria, 2000). The public also accused NEPA officials of sharp practices and ineptitude; and made calls for restructuring it for better service delivery.

The restructuring of NEPA actually started in 1988 when it was partially commercialized through an upward review of electricity tariffs (Babatunde & Shuaibu, 2008). This was designed to enable it generate funds to meet shortfalls in budgetary allocations. In 2004, the National Integrated Power Project (NIPP) was inaugurated to quicken the reforms. It was a private initiative supervised by the Niger Delta Power Holding Company (Awosepe, 2014). This was followed by the Electric Power Sector Reform Act of 2005 which transformed NEPA into the Power Holding Company of Nigeria (PHCN) along with transfer of its assets and liabilities to the latter. The law also paved the way for unbundling NEPA (now PHCN) into 18 companies: one (1) Transmission Company, six (6) generating companies, and eleven (11) distribution companies. The privatization agenda was further deepened when the 18 companies were sold and handed over to new core investors on November 1st 2013 (Anwane & Akpan, 2016).

The six power generating companies (GenCos) of PHCN sold to new power sector investors included two hydro power stations located in the northern part of the country: Shiroro Electricity Generating Companies (EGC) and Kainji EGC; while there were four thermal power GenCos located in the southern part of the country: Afam EGC, Egbin EGC, Ughelli EGC and Sapele EGC. Alongside these, there were also some new Independent Power Producers under the auspices of the Niger Delta Power Holding Company (NDPHC). The eleven DisCos were located in various state/regional capitals and the FCT as follows: Abuja, Benin, Eko, Enugu, Ibadan, Ikeja, Jos, Kaduna, Kano, Port-Harcourt, and Yola (Awosepe, 2014). Since 30th September 2013, generation and distribution of electricity have been transferred to the private investors with the handing over to them of certificates of ownership by the federal government.

The ownership structure of the 18 companies was clearly worked out from the beginning: the only transmission company was wholly (100%) owned by the federal government. Forty per cent (40%) each DisCos was owned by federal government while 60% belong to private firms. And for the power generating companies, 80% ownership belongs to private firms while 20% ownership belongs to federal government. In February 2014, the

Nigerian Electricity Regulatory Commission (NERC) at a meeting with the 17 firms in the power industry agreed to continue with the Transition Electricity Market (TEM), which showed clearly that the electricity industry in the country operates under a transition regime (Isola, 2012; Awosepe, 2014, and Anwane & Akpan, 2016). Earlier on in 2010, the Federal Government rolled out the Road Map for the Power Sector with targeted achievements as shown in Table 1.

Table 1.
Road Map for Enhanced Power Generation, Transmission and Distribution Capacity in Nigeria.

Period	Power Generating Capacity (MW)	Transmission Capacity (MW)		Distribution Capacity (MW)
		330.0 kv lines	1320.0 kv lines	
2nd quarter 2010	4612.00	5155.00	6677.00	5768.00
Last quarter 2010	5379.00	5515.00	7328.00	6334.00
First quarter 2011	7033.00	5995.00	7328.00	6900.00
Last quarter 2011	9769.00	6555.00	7488.00	7485.00
Last quarter 2012	11879.00	7866.00	8986.00	8061.00
Last quarter 2013	14218.00	8653.00	9885.00	9059.00

Source: *Olugbenga, et.al. (2013).*

A critical review of the literature suggests that not much has been achieved since the inception of the power sector reforms (Olugbenga, Jumah & Phillips, 2013). Targets in the Road Map (Table 1) have not been achieved and there are crises in the industry. Labour unrests are growing and strikes have been called by the National Union of Electricity Employee (NUEE) to protest the plight of workers of PHCN disengaged since 2013 without compensation and underpayment of severance benefits to several ex-PHCN staff (Ugo, 2019); transfer of Union properties to private investors and refusal of some DisCos to remit deducted contributory pension of workers to pension managers (Yusuf & Agboola, 2019). Furthermore, collapse of the national grid have been recorded, sometimes leading to nationwide blackouts (Choltera, 2020, Isaac, 2012) due largely to obsolete generation plants and equipment, shortage of gas supply to thermal plants, high levels of unpaid electricity bills, inability of NBET to pay GenCos and poorly maintained transmission network, owned by the federal government but management by private firms since 2012 (Ikande, 2018, Asu, 2020). None of the six EGCs has built a single power plant; implying zero power capacity enhancement since the onset of the power sector reforms in 2013 (Ugo, 2019). In addition, the federal government takes the blame for inability to identify and punish politicians who stole over US$16 billion of public funds meant to improve electricity supply under the power sector reforms (Omorodion & Okpabe, 2016). Notwithstanding, there seems to be power transmission efficiency as outages appeared to have reduced since 2012 but distribution companies

seems to be at loggerhead with power consumers over arbitrary charges.

3.0 Materials and Methods

Evaluation and survey research designs were used to answer the research questions and to achieve the objectives of the study. Two distinct communities-one covered by Ibadan Electricity Distribution Company (IBEDC) and the other covered by Ikeja Electricity Distribution Company (IKEDC)-were investigated. There are 15 community development associations in Lusada and Orile-Igboko area of IBEDC, with a population of 158 landlords, out which 57 samples were selected for investigation, using simple random sampling technique. At Ijuri-Medina area of IKEDC, 8 community development associations were identified, having a population of 63 landlords; out which 35 respondents were selected using simple random sampling technique. Simple random sampling was used in the sample selection exercise to ensure that each element (unit) in the population has equal chance of being included in the sample; which also allow for results of the study to be extrapolated in time and space.

Copies of structured questionnaire were used to collect primary data. Each question was structured on a Likert scale format to allow for quantification. Points were allocated to responses as follows: strongly agree (5 points), agree (4), undecided (3), strongly disagree (2), and disagree (1). Interview and telephone conversations were used to collect data from marketing officers and branch managers of the two DisCos. In-depth interview strategy was used to elicit information from identified opinion leaders and officials of the two community associations. Secondary data came from official documents of the community associations and the DisCos, newspapers, online magazines and publications of the NERC and NUEE. Six copies of questionnaires in IBEDC area and four copies in IKEDC area were voided for reasons of improper filling/incomplete data. Descriptive statistics (measures of central tendencies and dispersions) were used for data management while Person Product Moment Correlation (r) was used to analyse the data on consumption and tariffs payable to each of the two Discos in the study area. Pearson Correlation analysis is an inferential statistical tool for determining the degree, strength and direction of relationship between variables. The computed coefficient (r), ranges from -1 to +1, through 0, indicating positive (+), negative (-) or no relationship (r = 0). The ***r*** was computed as follows in Equation [1]:

$$r = \frac{\Sigma(X - \bar{X})(Y - \bar{Y})}{\sqrt{\Sigma(X - \bar{X})^2 * \Sigma(Y - \bar{Y})^2}}$$

$\Sigma(X - \bar{X})(Y - \bar{Y}) = Sum\ of\ products\ of\ the\ deviation\ of\ X\ and\ Y\ from\ their\ respective\ means$

$\Sigma(X - \bar{X})^2 = Sum\ of\ squares\ of\ the\ deviations\ of\ X_i\ from\ the\ mean\ (\bar{X})$

$\Sigma(Y - \bar{Y})^2 = Sum\ of\ squares\ of\ the\ deviations\ of\ Y_i\ from\ the\ mean\ (\bar{Y})$

The symbol *X* refers to responses on electricity consumption (transformed into numerical value through Likert scale format) while *Y* like-wisely transformed, refer to responses on tariffs. A two-tailed hypothesis was postulated and significance level of 0.05 was adopted with a degree of freedom (*df*) = n-2=80 for the pooled/aggregated data analysis.

Decision Rule: $_0$ table (critical) value; Reject H$r\geq$

H_0; There is no relationship between electricity consumption and tariffs charged by Electricity Distribution Companies in Igbesa-Agbara area of Ogun State (Ho: $\boldsymbol{r} = 0$)

H_1: There is a relationship between electricity consumption and tariffs charged by Electricity Distribution Companies in Igbesa-Agbara area of Ogun State (Ho: $\boldsymbol{r} \neq 0$)

Disaggregated analyses of data for each of the two distinct regions (IBEDC areas and IKEDC areas) were also carried out using the Pearson (r) correlation analysis at 0.05 probability level.

4.0 Results and Discussions

4.1 Results

The results of the Pearson Correlation Analyses are shown in Table 2. The computed coefficient (r) for the aggregated data (n=82) is 0.024. This implies a positive but weak relationship between rate of electricity consumption and tariffs determined by the Discos operating in the area. A higher Pearson coefficient (r) closer to 1.0 would have implied a strong association between power consumption and tariffs charged by the DisCos. The critical table (r) value at degrees of freedom (df) of 80 (n-2) is 0.217 which is higher than the computed coefficient (r) of 0.024. This implies that there is no statistically significant relationship between rates of electricity consumption and tariffs paid by customers. This is an important finding that requires informed discussion and careful explanation as it underlie much of the strained relationship between customers and the service providers.

Table 2:

Test of hypotheses of relationship between rates of electricity consumption and tariffs charged by electricity distribution firms

Items/Symbols	Aggregated Analysis Results	IBEDC Analysis Results	IKEDC Analysis Results
Sample (n)	82	51	31
Degree of freedom (*df*)	80	50	30
Probability level (x= 0.05)	0.05	0.05	0.05
Table (critical) value (*r*)	0.217	0.273	0.349
Computed coefficient (*r*)	0.024**	0.0018**	0.458*

Source: Extracted Results from Pearsn Correlation Analysis, 2020.

The results of the disaggregated analyses (Table 2) are mixed. In IBEDC areas (Lusada & Orile-Igboko communities) the computed coefficient (r) is 0.0018 while the critical table value of ***r*** at *df* of 50 is 0.273. Obviously, this implies that there is no relationship between the rate of electricity consumption and tariffs charged by the IBEDC. Generally where r=0, there is absolutely no relationship between the variables postulated and tested in a study. Furthermore, the critical table value of r is 0.273 at 50 degrees of freedom. It is greater than the computed coefficient (0.0018) thereby implying no statistically significant relationship between the two postulated variables.

In IKEDC area (Ijuri-Medinat communities), the results appear quite different. The computed Pearson correlation coefficient (r) is 0.458 while the critical table value is 0.349 (*df* = n-1= 30) which is lower than the numerical value of the computed coefficient. This implies a positive and statistically significant relationship between electric power consumption and tariffs charged by IKEDC. Explaining the differences between results of IBEDC areas and IKEDC areas is critical to resolving the disaffection between the Discos and consumers of electric power in the study area.

In Table 3, availability of electric meters for determining electric power consumption rates is shown in areas controlled by IBEDC and areas controlled by IKEDC. In the IBEDC areas only seven (14%) of the respondents have electric meters installed in their houses. This might be indication of shade deals either between consumers and PHCN officials or among PHCN officials. The respondents stated that it was by conjectural means based on personal judgment of the marketing officer. An opinion leader stated that a modern house occupied by just one person (the landlord or his caretaker) could attract higher tariff than a less semi-modern or ramshackle house occupied by several electricity consuming tenants. About 68% of the respondents stated that personal relationship between the marketing officer and house owners play important role in determination of electricity consumption rates and tariffs in the IBEDC areas.

Table 3:
Availability of Prepaid Meters in the Study Area

Items	IBEDC Areas Results (n=51)	IKEDC Areas Results (n=31)	Aggregated Results (IBEDC & IKEDC)
Prepaid Meters Installed	7(14%)	22(71%)	29(35%)
Prepaid Meters not yet Installed	44(86%)	9(29%)	53(65%)

Source: *Field Study, 2020.*

In IKEDC areas, about 71% of the houses had electricity meters installed. The respondents expressed satisfaction with the billing system under the prepaid metering approach of the power distribution company. They also reported that limited frictions now exist between IKEDC officials and electricity consumers in the area after installation of the prepaid meters. According to them, as long as positive balance exists in the prepaid meter, electric power availability was guaranteed, provided there were no technical problems leading to general outages.

A few of the respondents who do not have prepaid meters expressed desire and willingness to have them as soon as IKEDC officials can provide them. These are respondents who are registered with IKEDC and receive monthly electricity bills. But there are respondents who have access to electricity but are not officially registered with IKEDC. The latter pay between N2000 and N3000 per month in cash to IKEDC officials as '***sleaze money***'. No receipt is issued to such customers as they do not exist in the official records of the distribution company. This is where rent-seeking behaviour of IKEDC marketing officers is made manifest: use of official position for private gain. But they are rather bold in carrying out their rent-seeking activities leading to the assumption that they probably have powerful backers within and outside their areas of operations. The respondents stated that IKEDC provides prepaid meters free of charge to applicants and actively encourage house owners to acquire them, which suggests that the Company has a strong anti-graft policy in its areas of operations. Some respondents stated that the prepaid meters used in the area were actually provided by the Lagos State Government prior to the establishment of IKEDC and that during that period; no initial payment was demanded from applicants of the prepaid meters.

Results of data analysis in IBEDC areas are significantly different in terms of availability of prepaid meters and proportion of customers officially registered with the DisCo. Table 3 shows that about 86% of the respondents do not have prepaid meters. Discussions with them revealed that those applying for prepaid meters have to make some initial payments as precondition for the DisCo or its agents for making the meters available. A customer applying for a single phase prepaid meter is required to pay N40,000 upfront, those applying for two phase meters pay N70,000; while those applying for three-phase meter pay N140,000. The money is paid directly to a specified bank account of an organization called Meter Assets Provider (MAP), not in cash to IBEDC. It is a regulation approved by NERC under a scheme called credit advance payment for metering implementation (CAPMI), which requires customers to pay upfront for electricity not yet consumed as a precondition for provision of prepaid meters by MAP through the Discos.

This study found that there are as many electricity consuming customers that are not officially registered with IBEDC as those officially registered with it. This implies that rent-seeking behaviour and 'sleaze money' could be significantly higher here than in

IKEDC areas. It was discovered that many of the unregistered customers felt comfortable with paying monthly N2000-N3000 to officers of the DisCo than about N8000-N10000 paid monthly by registered customers. The latter amount was officially determined through estimated billing by IBDEC. The higher monthly billing scared many customers from officially registering with the Disco. They preferred the lower N2000-N3000 monthly payment to the higher N8000-N10000 monthly payment as long as the same quantity of the homogeneous product (electricity) is available to them. Thus the willingness to pay bribes for electricity supply and loss of income to power investors could be much higher in areas without prepaid meters than in areas with prepaid meters. Furthermore, the fact that there are several snags in attempts to provide prepaid meters to electricity consumers may suggest preference for estimated billing and arbitrary charges by service providers in the electricity industry.

A few of the respondents (8%) in the IBEDC areas complained that though their light (electricity) was disconnected for well over four years, yet their bills kept on running unknown to them, as IBDEC officials did not bring bills after disconnection. One of them became indebted to the tune of N200,000 and another one to the tune of N162,000 for electricity that was neither supplied nor consumed by customers. The IBEDC officials (marketing officer and station manager) insisted that these 'debts' must be settled before any application for prepaid meter could be accepted and processed. Both customers were advised to pay 50% of the debt immediately while the remaining amount would be deducted gradually over a period of one year, whenever such customers purchase electric recharge vouchers or cards. This finding has explicit implications: the Discos are operating as monopolies backed by government in their franchise areas as there are no alternative providers. They impose arbitrary charges and many electricity users are aggrieved. 'In the last four years, electricity tariffs have been increased by 300% ' (Abati, 2020:1).

4.2 Discussions

The results of the study presented in Section 4.1 indicate grave concerns within the electric power industry. There appears to be a discrepancy between electricity consumption rates and tariffs. Tariffs were arrived at by estimated billing, a process dubbed as 'guesstimation' due to the absence of a proper metering system (Ugo, 2019). This has created wide scope for rent-seeking and other forms of corrupt practices particularly in IBEDC areas where prepaid meters are scarcer. There are strong indications that DisCos and the Federal Ministry of Power are working hard to provide prepaid meters and stamp out corrupt practices in the power industry. The directors of the Rural Electricity Agency (REA) and National Bulk Electricity Trader (NBET) were sacked in late 2019 for alleged corrupt practices. The NERC also ordered the DisCos to migrate from cash-based to cashless settlement platforms with effect from January 2nd 2020 in order to reduce revenue collection leakages and losses (Echewofun, 2019). The

DisCos have increased monitoring and surveillance activities to disconnect and sanction unregistered electricity users in the study areas. Also the NERC instructed the 11 DisCos to increase tariffs with an average of about 250% with effect from January 1st 2020. The latest directive (Order No 184) was signed and posted on the website of NERC by its Chairman and Secretary on 31st December 2019 (Okorafo, 2020).

It is instructive to note that in a market economy, product and pricing decisions are made by firms, not imposed by a third party. It is the interplay of market forces of supply and demand that determine what is sold and at what price, not government regulators. The 11 DisCos seems like regional branches of a state monopoly, not private sector firms. NERC has overbearing influence on the DisCos. Genuine deregulation and privatization has not yet taken place in Nigeria's electricity industry. When a market player that has 40% stake in a firm makes all major decisions and routinely issue orders to the firm, then something may be deeply wrong with that business environment. The kind of deregulation and privatization in the Nigeria energy sector violates the tenets of supply-side economics and may not produce the desired results of revamping the electricity industry.

Tariffs have been increased four times since 2013 without any corresponding increase in power supply to customers (Ugo, 2019; Opera.com, 2020). None of the GenCos built a single power plant between 2013 and 2019 yet Nigeria's estimated population has increased from 160m to 200m. Power generation then was 4,000 MW but declined to 3,781 MW in 2019 from a yearly average of 3, 807 in 2018 (Guardian Nigeria, 2020). Thus per capita electricity consumption is lower now than in 2013. This probably explains why Nigeria has the widest gap worldwide between electricity demand and supply. It is also one of the reasons why Nigeria has been designated as the poverty capital of the world (Kharas, Hamel & Hofer, 2018). In contrast, South Africa with a population of less than 50 million generates about 40,000 MW while Brazil, an emerging economy like Nigeria, generates over 100,000 MW for its 201 million citizens (FG, 2013). Given the naught increase in Nigeria's power supply, why the incessant increase in tariffs? The literature suggests Government is behind the tariff hikes under the multi-year tariff order (MYTO) and minimum remittances order (MRO) of the NERC, which mandate the DisCos to meet specified monthly payments to NBET that take care of services provided by the electricity market operator (MO). Power investors borrowed money and are passing the interest burden on consumers. According to the NUEE, creditor banks take whatever is generated at source leaving the companies with hardly enough revenue to pay staff salaries, let alone make meaningful investments in the sector (Ugo, 2019).

Tariffs increase without corresponding increase in service delivery accounts for disaffection in the industry. There are reports that staffs of the DisCos are often molested during disconnection exercises. Aggrieved customers have sued and won landmark

cases against the firms for illegal disconnection and inability to provide prepaid meters (Opera.com, 2019a), given that estimated billing has been criminalized by the Nigeria National Assembly. In some parts of the country, offices of the DisCos have been invaded, infrastructure vandalized and staff chased away for reasons of epileptic power supply and huge debts reportedly owed, which customers described as 'bogus and fictitious' (Opera.com, 2020b). There is possibility that this kind of violence could spread across the country if not properly handled and nipped in the bud before it becomes infectious. It is not arguable that if urgent steps are not taken to address the growing grievances, Nigerians may be headed for mass protests sooner than later. Because nothing presently unites Nigerians more than their anger against estimated billing and pauperization of the populace by the DisCos.

Available secondary data from the quarterly report of the NERC in June 2019 reveals that in Nigeria with estimated population of 200 million, there are only 8.8 million registered electricity users; of which 5 million (about 57%) have no prepaid meters. Only 3.8 million (about 43%) have prepaid meters. This is in spite of the fact that a N27 billion meter scheme was initiated in 2015 by the Federal Government through the Bureau of Public enterprises (BPE). 'Five years after the procurement process, there is no public record that the meters have been supplied' (Adugbo, 2020).

Even the recent intervention through MAP to close the metering gap appeared to have run into a hitch. The duration of ten days for supply of meters to customers who registered on-line has extended beyond 3 months without MAP or Disco officials being able to explain the indefinite delay. Furthermore, the fact that Nigeria has only 8.8 million registered electricity consumers speaks volume about the number of unregistered electricity users that do not pay money into the coffers of the DisCos. This colossal revenue loss probably could have been enough for the DisCos to break-even, make profit and declare dividend to power investors. None of the DisCos has declared dividends since inception of the electricity reforms in 2013 (Ugo, 2019).

The metering gap may well be the outcome of contrived scarcity of prepaid meters. Rent-seeking thrives where there is artificial scarcity, and where distortions in policy and regulatory regime provide scope for it; and where anti-graft institutions are weak (Ajayi, 2002). Rents are generated by contrived scarcity and by restricted legality of certain economic activities where some rights holders obtain economic power and certain credentials which entitle them to capture the difference between scarcity and free market prices (Roy, 1996). Rent-seeking corruption tends to be widespread in regulated economies where government officials control the transfer of economic rights - licenses, subsidies, credit or the supply of vital resources (Stigler, 1971; Khan, 1996). Over the years there has been persistent threat from the Federal Government that the DisCos will be scrapped or that their licenses will be revoked and reassigned (Abati, 2020).

Coupled with these threats is the contrived scarcity of prepaid meters. If there are no prepaid meters, there is no way to account for energy losses or the quantum of electric power stolen and sold for private gain by officials of the DisCos. Presently, energy losses are widespread in Nigeria and the beneficiaries would rather prefer continuation of estimated billing to the efficiency and accountability that prepaid meters would bring into the industry. In some parts of the country, customers using prepaid meters supplied by PHCN were told those meters have become obsolete and should be upgraded with those of MAP and payment of N40,00 per one (Uzodinma, 2019).

5.0 Conclusion and Recommendations

5.1 Conclusion

The two DisCos investigated in the study area operate like comprador businesses linked to and controlled by top government bureaucrats. They operate as monopolies in their franchise areas with virtually no competition. Electricity pricing is determined by the NERC rather than by market forces of supply and demand. And where there are no prepaid meters, estimated billing was practiced by officials of the electricity distribution companies. Although there has been no increase in the quantum of electricity supplied to consumers in the study area in the last four years, yet tariffs have been raised by about 300%. Skirmishes and strained relationship have been reported in areas lacking prepaid meters as customers accused DisCos officials of arbitrary charges.

There is wide metering gap in the Agbara-Igbesa LCDA of Ogun State. The figure stood at 86% in IBEDC areas and 29% in IKEDC areas. Aside from this, there are several electricity consumers that are not registered with the DisCos. In some places (IBEDC areas) they outnumber registered consumers by two. This provides large scope for rent-seeking corruption and revenue loss not only to the DisCos but also to the Federal Government. The unregistered consumers pay N2000 monthly to the field staff of the DisCos. How that money is shared could not be determined by this study, but there were insinuations by some respondents that some persons in the leadership of the community development associations and top PHCN officials are involved in the scam.

5.2 Recommendations

i. *Capture and register all electricity consumers*: There are more power consumers than are registered with the DisCos in the Igbara-Igbesa LCDA, particularly in IBEDC areas. Ensuring that all electricity users are registered and pay efficiently determined monthly bills will improve the business outlook and profitability of the two DisCos. Tracking and registering all electricity users by the DisCos will also help to reduce revenue collection leakages and losses.

ii. *Provide prepaid meters*: There is need to close the wide metering gap in the study area which is approximately 58%. Availability and installation of prepaid meters

will help to douse tension and disaffection between consumers and DisCos officials. The DisCos should provide prepaid meters to all categories of electricity consumers. The quantum of power distributed and the amount paid for should be known; and the quantum that is unaccounted for should be determined as a first step towards stamping out inefficiency and corrupt practices in the electricity industry.

iii. *Customer relationship management needed*: There is need to reduce the growing skirmishes and strained relationships between DisCos marketing officers and electricity consumers in the study area. Customers determine business fortunes of firms in a market economy. Many of the consumers in the study area are unhappy with behaviour of some DisCos officials, particularly in bills collection and power disconnection. Hence we hereby recommend trainings on customer/ stakeholders' relationship management for all DisCos staff that interface with the public.

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