

Electricity Infrastructure and Rural Development: A Pilot Study Analysis

Ahmed Shehu

Niger State Polytechnic, Zungeru-Bida campus

Email - ahmedshehu76@gmail.com

Abstract: Development goal remains one of the global agenda and central point of discussion among comity of nations. The inception of the 21st century indicated a paradigm shift in international development plans and practices from traditionalism to modernity. This paper adopted survey research to examine electricity infrastructure and rural development in Niger State Nigeria. A total of 145 questionnaires were administered to the respondents in the three senatorial zones of Niger state and 136 were retrieved and valid for analysis. The reliability of the instruments was analyzed using SPSS version 22. The results established the reliability of all the instruments adopted for the study. Consequently, the benchmark of 0.70 adopted from literatures confirmed the reliability of the items of the variables and therefore be maintained for the main study.

Key Words: Electricity infrastructure, rural development, Pilot study analysis.

1. INTRODUCTION:

The quest for development has increased the growing concern on electricity infrastructure across the globe (Bhutta & Omar, 2011). The electrical and electronic equipment (EEE) market has substantially risen to an unimaginable position (Bhutta & Omar, 2011). Countries of the world, for example Philippine, Germany, Japan among others are currently facing growing concerns over resource sufficiency in its power sectors to keep up with growing demands of industries and individual consumers. The significance of electricity infrastructure translates into development and competition among the countries of the world and Nigeria inclusive (Ameli & Kammen, 2014). It is against backdrop, that Nigeria perceived the vision to be among the top 20 big economies by the year 2020. To accomplish this vision Nigeria government considers infrastructural development as a key factor (Olufemi, 2015).

Development goal remains one of the global agenda and central point of discussion among comity of nations. The inception of the 21st century indicated a paradigm shift in international development plans and practices from traditionalism to modernity (Castells & Halls, 2014). The shift in the global plans inspires the adoption and acceptance of the Millennium Declaration at the United Nations (UN) assembly in 2000, and subsequent Millennium Development Goals (MDGs), and the devotion of the international community towards the attainment of eight determined development objectives by 2015 (Oldekop, Grugel, Roughton, Adu, 2016). The extension of the MDGs agenda to 2030 is a further indication of the world commitment to the development philosophies. Again, the recent confirmation of a separate urban Sustainable Development Goal (SDG) made up of seventeen (17) goals, and the inherent formulation of Habitat III symbolizes a turning point in global development discourse on municipalities, cities vis-à-vis rural areas (Parnell, 2016). Interesting to note is that countries of the world are putting in place formidable strategies to sustain existing development and move ahead. Africa countries, and Nigeria in particular has not achieved a significant development from the MDG, after several years (Parnell, 2016 & Oldekop et al., 2016).

Just like other continents, the demand for electricity generally exceeds supply in many African nations particularly Nigeria (Ahlborg, Boräng, Jagers, & Söderholm, 2015). Considering the enormous human and materials resources in Africa as a continent, government at all levels have prioritize electricity infrastructure as major political agenda to meet up with the yearning and aspirations of the citizens vis-à-vis enhanced socio-economic standards of living and equality (Ahlborg et al., 2015). Literature further reveals that electricity supply in many countries in Africa like, Burkina Faso, Burundi, Chad, Cameroun, Mali and Egypt among others has been lower than 50 kWh per capita (Padi, Addor, & Nunfam, 2015).

Government of Nigeria has committed considerable resources to rural development; but, the resources does not mirror the economic reality, as dominant Nigerians in the rural areas have insignificant infrastructural facility to improve their wellbeing (Chinn, Eichengreen, & Ito, 2014; Strasser, Kam, & Regalado, 2016; Tanzi, 2016). Dearth of political-will led to the poor implementation of rural policy and programs thus, the development of infrastructure was sidetracked to the urban centers which worsen rural poverty and equally facilitate the migration among the young and able labor force to the urban centers (Kaygusuz, 2012; Olaseni & Alade, 2012).

There are several polices on the state rural development plan design to meet up with the international best practice standard, and electricity infrastructure is one among other infrastructures. However, there is no specific policy on power, because it is an exclusive function of the federal government. states are now investing on power to meet up

with the it's populations demand, but the plan to achieve it are weak and inconsistence, a good plan should have a specific time frame and not addressing programs within the plan differently, for instance one sector using 2011 as a base and another 2015. Within same plan where projections receive the same treatment, projected to different years.

2. METHODOLOGY:

The study adopted a survey research design. The instruments used for the data collected for this study were validated by conducting a pilot study before proceeding to the field. The recommendations gotten from this pilot study will therefore be assimilated and the items revised where necessary in the main study. According to Fink (2003) Pilot study test samples are usually small. This survey therefore, was conducted through self-administration of 145 questionnaires across the three senatorial zones in Niger state, however, 136 were retrieved and valid for analysis. The questionnaire instruments were apportioned into two parts. Section A of the questionnaire focused on the demographic characteristics of respondents. Under this section, respondents were asked to state their characteristics using property of nominal scale of each data to measure two dimensions of gender (male and female); four dimensions of age (15-30, 31-45, 46-60 and 61 and above); three dimensions of marital status (married, single and others); five dimensions of educational qualification (First School Leaving Cert, School Cert/Higher Sch. Cert, Diploma/Cert. in Education, BSc/HND and Postgraduate) and also, five dimensions of occupation (farmer, public servants, private business, community leader and others) respectively. The second section of the questionnaire is structured to explore electricity infrastructure and rural development in Nigeria using a five-point Likert scale of strongly disagree, disagree, Neutral, agree and strongly agree, based on the perception and attitudes of people towards electricity infrastructure.

2.1 Reliability and Validity of Survey Instrument

Reliability of data is a vital step of measuring variables in research. Reliability is the extent to which measures are free from errors and can be capable of producing reliable results. Sekaran and Bougie (2013) contends that, the reliability of measures is a signal of firmness and consistency with which the instrument measures the concepts to determine its goodness of measures. Reliability is largely concern with the consistency in measure that permit estimation of error. Cronbach's alpha will be used to establish the reliability of our data. To examine the internal consistency of our instrument, this study will run the Cronbach's alpha test using the reliability command in Statistical Package for Social Science, (SPSS). In line with the threshold of Nunnally (1978), the recommended level of 0.7 shall be the benchmark for the coefficient of Cronbach's Alpha of this study. The reliability was subjected to using Cronbach and Alpha based on the identified benchmark in the literature between 0.5 to 0.9 (Sekaran, 2003, Hulland, 1999 and Nunally, 1979). We subjected our Cronbach and Alpha 0.70. The SPSS version 22 was used to test the reliability of the instrument, using eighty-five (85) items under four (4) variables. This are presented as follows:

Table 1 Pilot Study

Variables	Code	Number of items	Cronbach's Alpha
Electricity Generation	EG	15	.919
Electricity Transmission	ET	15	.784
Electricity Distribution	ED	20	.792
Political-will	PW	10	.856
Good Governance	GG	10	.871
Rural Development	RD	15	.939

Source: Researcher, 2018

The above shows the reliability of measures for electricity generation. It shows that the fifteen items coded as EG were measured and all the items were found appropriate and reliable for measures at Cronbach Alpha .919. In the same vein, electricity transmission and electricity distribution were coded as ET and ED with fifteen and twenty items respectively. More so, the two moderator (Political-will and Good Governance) have ten items each and were labelled as PW and GG and finally, the dependent variable has fifteen items and coded as RD.

2.2 Rural Development

Development is conceptualized the act process of growing or causing something to grow or become larger or more advanced. It is also referring to the enhancement, the improvement of current status of an individual, an area, a state, a district, or a country in perspective with that particular space and time (Akhtar, 2012).Development is an endless desire mainly to improve standard of living of the people(Benería, Berik, & Floro, 2015). This prompted the introduction of new policies, programs or projects. Human Development Report of 2011 (United Nations Development Program, 2011) and the World Development Report 2011(World Bank, 2011) identifies some policies and intervention programs in the spheres of infrastructure that would make the world a better place for the less

privileged in the rural areas. In the same vein, the timely improvement of innovative infrastructure and the integration of modern technologies are essential elements for the enhancement of the functioning and success of any government (Colom, 2011). Additionally, Winkler, Andre and Alam (2011) asserted that the key pre-condition for the developing nations to attain development is to provide affordable access to contemporary energy services in order to support socio-economic development of its citizens (Winkler, Simoes, LaRovere, Alam, 2011).

According to Rashid (2015) rural development is a practical measure taken by government institutions to provide infrastructural facilities like water, electricity, road network, telecommunication facilities, better education and health services among others to enhance a decent living conditions and economic development of the rural areas.

Rural development has traditionally based on the exploitation of land-intensive natural resources such as agriculture and forestry (Mashreque, 2012). In other words, the term rural development denotes a different approach to interventions by the state in the economies of developing countries, and one that is at once broader and more specific than 'agricultural development'. Broader in the sense it is a distinct approach to the development of the economy as a whole. It is more explicit as it focuses on poverty and inequality. Though, there is a considerable overlap between the field of conventional agricultural economics and "rural development", the kinds of study required to understand the factors affecting "rural development" (Harris, 2011).

On the other hand, development is process of improving the quality of all human lives in the following aspects:

- i. Improving peoples' standard of living that encapsulates incomes and consumption, nutritious food, medical facilities, education through relevant growth processes.
- ii. Generating conditions favorable to the growth of peoples' self-confidence through the formation of socio-political and economic systems and institutions that encourage human promotion.
- iii. Liberating people to choose their socio-economic way of life by enlarging the range of their choice variables, e.g. varieties of goods and services (Micheal, 1982).

In this study rural development is define as a course of improving the quality of life and socio-economic well-being of people living in relatively isolated and sparsely populated areas of Niger state. The improvement of life in this context refers to the impact of electricity infrastructure on the socio-economic development of the rural people in Niger state rural areas.

Deliberations on the notions of rural development remains issue of debate among the intellectuals. Van der Ploeg et'al (2000) stresses that "there is no any generally putative definitions of rural development; as the concept of rural development emerges through socio-economic tussles and debate". In a different opinion, Emeh etal (2012) confirm that, the concept should rather be called and mentioned to as 'rural-community development' as a substitute of 'rural development'. This is according to them to capture the real meaning of the entire concept. That, most if not all the definitions and talks on rural or community development is actually referring to 'rural-community development'. This is based on the supposition that development does not happen in a vacuity but rather in a place (community) which is Noun, that, the adjective (rural) try describe and the verb (development) gives information about". Generally, however, rural development is concerned with the economic, social and general improvements in the living conditions of rural people through provision of adequate and quality social services for betterment of their communities.

Historically, electricity production began in 1896 in Nigeria, fifteen years after its introduction in England. In 1929, the Nigeria Electricity Supply Company (NESCO) started operations as an electric service company with the maiden construction of a hydroelectric power station at Kurra in plateau state, Jos. In spite of the long period of the establishment of power (electricity) less than 45 percent are benefitting from the services of electricity in Nigeria (Ekeh, 2012).

Globally, electricity perceived as a veritable tool to socio-economic development of any nation keeping homes and businesses running smoothly, transportation such as fast train that take people to work, school and other places of human endeavor. By implication, present economies critically depend on steady and affordable electricity supplies to preserve and promote economic growth and social welfare in both rural and urban centers (Volk, 2013). In spite of the significance of electricity to world development especially in the aspect of industries and household development, it has greatly suffered monopolistic supply with minimal levels of innovation, poor service quality and insufficient investor's competition (Volk, 2013).

Rural development policy is key priority to transform rural areas (United Nations Development Project, 2015). Rural development is the responsibility of public, private and non-profit sectors, hence, it cannot solely rely on a wave of financial support from the international institutions (Akpan, 2015). The idea of inclusive development of rural area is more important for developing countries with poor human and infrastructural capital. According to Okon (2016). Rural development is core task of national, regional and international governments as well as non-governmental interests the world over through the provision of infrastructural facilities like road, better education, electricity among others to the rural people. Industrial and developed nations rely on the neoliberal approach where

rural development is attracted from the outside through the ‘trickle down’ procedure carryout by improved production of investment in the rural areas.

3. CONCLUSION:

Essentially, the paper examined electricity infrastructure and rural development in Nigeria using pilot study results gotten from questionnaire survey. The result revealed that, the constructs can measure the variables of electricity generation, electricity transmission, electricity distribution, political-will, good governance and rural development. Consequently, the study concluded that, the 0.70 yardstick adopted from the literatures affirmed the reliability of all the items of the variables and therefore can be maintained for the main study.

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