

## **Anatomizing Nigerian Electricity Infrastructure and Rural Development: A quantitative approach**

AHMED SHEHU<sup>1</sup>  
NORANIZA BINTI YUSOFF  
MOHD NAZARUDDIN YUSOFF  
Ghazali Shafie Graduate School  
Universiti Utara Malaysia

### **Abstract**

*Infrastructural development is a universal agenda and fundamental issue of discussion amongst comity of nations. The driving forces to actualizing this dream vary among developed and developing countries depending upon their political and economic agenda/conditions. The return to democracy in 1999 marks the epoch of campaign mantra "Light for all" to minimize rural-urban migration and to liberate the citizens from the miseries of poverty. The period saw rural development as a veritable instrument for improving the lives of rural populace. This paper adopted quantitative method to examine the impact of electricity infrastructure on rural development in Niger State Nigeria. A total of 444 questionnaires were administered to the respondents in the three senatorial zones of Niger state and 395 were retrieved and valid for analysis. The findings reveal positive relationship between electricity generation and rural development but not statistically significant. On the other hand, the second hypothesis established positive and significant relationship between electricity distribution and rural development. In order to improve electricity supply in the rural areas, the paper recommends that government at all levels should approach electricity problem from a multidimensional perspective by carrying out a multi-faceted plan that will rectify the situation. Government policy must resolve the prospect of scavenger industries sabotaging the progress of electricity vis-à-vis engage in*

---

<sup>1</sup> Corresponding author: [ahmedshehu76@gmail.com](mailto:ahmedshehu76@gmail.com)

*structural transformation and reinforcement of the judicial institutions to restore the virtues of electricity personnel to enhance a hitch free application of rule of law as a stepping stone to facilitate economic development of the rural areas.*

**Key words:** Anatomizing, electricity infrastructure, rural development, quantitative approach

## 1.0 INTRODUCTION

Infrastructural development is a common struggle among comity of nations across the globe. This has accelerated the restructuring of electricity sector as a result of burgeoning electricity shortfall and financial crisis. The pursuit for development has amplified the growing concern on electricity infrastructure across the globe (Bhutta& Omar, 2011). The electrical and electronic equipment (EEE) market has considerably risen to an unthinkable position (Bhutta & Omar, 2011). Most of the countries of the world, such as Phillipine, Germany, Japan and several others are presently facing growing concerns over resource adequacy in its power sectors to keep up with growing demands of industries and individual consumers. The importance 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 realize this vision, Nigeria government considers infrastructural development as a solution (Olufemi, 2015).

It is a common knowledge that development goal is a global agenda and central point of discussion among comity of nations. The inception of the 21<sup>st</sup> 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 loyalty of the worldwide community towards the achievement of eight dogged

development objectives by 2015 (Oldekop, Grugel, Roughton, Adu, 2016). The extension of the MDGs agenda to 2030 is an indication of the world commitment to the development agenda. In the same vein, the current confirmation of a separate urban Sustainable Development Goal (SDG) made up of seventeen (17) goals, and the inherent formulation of Habitat III indicates 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).

Studies reveals that the demand for electricity in general exceeds supply in several African nations and mainly Nigeria (Ahlborg, Boräng, Jagers, & Söderholm, 2015). Taking into consideration 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, Maliand Egypt among others has been lower than 50 kWh per capita (Padi, Addor, & Nunfam, 2015).

Over the years, Nigeria government 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, however, states are now investing on power to meet up with the citizens demand. It is against this background that this study intends to anatomize the impact of electricity infrastructure on rural development in Niger state from 1999 to 2015. The following questions and objective provide guides for the study.

- i. To what extent does electricity infrastructure influence rural development in Niger state?

The objective of this study is to:

- i. Assess the effects of electricity infrastructure on rural development of Niger State from 1999 to 2015.

### **Methodology**

This study adopts quantitative instrument to pull together a cross sectional data from the sampled rural areas of Niger state to assess the effects of electricity infrastructure on rural areas development of Niger State from 1999 to 2015. A total of 444 structured questionnaires were administered and 395 were valid for analysis. The study adopts probability sampling technique which tolerate each item of the population the corresponding chance to be chosen as a sample so as to limit high rate of bias (Sekaran & Bougie, 2014). The study used multi-stage sampling method, where Niger state was clustered into three senatorial zones. Partial Least Square (PLS) software was used to run the data as it provide better prediction capacity and best option for data collected from social setting like rural areas which might not be absolutely normal (Hwang, Malhotra, Kim, Tomiuk, & Hong, 2010). Also, measurement of this study was adapted from the studies of (Ilemona, Akoji, & Matthew, 2014; Orji, 2005) with minor contextual modification that twinset the study area vis-a-vis to measure the independent and dependent variables using 5 Likert scale.

## **CONCEPTUAL DISCOURSE**

### **Electricity Infrastructure**

The provision of electricity infrastructure is indispensable for economic development, social cohesion, and environmental

sustainability (Edomah, Foulds, & Jones, 2016). The generation of electricity infrastructure is perceived as one of the challenge to sustainable development of developing countries across the world (Bhattacharyya & Palit, 2016; Blum, Wakeling, & Schmidt, 2013). The installation of infrastructure based on political reasons explains the poor nature of infrastructure in developing nations. Nevertheless, political decisions on infrastructure installations in most cases have little or no consideration for host communities (Ewugi & Usman, 2016). Consequently, host communities live in high expectation from the installations, which generates tensions between government, and the host communities, as most of the promises were usually not fulfilled.

Electricity is the driving force for both rural and urban development, because of its usefulness to other infrastructure such as schools, hospitals; agricultural irrigation system, small and medium scale industry and Information Communication Technology (ICT) that has brought about globalization, all of these cannot achieved without functional electrification (Kroes, Neelis, 2011). Literatures on economic of infrastructure tend to be more concerned or measures impacts of infrastructure in societies in terms of some particular socio-economic issues such as pollution, improved education, health services, employment and improved production in agriculture, wealth and income among others (Chingoiro & Mbulawa, 2016).

Scholars reveals that infrastructure is mainly assessed with particular respect to its economic impacts (Hanson, Owusu, & Puplampu, 2016; Torrisi, 2010), while urban planners and engineers narrows impact of infrastructure to particular benefits that accrues to the immediate locality (Ebrahimnejad, Mousavi, & Seyrafianpour, 2010; Havenga, 2010). On the other hand, Ebrahimnejad, et al (2010) measures 'critical, infrastructure' as risk related to damage of machines, human lives and environment respectively.

Electricity is an indispensable invention to sustain economic growth, increase the availability and distribution of productive wealth, productive enterprises, and increases employment opportunity and income generation. The strong connection between economic growth and poverty alleviation demonstrated by the understanding of countries like China, Vietnam and India that have sustained economic growth and a significant reduction in poverty. It

has been projected by the World Bank that attaining energy level of China would be equivalent to wage bill reduction of 25percent to 35 percent for countries such as Kenya, Nigeria and Zambia (Ekeh, 2012; Oyedepo, Fagbenle, & Adefila, 2015). Access to consistent and reasonable energy stimulates the creation of non-farm home businesses. Contemporary electricity allows the poor to benefit from new communication systems, which aid sound business decision making. Electricity offers an important input into telecommunication, comprising simple telephone, radio, television and internet services (Oyedepo et al., 2015).

Considering the significance of electricity, there is ardent need for developing nations as a whole to confront this challenge by providing dependable, reasonable and secured electricity supply in secluded, rural, semi urban and metropolises in order to link with the rest of the world (No, Oyuke, Penar, & Howard, 2016). Solar electricity is conceived as one of the most reliable prospects to these problems since it is non-pollutant, abundant, freely and accessible in all developing countries (Nna., 2016). The use of electricity has efficiently provides access to new markets and services, engender new opportunities for income generation, advance information and knowledge management within companies and decreases transaction costs and increase the promptness and consistency of transactions for corporate business and which subsequently reduced cost of manufacturing, lower prices and increase in demand (Blum, 2013).

The provision of infrastructure in most developing countries of the world is the responsibility of the government. Most importantly the high cost, coupled with its unevenness and indivisibility impedes the private sector from investing in the sector. Second, its indirect way of pay-off, together with its elongated period, makes it largely unattractive to private investors. Furthermore, providers also generate externalities that the producer might not be able to adopt in the valuing structure. So, in the aspect of other many competing, less risky and more conversant investment openings offering the potential of higher and faster revenues, limited private investors are willing to engage on infrastructure transactions (Ajayi, Fagbenle, & Zhang, 2011; Fagbenle, Katende, Ajayi, & Okeniyi, 2011).

Developing countries in Asia, Latin America and particularly Africa richly blessed with natural, non-renewable energy resources such as petroleum, natural gas, coal and uranium and renewable energy resources like solar energy, hydropower and wind, geothermal. However, the general position of electricity in both rural areas and urban centers does not reflect the vast resources they controlled. Due to disparity in economic strengths, technology, and the kind of energy bases, the energy sources used for electricity also vary from one country to another. For instance, Access to electricity in Ghana (AEG) is 47.3 percent serving the whole population mostly in the urban area (15 percent to 17 percent of the rural areas in general) as likened to an average of 17.9 percent for West Africa. Thus, the majority are without access to electricity (kwami Tsivor, 2014). Approximately Six hundred million people in Sub-Saharan Africa where Nigeria belongs have no access to electricity (Lee et al., 2014). These has compelled households to alternatively use candles and paraffin lighting which medical practitioners confirmed is responsible for increase in mortality rate and illness related with indoor air pollution (Lee et al., 2016). Subsequently, lack of access to electricity has decelerates economic development through negative impacts on all ramification of life such as income, health, education, and labor productivity (Chakravorty, Pelli, & Marchand, 2014).

In spite of the above result and to paucity of rural electrification, development agencies and governments have identified rural electrification as an essential element of economic development (Kirubi, Jacobson, Kammen, & Mills, 2009). Quality electricity supply has been an essential part of socio-economic and environmental development of humanity. Therefore, the need for electricity in both residential and industrial sectors of developing countries is always on the increase.

## **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 remain 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, Emehetal (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.

### **Empowerment theory**

The study adopts empowerment theory as a framework to explain the relationship between accessibility to electricity infrastructure and empowerment of the beneficiaries in the rural areas. Mac Zimmerman (1912 -1995) and Julian Rappaport (1909) are prominence advocates and famous scholars of empowerment theory (Calvès, 2009). According to the protagonists, empowerment theory is characterized by philosophy of grassroots political mobilization directed at radical changes and partaking of the underprivileged in development

programs (Calvès, 2009; Rappaport, 1987). Empowerment highlights the importance of increasing poor people's right to opportunity, well-being, improved assets and empowerment for economic growth and poverty reduction (Narayan-Parker, 2005).

In addition, empowerment theory emphasis on the capabilities of masses to enthusiastically partake in, negotiate, inspire, and hold accountable institutions that affect their lives (Narayan-Parker, 2002, 2005). Empowerment is concern with the support for self-efficacy, active in decision making process where people have better control over their lives (Rappaport 1987). Essentially, empowerment has four basic components that stimulate the reform of an individual and institutions: This include: (i) Accessible to information (ii) Active participation in policy processes (iii) Accountability (iv) mutual responsibility to achieve common goal. Also, the exclusive type of empowerment takes the form of community cooperation to enhance effective delivery of human service (Foster-Fisherman, 1998). Empowerment theory has multiple variables acknowledged by international institutions like the World Health Organization and the United Nations and can be fixed suitably into several disciplines (Capone & Petrillo, 2012, 2013; Fawcett et al., 2010). For instance, for professionals in community psychology and other disciplines, empowerment is perceived as a strengths-based, non-expert driven method that consider the ability of people to find their felt-needs and enthusiastically involve in solutions to the problems threatening them such paucity of capital to engage in business, electricity for domestic use, good road network among others (Baxamusa, 2008; Prati & Zani, 2013).

Empowerment theory combines self-control of individual owned resources, dynamic approach to life and understanding of the socio-economic and political atmosphere (Rappaport, 1987; Zimmerman, Israel, Schulz, & Checkoway, 1992). Empowerment theory is relevant to electricity infrastructure because the common objective of electricity services is anchored on development of both rural and urban centers. For instance, Winkler, Andre and Alam (2011); Winkler, Simoes, LaRovere, and Alam, 2011 asserted that the basic condition for the developing nations to attain development is to provide access to energy services to support socio-economic development of its citizens. In other words, electricity is required to

empowering the poor to mitigate poverty, increase human capital and skills respectively. Consequently, empowerment theory will be relevant to assess the impact of electricity infrastructure on rural development in Niger state.

In line with the objectives of this study and existing literature (Abdullahi, 2014; Kroes, 2011; Bhattacharyya, 2016; Ewugi et al. 2016; Obidike, 2013; Edomah et al. 2016).

**Hypothesis 1:** There is positive relationship between electricity generation and rural development in Niger state

**Hypothesis 2:** There is positive relationship between electricity distribution and rural development in Niger state

### **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 Distribution	ED	20	.792
Rural Development	RD	15	.939

Source: Researcher, 2019

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 distribution was coded as ED with twenty items and finally, the dependent variable has fifteen items and coded as RD.

### **Convergent validity**

Convergent validity is a form of construct's validity that assesses the extent at which a measure accurately measures what it intended to measure and correlates positively with alternative measures of the same construct (Hair *et al.*, 2017). Convergent validity in a variable occurs when the items of such variable are converged or share a great proportion of variance (Hair *et al.*, 2014). Hence, the most commonly used technique by researchers to determine convergent validity of a variable is average variance extracted (AVE) (Hair *et al.*, 2017). According to Fornell & Larcker (1981), the evaluation for convergent validity measurement is the average variance explained (AVE). It was posited that AVE is the total average of the squared loadings of the items of a given construct. Thus, the value of AVE of 0.50 and above signifies that the variable has a convergent validity (Hair *et al.*, 2011). The basis of the argument is that an AVE with 0.50 indicates that the latent construct explicates a half of the variance of its items (Hair *et al.*, 2014).

Therefore, attaining suitable convergent validity requires that AVE of each latent variable should not be less than 0.50 as recommended by Chin (1998). With this suggestion, all the AVE values in this study are greater than the recommended value of 0.50 on their respective variables which indicates adequate convergent validity. Table 2 shows the convergent validity of every variables in this study.

**Table 2: Summary of Items Loading, Composite Reliability and Average Variance Extracted (AVE)**

Constructs	Item Code	Loadings	AVE	Cronbachs Alpha	Composite Reliability
Electricity Distribution	ED1	0.721	0.502	0.7998	0.857
	ED3	0.733			
	ED4	0.701			
	ED7	0.759			
	ED8	0.584			
	ED9	0.740			
Electricity Generation	EG1	0.866	0.674	0.7552	0.860
	EG2	0.883			
	EG4	0.703			
Rural Development	RD1	0.806	0.513	0.9136	0.926
	RD10	0.676			
	RD11	0.695			
	RD12	0.707			
	RD13	0.669			
	RD2	0.722			
	RD3	0.771			
	RD4	0.676			
	RD5	0.762			
	RD6	0.732			
	RD7	0.608			
	RD8	0.743			
	RD4	0.678			
	RD5	0.763			
	RD6	0.732			
	RD7	0.608			
RD8	0.744				

Source Researcher, 2019

Determining the discriminant validity using Fornell-Lacker criterion entails the square root of average variance extracted (AVE) to be obtained and compared with the correlations of other constructs of the study (Chin 2010; Fornell & Larcker 1981). Meanwhile, to achieve the acceptable discriminant validity, the squared root of AVE must exceed the highest correlation estimates of the construct being measured (Hair *et al.* 2006). The square root of AVE for all the constructs are arranged diagonally against correlations coefficients of other constructs as shown in Table 3 below with the value in bold texts, and this indicates an evidence of adequate discriminant validity. The results of discriminant validity indicating that all the constructs meet Fornell-Lacker criterion are shown in Table 3

**Table 3 Fornell-Lacker criterion**

	ED	EG	RD	AVE
ED	<b>0.708</b>			0.502
EG	0.707	<b>0.821</b>		0.674
RD	0.437	0.410	<b>0.716</b>	0.513

Source: Researcher, 2019

## RESULT AND DISCUSSION

Paths	Beta	STDEV	T Statistics	P Values	Remark
EG ->RD	0.029	0.062	0.462	0.644	Rejected
ED -> RD	0.205	0.065	3.174	0.002	Accepted

Table 4.8 shows the results of the hypothesis testing for the direct relationship as proposed in this study. The discussion for the results on this table is as follows:

**Hypothesis 1:** There is positive relationship between electricity generation and rural development in Niger state.by path linking EG to RD on Table 4. The result from the table shows the path estimates for the linkage between EG and RD with beta ( $\beta = 0.029$ ), t-statistic ( $t = 0.462$ ) and p value ( $p = 0.644$ ). This signifies that the relationship between EG and RD is positive, but not statistically significant, hence hypothesis H1 was rejected based on this outcome.

**Hypothesis 2:** There is positive relationship between electricity distribution and rural development in Niger stateis represented by path linking ED to RD on Table 4.8. The path estimates for this relationship reveals beta ( $\beta = 0.205$ ), t statistics ( $t = 3.174$ ) and p value ( $p = 0.002$ ). The hypothesized relationship between ED and RD is accepted based on these values, indicating a positive and significant relationship at 5% level of significance. With this result, hypothesis H2 was accepted

## CONCLUSION

Basically, the main objective of this study is to assess the effects of electricity infrastructure on rural areas development in Niger State of Nigeria. Explicitly, the first objective in this study is to determine the relationship between electricity infrastructure and rural development

in Niger state. Subsequently, the analysis of the data was conducted, and hypothesized relationships proposed in the structural model were tested using SmartPLS version 3.2.7. The three available options of significance level for researchers, that is, 0.10, 0.05, and 0.01 was adopted as the critical level for deciding on whether to accept or reject the hypotheses. In agreement with this criterion, the results of the analyses revealed that one hypothesized direct relationships was statistically significant and accepted by this study while the other one was not, rejected. The paper recommends that government at all levels should approach electricity problem from a multidimensional perspective by carrying out a multi-faceted plan that will rectify the situation. Government policy must resolve the prospect of scavenger industries sabotaging the progress of electricity vis-à-vis engage in structural transformation and reinforcement of the judicial institutions to restore the virtues of electricity personnel to enhance a hitch free application of rule of law as a stepping stone to facilitate economic development of the rural areas.

## REFERENCES

1. Abdul-Salam, Y., & Phimister, E. (2016). The politico-economics of electricity planning in developing countries: A case study of Ghana. *Energy Policy*, 88, 299-309.
2. Abdulkareem, A. (2016). . *Evaluation and mitigation of technical losses on power lines: a case study of Nigeria 330-kv network*,. (PhD), Covenant University, Nigeria, Abeokuta.
3. Abdullahi, D., & Abdullah, M. D. S. J. B. (2014). The Political will and Quality Basic Education in Nigeria. *Journal of Power, Politics & Governance*, 2(2), 75-100.
4. Abila, N. (2014). Biofuels adoption in Nigeria: Attaining a balance in the food, fuel, feed and fibre objectives. *Renewable and Sustainable Energy Reviews*, 35, 347-355.
5. Ake, C. (1996), *Democracy and Development in Africa*, Washington DC: Brookings Institution.
6. Akpan, N.S. (2012) *From Agriculture to Petroleum Oil Production: What has Changed about Nigeria's Rural*



- Development? *International Journal of Developing Societies*, 1(3), 97-106.
7. Akpan, N.S. (2012b) Rural Development in Nigeria: A Review of Pre-and-Post Independence Practice, *Journal of Sociological Research*, Vol. 3, No. 2; 146-159.
  8. Alhassan, U., & Adamu, Z. I. (2014). Growth and economic development in Nigeria: issues and challenges. *The Business & Management Review*, 5(1), 235.
  9. Aliyu, A. S., Dada, J. O., & Adam, I. K. (2015). Current status and future prospects of renewable energy in Nigeria. *Renewable and Sustainable Energy Reviews*, 48, 336-346.
  10. Aliyu, A. S., Ramli, A. T., & Saleh, M. A. (2013a). First nuclear power in Nigeria: an attempt to address the energy crisis? *International Journal of Nuclear Governance, Economy and Ecology*, 4(1), 1-10.
  11. Ameh, I.E.J, Eluwa, I.J &Ukah F.O (2012) Rural-Community Development in Nigeria: A Group Dynamics Perspectives, *Interdisciplinary Journal of Contemporary Research in Business*, Vol. 4, No. 5, 1090-1107
  12. Atelhe, G.A (2014) Democracy and National Security in Nigeria: A Discussive Exploration, *Mediterranean Journal of Social Sciences*, Vol. 5, No. 4, 495-499
  13. Federal Government of Nigeria, (1999). Constitution of the Federal Republic of Nigeria: 1999, Federal Printing Press, Lagos.
  13. Fink, A. (2003). *The survey handbook* (Vol. 1). Thousand Oaks, CA: Sage.
  14. Hulland J. (1999) Use of Partial Least Square (PLS) in Strategic Management Research: A Review of Four Recent Studies, *Strategic Management Journal*, Vol. 20, Issue 2; 195-204.
  15. Nunally J. (1979) *Psychometric Theory*, (2nd Ed.). McGraw-Hill, New York
  16. Ojajorotu V. & Allen F. (2009) "From Authoritarian Rule to Democracy in Nigeria: citizens' welfare; a myth or reality? *Journal of Alternative Perspective in Social Science*, electronic; 152-192.

17. Okeje C. (2009) Decentralization and Public Service Delivery in Nigeria; Nigeria Strategy Support Programme(NSSP), Abuja, Background Paper, No. NSSP 04.
18. Okeke, R.C. (2014) Democracy and Sustainable National Development in Nigeria: Reimagining the Nexus, European Scientific Journal, 10 (1), 229-249.
19. Omotola J.S (2007) Democratization, Good governance and development in Africa: The Nigerian Experience, Journal of Sustainable Development in Africa, Vol. 9, No. 4; 247-274.
20. Otiye, I. (2011) Perspective on Democracy and Development in Nigeria. Retrieved 09/04/2014 @ <http://www.gamji.com/article4000/NEWS4733.htm>.
- Przeworski, A &Limongi F. (1993) Political Regimes and Economic Growth, Journal of Economic Perspectives,7 (3), pp 51-69,
21. Sekaran U. &Bourgie R. (2013) Research Methods for Business: A Skill-Building Approach, (Sixth Ed). JohWiley & Sons Inc