AN ASSESSMENT OF THE IMPLICATIONS OF THE MAJOR SOCIO-ECONOMIC CHARACTERISTICS OF THE CONSTRUCTION SKILLED LABOR ON EFFECTIVE DELIVERY OF ELECTRICITY POWER PROJECT IN THE SOUTH EASTERN NIGERIA

ABSTRACT

Provision of adequate power has been a long time problem in Nigeria. It has adversely affected the socio-economic condition of the society. In an effort to address this deplorable condition, the power sector has been transformed by various political administrations from one form to another over time yet, electricity supply and delivery of electricity power project (EPP) have not been effective. The study therefore seeks to improve on power supply services by way of assessing the implications of the major socio-economic characteristics of the construction skilled labor on effective delivery of EPP in the south eastern states of Nigeria. Field survey method of data collection targeted on the skilled labor of the power sector and the active electricity consumers in the study area was adopted, on a mutually exclusive order. An inferential statistical approach of polynomial regression analyses was used to establish model relationships existing between the skilled labor determinants (age of experience, availability, educational qualification, remuneration and training/retraining) as the independent variables and the different functions of effective EPP delivery (steady supply of electricity, fair charges on electricity consumption, and swift response to complaints and faults) as the dependent factors respectively. Findings show that the significant predictive variables remaining in the three final models ($\mathbf{Y_{STSUPt}}$ = 1.885 + 0.209REM_t + 0.520$TRAINP_t$; $\mathbf{Y_{FAIRCHt}}$ = 3.237 +0.097AGE_t + 0.423REM_t + 0.104$TRAINP_t$ and $\mathbf{Y_{SWIRESt}}$ = 2.583 +0.147$AVAIL_t$ + 0.201REM_t + 0.144$TRAINP_t$) tested for adequacy have positive influences on the models; with remuneration and training determinants common and strongest in their effects on the models. Age of experience and availability of the labor determinants however are in addition contained in the model for fair charges on electricity consumption,

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and model for swift response to complaints and faults respectively. It is therefore recommended to all stakeholders in the power sector to align efforts with the power authority in engaging workers on training need based programmes regularly, as well as review upwards and appropriately the workers remunerations so as to boost generally the human capacity industrial base knowledge, motive and comfort; towards effective delivery of EPP in the study area.

Key Words: Electricity Power Project (EPP), Skilled Labor, Socio-economic Characteristics, Effective Performance, Regression Model.

INTRODUCTION

In Nigeria, electricity was first produced in Lagos in the year 1896, fifteen years after its introduction in England. Both Niger Dams Authority (NDA) and Electricity Corporation of Nigeria (ECN) were merged as National Electric Power Authority (NEPA) on April 1, 1972. In 2005 it was changed to Power Holding Company of Nigeria (PHCN) by an act of legislation. Presently, the generation and supply of electricity in Nigeria is in poor condition, not because of doubts about the resources the PHCN commands, but because of low manpower development (Diogu, 2017). To this effect, waste of resources, poor co-ordination, complacency and indiscipline at work places become the characteristics of the power sector.

Mohammed (2007) says that beside other challenges in the power sector, there is shortage of skilled manpower to maintain the power plants. This appalling situation leads to lack of proper maintenance culture in line with global engineering practice. Besides, there is a total absence of effective and efficient maintenance policy in place to guide in the limited attempt in operation and maintenance (O&M) of materials and management, which may equally be attributed to lack or poor working conditions of skilled labor force.

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A critical analysis of the operations of PHCN shows that it has not actually addressed manpower problems (Diogu, 2017). The Fourth National Development plan (1981-1985) exposed the very rapid increase in power demand at over 20 percent per annum. This makes it difficult for the installed capacity to cope with the demand by the economy.

Consequently, after a long time struggle over the years without improving significantly in EPP delivery the government through the electricity reform act of 2005 unbundled the then PHCN into eleven distribution companies, one transmission company and six generation companies. Enugu Electricity Distribution Company (EEDC) which is one of distribution companies is located in the South East (SE) geo-political zone of Nigeria covering Abia, Anambra, Ebonyi, Enugu and Imo states with headquarters at Enugu. It has the basic function of distribution, maintaining and marketing of electricity in these five states. The franchise area is subdivided into ten districts as follows: Abia, Abakaliki, Abakpa, Awka, Ogui, Onitsha, Orlu, Owerri, Nnewi and Umuahia with Aba, Onitsha and Nnewi as the major domestic, industrial and commercial centres. In this zone, EEDC installs, meters, bills and co-ordinates consumer credit services and collects revenues. These activities are anchored on effectiveness of the skilled workforces.

The services of these skilled construction labors who constitute the major component of the labor in the EPP are very significant in the effectiveness of EPP delivery. Udegbe, (2007) concludes that the financial implication or utilization of labor force accounts for a significant proportion of the cost of construction projects. Thus, production costs would always be reduced by

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either increasing the labor productivity or reducing input resources and waste in order to improve on construction efficiency (Ikechukwu et al, 2015).

In search for adequate and appropriate skilled manpower, Nigeria set up the National Power Training Institute of Nigeria (NAPTIN). It is an organ for the training of skilled manpower for the country's Electricity Power Industry. NAPTIN (2013) reveals that there are 8,440 skilled workers generally running Nigeria Power System. This shows that there is a large gap left. NAPTIN has said that it has a yearly average intake of 250 students and this is not quite enough to move the projected 40,000 MW by 2020. Experts are of the view that the huge challenge threatening the sustainable expansion plan by Nigeria Electricity Supply Industry (NESI) is not the finance to undertake rehabilitation and expression projects, but the dearth of standard skilled workforce to keep the sector running with minimal hitches. Consequently, Diogu (2017) therefore concluded that lack of skilled manpower in the defunct PHCN is one of the major problems that plagued the development of the Nigerian power sector.

Just recently, DISCO (2019) in the evening broadcast of the Nigeria Television Authority on the 22nd day of May, 2019 reported that with six Nigeria power plants in idle conditions, the electricity power generation falls to 2.616mw. This regrettable development can be traced down to poor management of the skilled labor among other things in the system; hence the need for effective alignment of efforts from all stakeholders towards reviving the sector sustainably for improved EPP delivery.

RESEARCH METHODS

The study adopted a field survey research design of objective nature in the administration and retrieval of the instrument used for data collection. An

inferential statistical method of data analyses was used to process the relationship between the major socio-economic characteristics of the skilled labor forces in the power sector, and the effective delivery of electricity power projects in the Southeast states of Nigeria.

The survey was carried out to find the influence of skilled construction workforce determinants (age, qualification, availability, remuneration, and training programme) on effective delivery of electricity power projects. Given the nature of this study, the population of interest is divided into two namely; the construction skill labor force of the EEDC and the active electricity consumers in the entire South East States, on the basis of mutual exclusive condition of the population.

Method of Data Analysis

For the purpose of analysis, data collected from the well designed questionnaires were transformed into multiple regression models. Thus, the multiple regression models as developed are therefore expressed as follows;

EDELEPP = f (AGE, QUALF, AVAIL, REM, TRAINP) .... Eq. 1.1

Effective Delivery of Electricity Power Project (EDELEPP) is an objective function (Y) depending on Age of Experience, Educational Qualification, Availability of Labor, Remuneration, and Training programmes as the independent factors. Given the nature of the hypotheses formulated therefore, the multiple regression approach was developed into the following model as;

EDELEPP = $\beta_0+\beta_1$AGE $+\beta_2$QUALF $+\beta_3$AVAIL $+\beta_4$REM $+\beta_5$TRAINP + e ... 1.2

Thus, the base model (Equ. 1.2) was therefore estimated with regard to the respective major conditions of effective delivery of EPP in the study. They are presented as follows.

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STSUP = $\beta_0+\beta_1$AGE $+\beta_2$ QUALF $+\beta_3$AVAIL $+\beta_4$REM $+\beta_5$TRAINP + e 2.1

FAIRCH = $\beta_0+\beta_1$AGE $+\beta_2$ QUALF $+\beta_3$AVAIL $+\beta_4$REM $+\beta_5$TRAINP + e 2.2

SWIRES = $\beta_0+\beta_1$AGE $+\beta_2$ QUALF $+\beta_3$AVAIL $+\beta_4$REM $+\beta_5$TRAINP + e 2.3

Where:

STSUP = Level of Steady Supply of Electricity;

FAIRCH = Level of Fair Charge in Electricity Supply and;

SWIRES = Level of Swift Response to Complaints and Faults.

The STSUP, FAIRCH and SWIRES are functions of EDELEPP in the study.

The regression analyses generated equations that describe the statistical relationship between one or more predictive variables and the response variables, and to predict new observations. The results indicate the direction, size, and statistical significance of the relationship between the predictors and the response (objective function).

Test for Adequacy of Model.

Adequacy (fitness) of the models was checked using the Fisher statistics with the criteria, $F_{cal} \geq F_t$ for fitness. In so far the confirmation of the model for fitness can never be compromised in regression analysis, F test statistic was applied to check for reliability and adequacy of the multiple regression model.

This relationship is described in the linear regression model as;

DATA PRESENTATION AND ANALYSIS

Attention is focused on the Socio-economic Characteristics of the population seeking to test the relationship between skilled construction labor force determinant (i.e. age of experience, educational qualification, availability,

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remuneration and training/retraining programmes of the skilled labor) and effective delivery of electricity in terms of steady electricity supply, application of a fair charge billing system and swift response to complaints and faults under the electricity power projects, EPP in Nigeria.

I. The Influence of Skilled Construction Labor Force Determinants On Steady Electricity Supply

In determining the relationship between the EPP labor determinants and effective delivery of the electricity power projects in terms of steady electricity supply, the following hypothesis was therefore tested

$H0_1$: There is no significant relationship between the skilled construction labor force determinants and effective delivery of EPP in terms of steady electricity supply in Nigeria;

The result of this hypothesis is presented in Table1. The first test carried out was the analysis of variance (ANOVA), to arrive at the F - test seeking to test the adequacy of the model as a whole.

Test of Adequacy for Model 1

As a decision rule if the calculated F - ratio is greater than the tabulated F - ratio or critical F - ratio, we reject Ho and accept Ha. Here, the F - ratio calculated (16.897) > F - ratio theoretical (3.02, 2.21), at 1% and 5% levels of significance respectively. Hence, we reject Ho and accept Ha, to conclude that there is a significant relationship between skilled construction labor force determinants and effective delivery of electricity power projects (EPP) under the steady supply of electricity in Nigeria.

The resulting estimated model is given as;

$$Y_{STSUPt} = 1.885 + 0.081AGE_t + 0.010QUALF_t + 0.067AVAIL_t$$

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$$+ 0.209REM_t + 0.520TRAINP_t \quad \ldots\ldots\ldots\ldots \quad \ldots\ldots\ldots\ldots \quad 3.1$$

Test of Significance of the Coefficients of the Predictive Variables

As a decision rule**,** If the calculated t is greater than the tabulated t (DF = 214), we eliminate the variables of insignificant coefficients to conclude that the other variables belong significantly; which implies that a particular explanatory variable makes a significant contribution to the dependent variable ($\mathbf{Y_{STSUPt}}$) in the south east. Here, only two (REM, and TRAINP) out of the five explanatory variables proved to be significant contributors to effective delivery of EPP under steady electricity supply in the study (i.e. 2.05, 8.56 respectively) > t - tabulated (1.96), at least at 5% level of significance. We therefore, eliminate the variables of insignificant coefficients in the final model and conclude that the two explanatory variables namely remuneration and training programme proved to exert significant effects on the level of effective delivery of EPP under steady electricity supply in Nigeria.

TABLE 1: Hypothesis Result/Output

Variables	**Coefficients**	**Std Error**		**t(df=214)**	**Significance**
Intercept	β_0 = 1.885	0.759			
$X_1 = AGE_t$	β_1 =0.081	0.056		1.452	0.148
$X_2 = QUALF_t$	β_2 = 0.010	0.078		0.131	0.896
$X_3 = AVAIL_t$	B_3 = 0.067	0.043		1.530	0.128
$X_4 = REM_t$	B_4 = 0.209	0.102		2.050	0.042
$X_5 = TRAINP_t$	B_5 =0.520	0.061		8.560	0.000
Source	SS	Df	MS	F=16.897	0.000***
Regression	25.185	5	5.037		
Residual	63.796	214	0.298		
Total	88.982	219			

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NB: *** = significant at 1%; ** = significant at 5%; NS = Not significant. F-ratio tabulated DF (5, 214) 1% = 3.02, 5% = 2.21, t-ratio 1% = 2.58; 5% = 1.960.

Thus, R = 0.953, R^2 = 0.928, Adjusted R^2 = 0.906

Observations = 220, Predictor Variable = 5

Dependent Variable = Steady Electricity Supply.

Results from the statistical analyses carried out on adequacy of model no.1, and significance of coefficients of the predictive variables were therefore used to derive the final model in the following expression:

$$Y_{STSUPt} = 1.885 + 0.209REM_t + 0.520TRAINP_t \quad \ldots\ldots \quad \ldots\ldots \quad 3.2.$$

II. The Influence of Skilled Construction Labor Force Determinants on Fair Charge to Electricity Consumption

In order to determine the relationship between EPP labor determinants and effective delivery of the electricity power projects in terms of fair charge in billing system. The following hypothesis was therefore tested:

$H0_5$: There is no significant relationship between the skilled construction labor force determinants and effective delivery EPP in terms of fair charge in billing system in Nigeria. The result of this hypothesis is presented in Table 2.

Test of Adequacy for Model 2

Decision Rule - If the calculated F - ratio is greater than the tabulated F - ratio or critical F - ratio, we reject Ho and accept Ha. Here, the F - ratio calculated (9.053) > F - ratio theoretical (3.02, 2.21), at 1% and 5% levels of significance respectively. Hence, we reject Ho and accept Ha, to conclude that there is a significant relationship between skilled construction labor force determinants and effective delivery EPP in terms of fair charge in billing system in Nigeria.

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The resulting estimated model is given as;

$$\mathbf{Y_{FAIRCHt}} = 3.237 + 0.097AGE_t + 0.104QUALF_t + 0.030AVAIL_t + 0.423REM_t + 0.104TRAINP_t \quad \ldots\ldots \quad \ldots\ldots\ldots \quad \ldots\ldots\ldots \quad 4.1$$

Test of Significance of the Coefficients of the Predictive Variables

Decision Rule - If the calculated t is greater than the tabulated t (DF = 214), we eliminate the variables of insignificant coefficients to conclude that the other variables belong significantly. This implies that a particular explanatory variable makes a significant contribution to the dependent variable, ($\mathbf{Y_{FAIRCHt}}$) in Nigeria. Here, three (AGE, REM, and TRAINP) out of the five explanatory variables proved to be significant contributors to the objective function, ($\mathbf{Y_{FAIRCHt}}$) in the study. (i.e. 2.173, 5.191, and 2.13) > t - tabulated (3.02, and 1.96 respectively), both at 1% and at 5% levels of significance.

We therefore, eliminate the variables of insignificant coefficients in the final model and conclude that the other three explanatory variables namely; age, remuneration and training programme exerts significant effects on the level of the objective function, ($\mathbf{Y_{FAIRCHt}}$) in Nigeria.

TABLE 2: Hypothesis Result/Output

Variables	Coefficients	Std Error		t(df=214)	Significance
Intercept	β_0 = 3.237	0.607			
X_1 = AGE_t	β_1 =0.097	0.045		2.173	.031
X_2 = $QUALF_t$	β_2 = 0.104	0.063		1.666	0.097
X_3 = $AVAIL_t$	B_3 = 0.030	0.035		0.852	0.395
X_4 = REM_t	B_4 = 0.423	0.082		5.191	0.000
X_5 = $TRAINP_t$	B_5 =0.104	0.049		2.130	0.034
Source	SS	Df	MS	F=9.053	0.000***
Regression	8.630	5	1.728		
Residual	40.802	214	0.191		
Total	49.432	219			

NB: *** = significant at 1%; ** = significant at 5%; NS = Not significant. F-ratio tabulated DF (5, 214) 1% = 3.02, 5% = 2.21, t-ratio 1% = 2.58; 5% = 1.960.

Thus, R = 0.748, R^2 = 0.715, Adjusted R^2 = 0.695

Observations = 220, Predictor Variables = 5

Dependent Variable = Fair Charge Billing System.

Results from the statistical analyses carried out on the adequacy of no. 2 model, and significance of coefficients of the predictive variables were therefore used to derive the final model stated as follows:

$$Y_{FAIRCHt} = 3.237 + 0.097AGE_t + 0.423REM_t + 0.104TRAINP_t \quad ..... \quad 4.2$$

III. The Influence of Skilled Construction Labor Force Determinants on Swift Response to Complaints and Faults

In order to determine the relationship between EPP production determinants and effective delivery of the electricity power projects in terms of swift

response to complaints and faults. The following hypothesis was therefore tested:

$H0_6$: There is no significant relationship between the skilled construction labor force determinants and effective delivery of swift response to complaints and faults under the electricity power projects (EPP) in Nigeria. The result of this hypothesis is presented in Table 3**.**

Test of Adequacy for Model 3

Decision Rule - If the calculated F - ratio is greater than the tabulated F - ratio or critical F - ratio, we reject Ho and accept Ha. Here, the F - ratio calculated (14.302) > F - ratio theoretical (3.02, 2.21), at 1% and 5% levels of significance respectively. Hence, we reject Ho and accept Ha, to conclude that there is a significant relationship between skilled construction labor force determinants and effective delivery of swift response to complaints and faults under the electricity power projects (EPP) in Nigeria.

The resulting estimated model is given as;

$$Y_{SWIRESt} = 2.583 + 0.010AGE_t + 0.138QUALF_t + 0.147AVAIL_t + 0.201REM_t + 0.144TRAINP_t \quad ..... \quad ..... \quad 5.1$$

Test of Significance of the Coefficients of the Predictive Variables

Decision Rule - If the calculated t is greater than the tabulated t (Df = 214), we eliminate the variables of insignificant coefficients to conclude that the other variables belong significantly. This implies that a particular explanatory variable makes a significant contribution to the dependent variable, ($Y_{SWIRESt}$) in Nigeria. In this case, three (AVAIL, REM, and TRAINP) out of the five explanatory variables prove to be significant contributors to the objective

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function ($Y_{SWIRESt}$) in the study (i.e. 2.619, 5.518, and 7.823) > t - tabulated (3.02, 1.96), both at 1% and at 5% levels of significance.

We therefore, eliminate the variables of insignificant coefficients in the final model to conclude that the other three explanatory variables namely availability, remuneration and training programme prove to exert significant effects on the level of effective delivery of EPP in terms of swift response to complaints and faults in Nigeria.

TABLE 3: Hypothesis Result/Output

Variables	**Coefficients**	**Std Error**		**t(df=214)**	**Significance**
Intercept	β_0 = 2.583	0.983			
X_1 = AGE_t	β_1 =0.010	0.072		0.136	0.892
X_2 = $QUALF_t$	β_2 = 0.138	0.101		1.465	0.144
X_3 = $AVAIL_t$	B_3 = 0.147	0.056		2.619	0.009
X_4 = REM_t	B_4 = 0.201	0.132		5.518	0.000
X_5 = $TRAINP_t$	B_5 =0.144	0.079		7.823	0.000
Source	SS	Df	MS	F=14.302	0.000***
Regression	10.762	5	2.152		
Residual	107.074	214	0.500		
Total	117.836	219			

NB: *** = significant at 1%; ** = significant at 5%; NS = Not significant. F-ratio tabulated DF (5, 214) 1% = 3.02, 5% = 2.21, t-ratio 1% = 2.58; 5% = 1.960.

Thus, R = 0.832, R^2 = 0.801, Adjusted R^2 = 0.770

Observations = 220, Predictor Variables = 5

Dependent Variable = Swift Response to Complaints and Faults.

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Results from the statistical analyses carried out on adequacy of no.3 model, and significance of coefficients of the predictive variables were therefore used to derive the final model in the following expression:

$$Y_{SWIRESt} = 2.583 + 0.147AVAIL_t + 0.201REM_t + 0.144TRAINP_t \quad .....5.2.$$

DISCUSSION OF FINDINGS

All the models of the three major functions of effective electricity power project delivery are adequate in the study. Some of the determinant factors however are proven not to contribute significantly in all the models except levels of remuneration and training/retraining of the skilled workers in the power sector. Nevertheless, the contributive effects of age and availability factors of skilled labor towards effective electricity power project delivery are significant only in the models of fair charge to electricity consumption **and** swift response to complaints and faults functions respectively.

The appropriate models as derived in Eqs 3.2, 4.2 and 5.2 are therefore expressed as follows, respectively.

i. $\mathbf{Y_{STSUPt} = 1.885 + 0.209REM_t + 0.520TRAINP_t}$

ii. $\mathbf{Y_{FAIRCHt} = 3.237 + 0.097AGE_t + 0.423REM_t + 0.104TRAINP_t}$

iii. $\mathbf{Y_{SWIRESt} = 2.583 + 0.147AVAIL_t + 0.201REM_t + 0.144TRAINP_t}$

All the contributory determinants have positive influence on all the models for efficient performance of EPP. Training/retraining determinant factor has the strongest effect on steady electricity supply of electricity than remuneration determinant factor while; remuneration factor exert the strongest effect **on** fair charge to electricity consumption**,** and swift response to complaints and faults than training/retraining, age and availability determinants as the case may be.

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CONCLUSION

In respect of the subject of the study, human resource today has a strategic role for productivity increase of any organization, and this makes it superior in industrial competition (Kazaz et al, 2004). With the effective and optimum use of it, all the benefits of increased productivity can be obtained; and it is made possible by establishing clear and understandable criteria for managing the factors affecting labor.

In the study therefore, some socio-economic factors like Training and Remuneration especially, as well as Age of experience and Availability of the skilled labor can be used to regulate and improve the delivery of EPP. The motivation of the labor force is a necessity, and is important because the quality of human performance depends largely on it. Thus, it is ethical that higher motivation brings higher productivity; even the smallest action that is positive or negative can have an effect on motivation strategy and workers attitude. Findings in the study show that remuneration has always been the most common motivational factor towards improved labor performances. In this scenario, Khan (1993) explained that motivation, especially monetary rather than moral has proven its influence on the productivity of workers. On the same note, McKenzie and Hann's (1984), claimed that money is the only motivator for construction workers. Olomolaiye and Ogunlana (1988), similarly asserted that earnings related factors are predominant for motivating construction workers and operatives in a developing country like Nigeria. Zakeri, et al (1997), supports the findings and observed that money related issues are important to the Iranians workers.

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On the other hand, training/retraining as a systematic acquisition of skills, concept or attitudes is marked as another vital motivational factor for the effective performance of the skilled labor. It served as strategy for sustaining the effective performances of workers. Most people employed in the construction industry are not already versed or skilled in all the tasks required to perform effectively. Evidence shows that training is effective in the construction industry and no amount spent in training is a waste. Training is beneficial in the construction project and also to the employees in terms of increasing their value and competence in the industry. EPP can use training and development as a way to attract and retain their most successful employees (the skilled manpower). Before training designs are considered generally, a careful training needs analysis is required to develop a systematic understanding of the form and condition of the training programme. Hence, training and retraining should be seen among other vital measures as a necessary tool for closing the gap in skilled manpower requirements for effective delivery of EPP in the south eastern states of Nigeria.

REFERENCES

Diogu, U. R. 2017. Enhancing the Production Performance of Skilled Construction Labor for Effective Delivery of Electricity Power Projects (EPP) in the South East States of Nigeria. A Successful PhD Dissertation in Construction Management Presented in the School of Post-graduate Studies, Imo State Unversity, Owerri. Nigeria.

DISCOS. 2019. Six Nigeria Power Plants in Idle Conditions. Nigeria Television Authority Broadcast; May 22, 2019. Nigeria.

.

Ikechukwu, U. F. and Anekwe, M.C. 2015**.** Establishing Appropriate Labour Output Rate for Increased Site work Productivity of Building Projects in Owerri Metropolis, Imo State. An International Journal of Economic Development Research and Investment: ICIDR; 7(2), Pp51-62. Akwa-lbom, Nigeria.

Kazaz, A. and Ulubeyli, S. 2004. A Different Approach to Construction Labor in Turkey. Cooperative Productivity Analysis, Building and Environment; 39(1), Pp93-100.

Khan, M. S. 1993. Methods of Motivating for Increased Productivity: Journal of Management in Engineering; 9(2), Pp131-141.

McKenzie, K. I. and Harris, F. C.1984. Money, the Only Motivator? Building Technology and Management; Pp25-29. South Africa.

Mohammed K. B. 2007. Why Electricity Generation in Nigeria is in a Sorry Condition: Daily Times Newspaper; December 9, 2007; Ile-Ife Press.

National Power Training Institute of Nigeria (NAPTIN) 2013. The Training of Skilled Manpower for the Country Electricity Power Industry. Nigeria.

Olomolaiye, P. O. and Ogunlana, S. O. 1988. A Survey of Construction Operative Motivation on Selected Sites in Nigeria Buildings and Environment; 22(3), Pp179-185.

Udegbe, M. I. 2007. Labor Output on Painting Activity in the Construction Industry in Edo State: Journal of Social Sciences; 14(2), Pp179-184. Nigeria.

Zakeri, M., Olomolaiye, P. O., Holt, G.D., and Harris, F. C. 1997. A Survey of Constraints on Iranian Construction Operatives–Construction Management Economics; 14(5), Pp417-426.

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