



EFFECTS OF ELECTRICITY SUPPLY ON THE PERFORMANCE OF RURAL MICRO ENTERPRISES IN KUDAN LGA, KADUNA STATE.

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Abstract

In Kudan LGA, several communities which have previously had access to electricity have recently suffered poor supply due to several factors which undermine the performance of the micro enterprises in the study area. The purpose of This paper is to examine the effect of electricity supply on the performance of micro enterprises in Kudan LGA. Two hundred and thirty people were used across the ten (10) wards of the LGA. The study used

Keywords:

Electricity, Supply, Micro Enterprises, Performance, Electricity

INTRODUCTION

The importance of electric power supply cannot be overemphasized as it is considered the most important commodity for national development. With electrical energy, people are empowered to work from the domestic level and the cottage industries, through the small-scale and medium industries to employment in the large-scale manufacturing complexes. In these days, depriving people of electric power is tantamount to castration (Musa, 2009).

The electric power sector is one of the most important sectors to national development. It is also critical to the developmental reform of any country. The Power Holding

purposive sampling findings reveal that, , the availability of technique and data electricity supply and electricity supply was obtained using production and increases the profit questionnaire. Data performance of micro and income of micro were analyzed using enterprises are entrepreneurs. There descriptive such as positively correlated is a direct link between percentage and and significant with P access to electricity inferential statistics value as .001 at 0.01 and financial prospects method(correlation significant level. of micro enterprises in analysis). The study Another finding is that the study area.

Company of Nigeria (PHCN) formerly known as the National Electric Power Authority (NEPA) is an organization involved in the supply of electricity in Nigeria and presently due to privatization of the power sector, Kaduna state now has an electricity distribution power body called Kaduna Electricity Distribution Company (KAEDCO). The power sector plays a very important role in the economic development of a nation; therefore, the growth of industries, agriculture, infrastructure, and the private sector is dependent on the state of the power sector.

In Nigeria, the Power Holding Company of Nigeria (PHCN) is the public utility company saddled with the task of managing the power sector. PHCN was established in 1972 with a mandate to maintain an efficient system of electric supply to all parts of the Nigeria. After NEPA was renamed PHCN, the government also unbundled 18 successor companies from the PHCN – six generation companies; one transmission company and 11 distribution companies. These networks are made up of wires, pipes, transformers, valves, meters and poles and these networks needs to be managed by a complex database in order to censure effectiveness of operation (Clouidius, 2014).

Electricity is a basic and integral component of the overall development of any nation and one of the critical infrastructural requirements for agricultural, industrial and socio-economic development of rural or remote environment. One major use of rural electrification (RE) is for lighting, which brings benefits of increased night time livability, improved

study environment for school children, extended hours for small businesses, and ensure greater security. Another use is to power electronics such as television set which provides both entertainment and information such as health programmes. Thus electrification is expected to bring an improved quality of life. There is also a greater willingness of health and education workers to stay in communities that have electricity (Word Bank 2008).

Claudius (2014) defined electricity as a form of energy usually supply by wires or batteries used to power machines and computing, communications, lighting, and heating devices. Electricity is a basic and integral component of the overall development of any nation and one of the critical infrastructural requirements for agricultural, industrial and socio-economic development of rural or remote environment. Currently more than 1.5 billion people are without access to electricity and it is estimated that not more than 20%, and in some countries as little as 5%, of the population in Africa (excluding South Africa and Egypt) have direct access to electricity. The figure falls to 2% in rural areas (Igbinovia and Orukpe 2007).

In developing nations micro scale enterprises play important roles in the provision of immediate employment, complementing large and medium scale enterprises in the provision of goods and services, creating opportunity for acquisition of managerial and entrepreneurial skills, and mobilization of resources (Yusuf, 2010). The dynamic role of micro scale enterprises in developing countries as engines of growth has long been recognized. It is estimated that micro scale enterprises employ 22% of the adult population in developing countries (Daniel and Ngwira, 1994). Worldwide, Micro, Small and Medium Enterprises (MSMEs) have been recognized as the engine of economic growth for promoting economic development. The MSMEs constitute over 90% of total enterprises in most economies and are credited with generating the highest rates of employment growth and account for a major share of industrial production and export (Ministry of Micro Small and Medium Enterprises (MMSMEs) India, 2006).

In Tanzania cited in Maleko (2005), micro-enterprises are those engaging up to four people, in most cases family members or employing capital amounting up to Tshs. Five million. In Nigeria, the Central Bank of Nigeria (CBN), for the purpose of credit guideline to financial institutions, classifies as micro scale enterprises those enterprises with an annual turnover between the range of N100, 000.00 to N150, 000.00; with less than 50 employees; and asset base (excluding real estate) of not less than one million (CBN, 1989). This almost coincides with the conception of the Federal Government Micro scale Business Development Programme (MSBDP,1990) which sees a micro scale enterprise as any manufacturing, process or service firm with investment capital not exceeding N150, 000.00 in machinery and equipment and employing not more than 50 workers .These are enterprises with less than 10 employees with a total asset of less than N5 million (excluding land and buildings) and operated by sole proprietor (MSMEDF, 2014).

These enterprises require electricity for their services and production purposes whether in the urban or rural areas.The commonly used yardsticks are total number of employees, total investment and sales turnover. In the context of this study, adopts the definition of (MSMEDF,2014) that micro-enterprises are those engaging with less than 10 employees. The characteristics of micro enterprises and the nature of their production and services make them suitable for rural areas. Unlike urban areas which can maximize their potential through large scale enterprises, rural areas have immense benefits to be derived from micro enterprises.

Ele, (2006), defined rural area as the opposite of an urban area, refers to the country side whose population engages mainly in primary production activities like agriculture, fishing, and rearing of livestock. Moreover, these rural areas refer to the geographical areas that lie outside the densely built-up environment of towns, cities and the sub-urban villages and whose inhabitants engaged primarily in agriculture as well as the most basic of rudimentary form of secondary and tertiary activities (Ezeah, 2005).Rural areas cannot be defined in isolation of urban areas. Since both of them

represent geographical space within which human activities took place. Thus, rural area is the antithesis of urban area, i.e large settlement with a high concentration of people (Mabogunje,1997).

Rural areas are poorly served with modern energy infrastructure such as grid electricity or petroleum product distribution chain unlike urban areas that are well connected with the modern energy services. In order to provide energy for rural areas, in Nigeria rural electrification has been used. Rural electrification is the process of generating and spreading electrical power to rural and remote areas. Electricity is used not only for lighting and other domestic purposes, but it also allows for mechanization of many farming operations, such as threshing, milking, and hoisting grain for storage. In areas facing labour shortages, this allows for greater productivity at reduced cost (Bhattacharyya, 2006).Indeed studies have shown that there is a high correlation between the level of electricity consumption and human development index (Meisen and Akin, 2008).

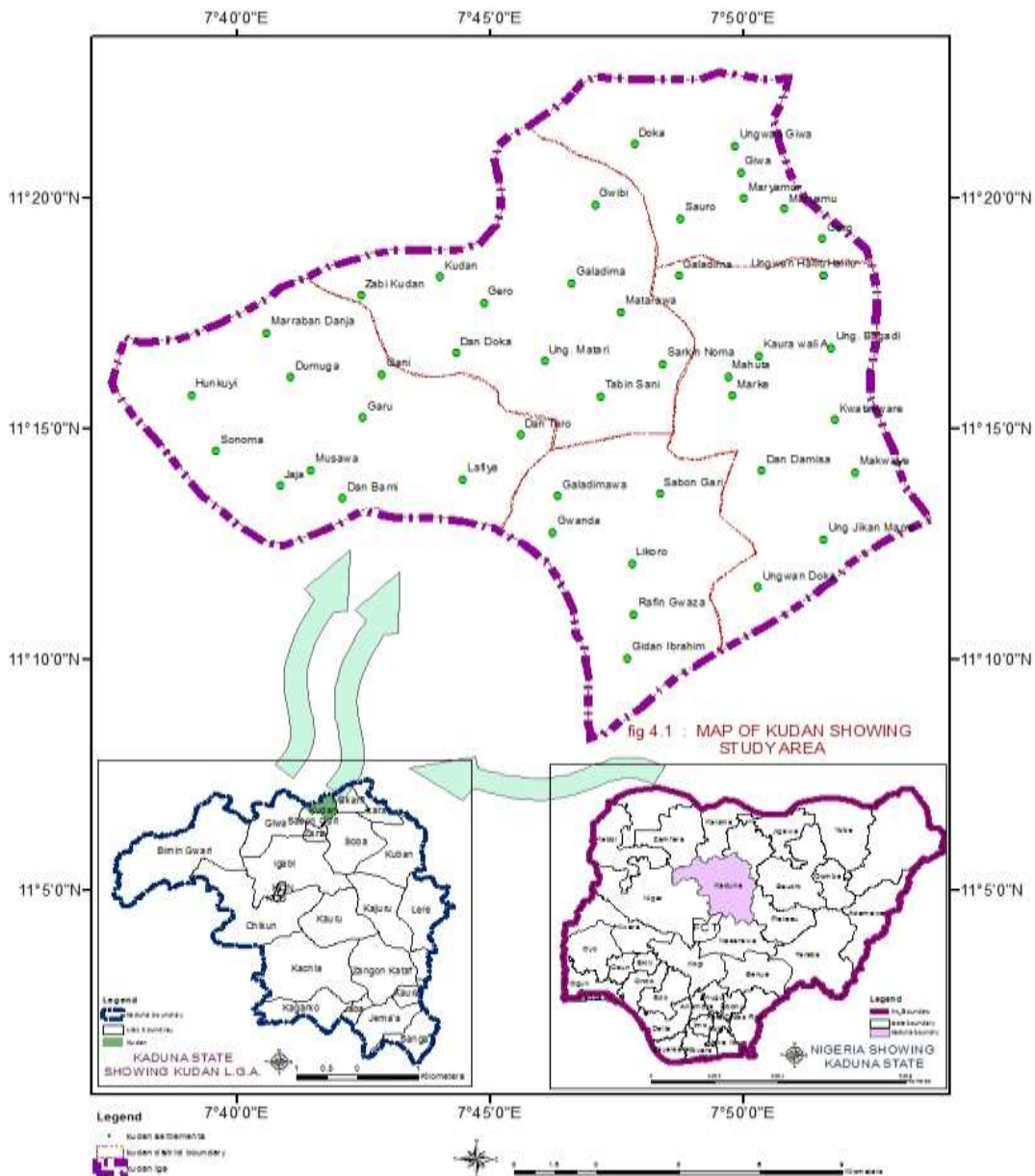
AIM AND OBJECTIVES

The aim of this paper is to examine the effects of electricity supply on the performance of rural micro enterprises and the specific objectives is to find out how electricity supply influence the performance and income of micro enterprises in Kudan LGA of Kaduna State.

THE STUDY AREA

Kudan local government area of Kaduna State is located between latitudes 11°18' 27.57"N and 11°18' 34.13"N of the equator and longitudes 07°43'53.82"E and 07°43'57.09"E of the Greenwich meridian and is presently one of the most important rural area in Kaduna State. Kudan is located in the central plains of the northern Nigeria highland standing at an average height of 670 metres above sea level and is about 83km North of Kaduna town. It shares boundaries with Makarfi Local Government to the east, Giwa and Sabon-gari Local Governments to the west, Soba Local Government to the south. The Local Government also shares boundaries with some part of Kano and Katsina States to the north respectively

Figure 1:MAP OF KADUNA STATE SHOWING THE STUDY AREA



Source: Adopted from Administrative map of Kaduna state, 2014

MATERIAL AND METHODS

The study area is made up ten (10) wards and the ten wards are used for this research. As depicted in Figure 2, the ten wards areKudan, Zabi-Kudan,

Hunkuyi, SabonGarin-Hunkuyi, Doka, Likoro, Kauran-wali (A), Taban-sani, GaruandKauranWali (B). See. Figure 2.

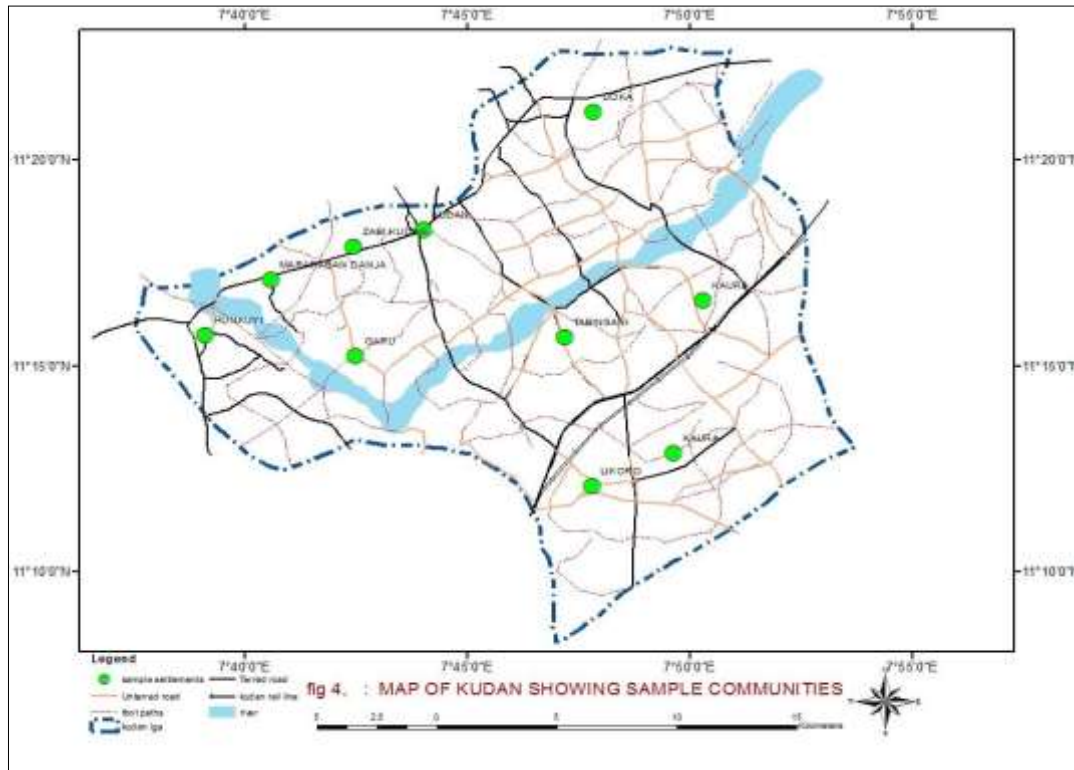


Fig. 2: Kudan LGA Showing Sampled Communities

Source: Adopted from Administrative map Kaduna State, 2014

To determine the sample size for this research. Krejcie and Morgan (1970) method of determining sample size was used. The method suggest that where the population size of 800 exist, 260 is the appropriate sample size for the study at 95% confidence level and 5.0 margin of error. Based on the above, since the population size is 716 the researcher adopted 260 as the sample size for the study but only 230 copies were were dully filled. In determining the sample size for each micro scale enterprises in the study area, a quota sample formula by Stat Trek (2012) was used to calculate the sample size for each micro enterprises. The formula is $nh = \left(\frac{Nh}{N}\right) X n$. A purposive selection of the respondents in each microenterprise depending on the number of questionnaire allocated was done see Table 1.

Table 1: Distribution of micro enterprises in the study area

WARDS	TYPES OF MICRO ENTERPRISES							
	Welding	Tailoring	Cobbling	Grain mailing	Barber shop	Sachet water factory	Viewing center	Furniture making
<i>Kuban</i>	7	67	1	33	23	2	9	4
<i>Zabin-Kuban</i>	-	8	-	-	1	-	2	-
<i>Hunkuyi</i>	9	123	3	54	37	2	14	6
<i>Sabon-garinHunkuyi</i>	1	37	-	1	7	-	5	1
<i>Doka</i>	-	22	-	1	9	-	3	-
<i>Likoro</i>	7	64	2	17	16	-	12	3
<i>Kauran-Wali(A)</i>	2	31	-	6	2	-	8	1
<i>KauranWali(B)</i>	3	47	-	4	5	-	10	3
<i>TabanSani</i>	-	13	-	1	2	-	2	-
<i>Garu</i>	-	11	-	-	1	-	1	-
Total	29	373	6	117	103	4	66	18

Source: Reconnaissance Survey, 2016

The purposive technique was preferred in this work because it enable the researcher to choose respondents who fall in the chosen category of the micro scale enterprises in the study area. . Data generated was analyzed using descriptive (percentagr) and inferential statistics technique Pearson products moment correlation (PPMC) was used to explain the relationship between electricity supply and the performance (income) of the selected micro enterprises, this was performed by using the Statistical Package for the Social Science (SPSS) version 22.0, and the tests were at 0.05 probability levels.

RESULTS AND DISCUSSION

Discussion of the results. It covers the result on respondent access to electricity supply and performance of micro entetrprises, **number of hours which micro enterprises have access to electricity supply per day**, fund raise by the micro enterprises when access to public electricity Increase in Sales/services due to access to public electricity. In this study, 260 samples size were taken, but only 230 of the respondents were available at the time of the field survey. The result of this research work is presented below.

Number of hours which micro enterprises have access to electricity supply per day

The usual hours with good electricity supply increases the productivity and profitability of micro enterprises. Also access to public electricity in this study refers to “period or hours when public electricity supply is good for the production activities of micro enterprise in the study area. The findings by Neelsen and Petersen (2011) and Kooijman-van Dijk (2012), Akpan, Essien and Ishaq (2013) Khan (2001) highlight the positive influence of better lighting on income generation due to extended business hours in the evenings

Access to electricity is necessarily an important factor influencing micro-enterprise development. Other factors such as access to finance, markets, and other infrastructure are also very important. Support for the notion that modern energy can and does act as a stimulus for the emergence, growth and continued development of micro- enterprises is relatively strong in the literature (Fakira, 1994; Foley, 1990; Karekezi and Majoro, 2002). Fakira (1994 cited in Meadows, Riley, Rao and Harris 2003), for example, claims that “energy is one of the critical resources needed to liberate micro-enterprises from low value, low productivity and low income activities.”

Rogerson (1997) described that “access to even limited amounts of electricity for micro-enterprises in non-grid-connected areas can be important to the establishment and growth of those businesses.” Foley’s (1990) study reports increased economic activity and higher living standards following electrification and concludes that “the arrival of an electricity supply in certain areas seems to be a crucial factor in precipitating decisions by local entrepreneurs to invest in a variety of productive enterprises.” Rogerson (1997) cites evidence from KwaZulu/Natal of positive impacts of on existing SMEs that benefited from the switch to electricity including welding shops and tailors. Result from table 2 shows the different number of hours which micro enterprises have good electricity supply.

Table 2: shows that 70% of micro enterprises in the study area have access to regular public electricity mostly for 5-7 hours, while 14.4% of micro

enterprises have 1-3hours as their regular hours of having access to public electricity. However, some enterprises have access to public electricity for 3-5 hours, while some for 9-12 hours. Only five micro enterprises(two tailoring, one grain milling and two barber shop) report to have access to public electricity for 9 to 12 hours. Despite the differences in the electricity requirement by the micro enterprises, the longest hours with regular access to public electricity is the most profitable and productive hours to the activities of micro enterprises in the study area. Example; micro enterprises like, Grain milling, Tailoring and welding require longer hours of access to public electricity this is due the nature of their electrical tools and machines they use in their enterprise.

Measurable effect of public electricity on micro enterprises.

Table 2; shows the different ways in which public electricity affect the activities of micro enterprises.The result indicated that 73.1% of respondents confirmed that there is increase in production output and profit while 17.4% affirmed thatit reduce the cost of operation while 4.8% recorded all the positive effects. Other effects are increase in production quality 3% and the increase in consumer patronage.

Using electricity for production is faster than the manual machines. For instance, the electric power sewing machine can complete tailoring task within short time and meet the customer's requirements, which attracts more customers and, at the end, increases turnover. For example, in Likoro village, one tailor who owned one electric machine and specializes in women's dresses said he started with one machine. His income earning increase after adding some electrical equipment that operate faster than manual tools.

Fund raise by the micro enterprises when access to public electricity

Table 4 presents the total sales by different micro entrepreneur per day. Close to 85% of respondent confirmed that they are getting about N5000 per day in their enterprises while close to 11% of the respondents are regularly make between five and ten thousand Naira (N5,000-N10000) also 0.9% while very few respondent are making up to (N20,000&above)per day. As illustration a welder in Kudan village said he

open another welding shop and he bought a television set, mobile phone, radio system, and two goats. He further revealed that he had used part of the income to support his parents and do farming activities. In the same village another tailor, specialized in men's suits, said he owned a manual machine and hired an electric machine from his friend. His income increased after using the electric motor and enabled him to buy bulk materials and an electric iron, and started producing a stock of ready to wear suits waiting for customers. . For tailors in Bangladesh, access to electricity and thus lightening led to an on average 30 per cent higher turnover (Kahn, 2001). Similarly, repair shops in Bangladesh with access to electricity have reportedly seen an increase in daily earnings (Meadows et al, 2003).

Result of the relationship between electricity supply and the performance of micro enterprises

Table 5: Shows the correlations between one independent variables electricity supply and dependent variables performance of micro enterprises and its significant relationship. The result also indicate that access to electricity and income and productivity of micro enterprises are positively correlated and significant with P value as .001 at 0.01 significant level. Thus, indicate the positive relationship between electricity supply and income (performance) of micro enterprises. This lead to increase in the production and income of ME. Therefore, the null hypothesis is rejected.

CONCLUSION

In conclusion, the availability of public electricity services increase the profit and income of micro entrepreneurs. There is a direct link between access to electricity and financial prospects of micro enterprises in Kudan LGA. Because the micro enterprises when have access to public electricity for 5-7 hours make an average between (N 5,000-N 10000) profit.

Another conclusion is that there is a possibility of rapid economic growth and development of ME in rural areas of the same characteristics as urban region if the electricity services supplied should be available, reliable and affordable to most of rural entrepreneurs. It is believed that with time, it

is possible that rural communities will be able to take advantage of the opportunities provided by the introduction of electricity services by establishing more micro-enterprises and use electricity more productively.

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Table 3: Measurable effect of public electricity on micro enterprises.

M/enterprises	IPQ	%	IPI	%	ICP	%	ROC	%	AOA	%	Total
Tailoring	2	0.9	101	-	3	-	10	-	5	-	121
Cobbling	-	-	2	-	-	-	-	-	-	-	2
G/milling	1	0.4	30	13.0	-	-	2	-	2	-	35
B/saloon	-	-	20	8.7	-	-	7	3	3	1.3	30
S/water	-	-	2	0.9	-	-	-	-	-	-	2
V/center	4	1.7	-	-	-	-	17	7.4	1	0.4	22
Furniture	-	-	5	2.2	-	-	2	0.9	-	-	7
Welding	-	-	8	3.5	1	0.4	2	0.9	-	-	11
TOTAL		7(3.0%)	168(73.1%)		4(1.7%)		40(17.4%)		11(4.8%)		230

Source: Field Survey, 2017

Keys: IPQ=Increase Production Quality, IPI=Increase Production output and Income, ICP=Increase Consumer Patronage, ROC= Reduce operation cost and AOA=All of the above

Table; 3: Fund raise by the micro enterprises when access to public electricity

M/enterprises	0-500	%	500-1000	%	1000-1500	%	1500-2000	%	20000 & Above	%	Total
Tailoring	107	46.5	8	3.5	3	1.3	3	1.3	-	-	121
Cobbling	2	0.9	-	-	-	-	-	-	-	-	2
G/milling	27	11.7	8	3.5	-	-	-	-	-	-	35

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<i>B/Saloon</i>	29	12.6	1	0.4	-	-	-	-	-	-	30
<i>S/water</i>	-	-	-	-	-	-	-	-	2	0.9	2
<i>V/center</i>	15	6.5	5	2.2	2	0.9	-	-	-	-	22
<i>Furniture</i>	6	2.6	1	0.4	-	-	-	-	-	-	7
<i>Welding</i>	9	3.9	2	0.9	-	-	-	-	-	-	11
TOTAL	195	(84.8%)	25	(10.9%)	5	(2.2%)	3	(1.3%)	2	(0.9%)	230

Source: Field Survey, 2017

Table: 4: Result analysis

Correlations Analysis of the result

Variables Access to electricity		Income(productivity) of micro enterprises
Access to electricity	1	.222
		.001
	230	230
Income(productivity) of micro enterprises	.222	1
	.001	
	230	230

Correlation is significant at the 0.01 level (2-tailed).

Source: Author computation output, 2017