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Assessing rural residents' perception on utilization of environmental impact assessment for rural development projects in Oyo State, Nigeria

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ABSTRACT

This study assessed rural residents' perception on utilization of environmental impact assessment for rural development projects in Oyo State, Nigeria. A multistage sampling procedure was employed to select 450 respondents for this study. An interview schedule was used to obtain data, summarize and present by using tables, frequency counts, percent and means while Ordered Logit Regression and Spearman Rho Correlation were used to analyze the relationships between variables. Results showed that the mean age, household size and average monthly income were 33.16 years, 8 people and ₦77,644.67 respectively. Rural residents perceived that the public should participate in EIA ($\bar{x}$=4.56). The proportion of the respondents with mean value of 4.40 claimed that lack of transparency was the major factor strongly affecting them in utilizing EIA. Educational level (β = 0.36, P<0.05) and access to extension services (β = 0.53, P<0.01) were significant determinants of perception of rural residents on utilization of EIA for rural development projects. However, correlation analysis revealed a favorable link (r = 0.417, P<0.05) between the factor affecting utilization of EIA and its perception to rural residents. In order to encourage public involvement in the EIA process, explicit rules for public participation, transparency, and review should be developed.

Keywords: EIA; perception; rural development projects; rural residents

INTRODUCTION

Rural development is a means of bringing about ensuring changes in the structure sector of the rural sector in a manner that productivity and output are increased, the technology and objectives of production are radically revolutionized with enhanced standard of living. Rural development from a general point of view is the process of improving the quality of life and economic wellbeing of people living in relatively isolated and sparsely populated areas (Micheal, 2016).

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The term "rural development" refers to a development initiative to improve rural residents' awareness and living conditions (Hackbarth and Vries, 2021). Therefore, rural development encompasses important advancements in governance of society, ownership of property, possession of land, technological advances, workforce, physical amenities, accessibility to assistance, and societal power structures (Ravetz *et al.,* 2013; Deichmann *et al.,* 2016). However, many rural residents do not profit from the methods implemented in the form of projects offered to them because they are not involved in the project design and implementation processes; for this reason, the emphasis on community participation in rural development projects is made. The provision of infrastructures like motorable roads, schools, markets, electricity, and water supplies is at the core of rural development, and for the overall goals and objectives to be met, the principle for effective community participation must be modified. As a result, rural development is more pragmatic when people participate in the process of infrastructure provision (Lilford *et al.,* 2019; Sunday and Oluoha, 2020).

However, the process of assessing a proposed rural development project or development anticipated environmental impact while accounting for connected socioeconomic, cultural, and human health effects that may be both positive and negative for rural residents is known as environmental impact assessment (Morgan, 2012). Environmental impact assessment is the process of assessing a project's or development's anticipated environmental effects that may be both advantageous and detrimental to rural residents (Glasson and Therivel, 2013).

Thus, interest in environmental issues, sustainability, and better managing development in line with the environment has increased dramatically (Roth, 2014). The introduction of new laws, both from national and international sources such as the European commission, which aims to impact the interaction between development and the environment, has been associated with this increase in interest. As a result, the environment is seriously endangered by a number of issues, some of which are brought on by the operations of construction projects (Gifford and Nilsson, 2014). Both renewable and non-renewable resources can be found in abundance in the natural world. Environmental impact assessments must be conducted before and after all environmental projects to ensure that the usage of environmental resources is sustainable (Alozie and Nikolaos, 2018).

Environmental Impact Assessment (EIA), a widely used process, was first introduced in the United States by the National Environmental Policy (NEPA) Act in 1970. Before decisions are made to commit to any developmental project, proposed action is evaluated for its anticipated effects on all areas of the environment, and appropriate responses are developed to the problems highlighted in the assessment (Morgan, 2012; George *et al.,* 2020).

Environmental Impact Assessment (EIA) structures differ between nations, but the procedures they use are frequently the same (Fonseca *et al.,* 2017). It is clear that the process of EIA in Nigeria has allegedly improved in terms of the proper and sustainable construction of developmental projects. However, a careful examination of the procedure reveals that most project supporters prefer to lobby rather than engage in the activity, and as a result, they rarely include or integrate mitigation suggestions into the project's design phase (Kalu and Ogbonna *et al.,* 2021).

Numerous rural development project proponents no longer take into account the outcomes of the exercise from the beginning since environmental regulatory bodies are frequently unable to carry out follow-up plans on the activities of these projects while they are ongoing. The majority of project proponents do not prefer to investigate alternatives because they have already decided on a design, even though an EIA exercise may enable

them to come up with superior ones. They believe that redesign and modification costs are not ideal for the project's overall cost or the project proper (Kalu and Ogbonna *et al.,* 2021).

The study region has not seen any noteworthy correlation between rural development projects and EIA's issues in the past research on the rural residents' perception. Therefore, this called for investigating on assessing rural residents' perception on utilization of EIA for rural development projects in Oyo State, Nigeria. Specifically, the study was designed to describe socio economic characteristics of the rural residents in study area; determine perception of rural residents on utilization of EIA for rural development projects; and determine factors affecting utilization of EIA for rural development projects.

METHODOLOGY

Study Area

Between August 2022 and June 2023, the research project was conducted in the southwest region of the state of Oyo, Nigeria. Oyo State is located in the South-Western part of Nigeria, with its capital in Ibadan. It is located between latitudes $7^{0}3^{|}$ and $9^{0}12^{|}$ north of the equator and longitudes $2^{0}47^{|}$ and $4^{0}23^{|}$ east of the Meridian. Temperature is $27^{O}C$ (Amalare, *et al.,* 2020). Oyo State has thirty-three (33) Local Government Areas (Arowosegbe, 2019). The Oyo State Ministry of Environment and Water Resources, Ibadan, and the Oyo State Environmental Protection Commission oversee the EIA process in Oyo State. The Oyo State Ministry of Environment is in charge of overseeing and managing donor-funded projects, managing flood, erosion, and coastal management, controlling water pollution and hygiene, treating wastewater, developing policies regarding environmental services, and evaluating EIA and Environment Audit Reports (EAR) (Shittu, 2016). This will make the study area's use of EIA pertinent for mitigating or preventing harmful environmental effects.

The study area included two rural/semi-urban Local Government Areas of Oyo state in this study. The two Local Government Areas were Egbeda and Akinyele.

Sampling Procedure and Sample Size

The population of the study includes rural residents in Oyo-State. In this sense, the study's respondents were chosen using a multistage sampling technique. It was completed in phases: Firstly, out of the 33 local government areas that make up Oyo State, Egbeda and Akinyele were purposively chosen because they had extensive lists of Community Development Associations (CDAs), benefited from numerous rural developments, benefited from rural infrastructural development programmes and were primarily participated in local empowerment and environmental management programmes. Secondly, from each local government area, five (5) communities were picked at random, creating a total of ten (10) communities. Lastly, from each of the communities, forty-five (45) rural residents were chosen for interview by using systemic random sampling from the list of members of each Programme User Groups (PUG) and Community Development Associations (CDAs). Therefore, four hundred and fifty (450) respondents in total were used for this study.

Data Collection

Primary data were used in this investigation. A well-structured interview schedule was employed to collect the primary data from the respondents, who were rural residents.

Measurement of the Study Variables

The perception of the rural residents on utilization of environment impact assessment for rural development projects was measured on a 5- point Likert-type scale response of Strongly Agreed (5), Agreed (4), Undecided (3), Disagreed (2), and Strongly Disagreed (1) in response to 15 general intention statements. Grand mean is 3.51; as a result, a statement's mean value that is equal to or greater than the grand mean is classified as a "high perception statement," and any value below that is classified as a "low perception statement". The factors affecting the utilization of environmental impact assessment for rural development projects was measured on a 5- point Likert-type scale response of No Affect (1), Minor Affect (2), Neutral (3), Moderate Affect (4), and Major Affect (5) by responding to 12 generalized intent assertions. Grand mean is 3.67; as a result, a statement's mean value that is equal to or greater than the grand mean is classified as a "minor factor," and any value below that is classified as a "major factor".

Data Analysis

In this study, descriptive statistics (frequency, percent and mean) was used to summarize the socio-economic characteristics of the respondents and other variables. Inferential statistical methods, such as Ordered Logit Regression for hypothesis one and Spearman's Rho for hypothesis two, were then employed to test the hypotheses.

Table 1: Ordered logit model on dependent and explaining variables for socio economic characteristics and perception of rural residents on utilization of EIA for rural development projects

Variables	Measurement	a priori signs
	Dependent Variable	
Perception of Rural Residents	Strongly Agreed (5), Agreed (4), Undecided (3), Disagreed (2), and Strongly Disagree (1) to justify their perception.	
	Explanatory variable	
Age	Measured at the respondent's true age in years	-
Sex	Measured at dummy variable,1 = Male, 2 = Female	+/-
Marital status	Single = 1, married = 2 divorced = 3, widowed = 4, separated = 5.	+/-
Level of education	No Formal Education =1, Primary Education =2, Secondary Education =3, Tertiary Education = 4	+
Household size	Number of people residing with a rural resident	+
Access in services of extension	Yes= 1, Otherwise = 0	+
Monthly income	Measured as the monthly net sales of farm produce and other revenues realized in Nigerian money (₦)	+
Religion	Christianity =1, Islam = 2	+/-

RESULTS AND DISCUSSION

Socio-economic Characteristics of the Respondents

Results in Table 2 show that 34.6% of the respondents fall between 30 to 39 years with a mean age of 33.2 years. The results show that most of the respondents (65.3%) were males while the minority (34.7%) was females. It was suggested that men in the communities are the ones who ensured the safety, welfare, and affairs of the community, implying that a greater number of men participate in rural development projects that may require an environmental impact assessment and are still within the active age bracket.

Table 2: Distribution of the respondents based on their socio-economic characteristics

Socio-economic characteristics	Frequency	Percent	Mean ($\bar{x}$)
Age(years)			
20-29	135	30.0	
30-39	157	34.6	33.16
40-49	76	16.7	
50-59	58	12.7	
60 and above	24	6.0	
Sex			
Male	293	65.3	
Female	157	34.7	
Religion			
Christianity	191	42.6	
Islam	259	57.4	
Marital status			
Single	124	27.7	
Married	299	66.3	
Widowed	18	4.0	
Separated	4	0.7	
Divorced	5	1.3	
Education level			
No formal education	3	0.7	
Primary education	14	3.3	
Secondary education	90	20.0	
Tertiary education	343	76.0	
Household size			
1 – 5	65	14.2	
6 – 10	191	42.5	8
11 – 15	83	18.4	
16 – 20	7	1.6	
Above 20	104	23.3	
Monthly income (₦)			
≤ 50,000	107	24.0	
50,001 - 100,000	206	46.0	77,644.67
100,001 - 150,000	101	22.4	
150,001 - 200,000	31	6.6	
> 200,000	5	1.0	
Extension Services			
Access to extension services	292	64.7	
No access to extension services	158	35.3	

The results also show that 42.6% of the respondents identified as Christians and over half (57.4%) as Muslims. This shows that the respondents are from a variety of religious backgrounds, and religious leaders have the power to persuade their followers to take part in charitable activities in the community. The study reveals that most of respondents (66.3%) were married, indicating that the respondents were accountable and dedicated to rural development initiatives aimed at improving the quality of life in their immediate surroundings. According to Patton and Roth (2016), marriage and family are indicators and pathways to community development in every community, so it is impossible to negotiate the importance of responsible members. Furthermore, the results show that a sizable percentage of the responders (76.0%) have tertiary education. Abdollahzadeh and Sharifzadeh (2014) corroborated this finding, noting in a related study that the majority of respondents (80.0%) with higher educational levels understood whatever the information that came from Environmental Impact Assessment in the context of rural development projects better. Thus, the results also show that the average household size of the respondents is eight (8) people. This suggests that the households are of a modest size, which may be a source of labour for community development initiatives. The findings also reveal that 46.0% of the respondents made a mean monthly income of between ₦50,001 to ₦100,000. This shows that a portion of the respondents earn more than the minimum wage set by the Nigerian government (₦33,000) per month compared to their mean monthly income (₦77,644.67), indicating that they would be able to pay their complementing money when they are requesting for rural development projects. Accordingly, approximately 64.7% of the respondents lack access to general extension services, which would restrict the ways in which rural residents' rural development initiatives could be promoted by means of extension services.

Respondent's Perception on the Utilization of EIA for Rural Development Projects

Results in Table 3 display the respondents' perceptions of the utilization of environmental impact assessments (EIAs) for rural development projects. The comments on perception that were deemed high were respondents perceived that the public should participate in EIA ($\bar{x}$=4.56). This is in line with the findings of Karjalainen *et al*. (2013), and Biswas and Agarwal, (2013) that the success of any Environment Impact Assessment depends on the level of participation of the rural residents. Also, when starting EIA activities, the respondents attested, surveys and public opinion polls should be taken into account ($\bar{x}$=4.17) and EIA will be of benefits to family, friends and general community when conducting on rural development projects ($\bar{x}$=4.16), this corroborates the findings of Corner *et al.* (2012) that emphasized on the efficacy of public engagement and public opinion in environmental activities and community development. It also emphasize on the awareness of the right to know and participation power is important in EIA issues ($\bar{x}$=4.05), in the same vein the rural residents agreed that advocacy planning of EIA should be considered ($\bar{x}$=4.05) in rural development projects, this finding is supported by Hasan *et al.* (2018); Sandham *et al.* (2019); de Oliveira and Partidário (2020) that decisions made about what is significant are strongly guided by context, values, sense-making and subjectivity.

Table 3: Distribution of the respondents based on perception on Utilization of EIA (n=450)

Perception	S.D F %	D F %	U F %	A F %	S.A F %	Mean $(\bar{x})$
EIA should be public participated	5(1.1)	0(0)	13(2.9)	149(33.3)	283(62.7)	4.56
Public opinion polls and surveys should be considered in EIA	0(0)	13(2.7)	17(4.0)	299(66.7)	121(26.7)	4.17
EIA will be of benefits to family and friends	14(3.3)	14(3.3)	18(4.0)	238(52.7)	166(36.7)	4.16
Awareness of rights to know and participation power is important in EIA	4(0.7)	40(8.7)	32(7.3)	230(51.3)	144(32.0)	4.05
Advocacy Planning of EIA should be considered	0(0)	31(6.7)	0(0)	302(67.3)	95(21.3)	4.05
Environmental Impacts of issues on human being is crucial in EIA	5(1.3)	13(2.7)	54(12.0)	284(63.3)	94(20.7)	3.99
Protest and demonstration on EIA should be considered	30(6.0)	50(11.3)	95(21.3)	194(43.3)	81(18.0)	3.71
Legitimacy of participation process in EIA	21(4.0)	32(7.3)	95(21.3)	252(56.0)	50(11.3)	3.63
Trusted information sources should be considered	0(0)	14(3.3)	22(4.7)	252(56.0)	162(36.0)	3.56
There are issues diverted in EIA	9(2.0)	59(13.3)	112(24.7)	230(51.3)	40(8.7)	3.51
Government encourages and promotes EIA	19(4.7)	112(24.7)	58(12.7)	212(47.3)	49(10.7)	3.35
There is legitimacy to EIA	23(5.3)	63(14.0)	153(34.0)	176(39.3)	32(7.3)	3.29
No barrier to EIA	41(9.3)	176(39.3)	144(32.0)	67(14.7)	22(4.7)	2.66
Public opinion won't have influence on decision making	68(27.3)	122(38.7)	36(8.0)	104(23.3)	13(2.7)	2.35
It has nothing to do with the public	220(48.7)	180(40.0)	22(4.7)	28(6.7)	0(0)	1.69

S.A = Strongly Agreed, A = Agreed, U = Undecided, D = Disagreed, S.D = Strongly Disagree F = Frequency, % = Percent.

Factors Affecting the Utilization of Environmental Impact Assessment (EIA)

The results in Table 4 show the factors affecting the respondents in utilizing EIA in the study area. The results reveal that the proportion of the respondents with mean value of 4.40 indicated that lack of transparency was the major factor compelled them to utilize EIA. Calland and Bentley (2013); Voorberg *et al.* (2015) asserted that impact and effectiveness of transparency is the major factor to be considered why embarking on rural development projects and social innovative journey. Followed by the respondents with mean value of 4.21 that asserted lack of communication which associated with rural development projects was the major factor coerced them into usage of EIA. However, the results further reveal that the

respondents with mean value of 4.10 claimed that inadequate government capacity to foster public participation was the major factor affecting them in utilizing EIA. However, other respondents with mean values of 4.00 and 3.81 agreed that lack of legal framework and lack of consultation were the major factors affected them in utilizing EIA respectively.

On the other way round, respondents with mean value of 3.23 stated that strengthening and building indigenous sustainability of some projects had not motivated them in utilizing EIA. Also, respondents with mean value of 3.23 claimed that exerting pressure on project sponsor/ donors to address the negative environmental impacts of some projects has not impelled them in utilizing EIA. Finally, respondents with mean value of 3.17 indicated that lack of drawing attention to the concerns of local people has not compelled them in utilizing EIA.

Table 4: Distribution of the respondents based on factors affecting the utilization of EIA (n=450)

Factors	NA F %	MiA F %	N F %	MoA F %	MaA F %	Mean $\overline{(x)}$
Lack of transparency	3(0.7)	18(4.0)	30(6.7)	144(32.0)	255(56.7)	4.40
Lack of communication between government and local people	6(1.3)	24(5.3)	24(5.3)	210(46.7)	186(41.3)	4.21
Inadequate government capacity to foster public participation	6(1.3)	27(6.0)	24(5.3)	252(56.0)	141(31.3)	4.10
Lack of legal framework	0(0.0)	30(6.7)	63(14.0)	234(52.0)	123(27.3)	4.00
Lack of consultation	15(3.3)	45(10.0)	78(17.3)	183(40.3)	129(28.7)	3.81
Land use	21(4.7)	51(11.3)	96(21.3)	201(44.7)	81(18.0)	3.60
Lack of relevant human resources in environmental protection agency	21(4.7)	57(12.7)	114(25.3)	207(46.0)	51(11.3)	3.47
Socio economic	18(4.0)	60(13.3)	114(25.3)	210(46.7)	48(10.7)	3.47
Exerting pressure on project sponsors/ donors to address the negative environmental impacts of some projects	9(2.0)	69(15.3)	150(33.3)	150(33.3)	72(16.0)	3.46
Strengthening and building indigenous sustainability of some projects	24(5.3)	84(18.7)	132(29.3)	183(40.7)	27(6.0)	3.23
Extending and improving public awareness of environmental concerns	21(4.7)	69(15.3)	183(40.7)	141(31.3)	36(8.0)	3.23
Drawing attention to the concerns of local people	33(7.3)	72(16.0)	171(38.0)	132(29.3)	42(9.3)	3.17

No Affect (NA), Minor Affect (MiA), Neutral (N), Moderate Affect (MoA), and Major Affect (MaA), S.D = Standard Deviation, F = Frequency, % = Percent

Relationship between the Selected Socio-economic Characteristics and Perception of Rural Residents on Utilization of EIA for Rural Development Projects

The parameters determining perception of rural residents on utilization of EIA for rural development projects were projected by taking into account their socio-economic characteristics. The chi-squared value of 76.44 from the ordered logit model indicates very

significant likelihood ratio statistics (P<0.05), showing a wide range on the perception of rural residents on utilization of EIA for rural development projects. With a pseudo-R^2 of 0.23, it can be inferred that independent variables account for 23% of the variation in the perception of rural residents on utilization of EIA for rural development projects. Table 5 presents results, which indicate that perception of rural residents on utilization of EIA for rural development projects was influenced by level of education and access to extension services. However, there was no significant association found between perception of rural residents on utilization of EIA and variables such as age, sex, marital status, household size, monthly income and religion.

Level of education

The ordered logit result confirms that perception of rural residents on utilization of EIA for rural development projects and level of education have a positive and significant (p<0.05) association. Education encourages rural residents in utilization of EIA for rural development projects. This suggests that knowledgeable rural residents would utilize EIA issues that would benefit them when embarking on rural development projects, whereas less knowledgeable rural residents would not, as the result is in line with the stated a priori expectation. Educated rural residents that utilize EIA for rural development projects will have odds ratio that are 1.27 times higher than those of non-educated rural residents.

Extension contacts

There is a positive and substantial ($p < 0.01$) correlation between access to extension services and perception of rural residents on utilization of EIA for rural development projects. The results indicate that perception of rural residents on utilization of EIA for rural development projects was highly impacted by their ability to connect with extension services. When all other factors are held constant, a one-unit increase in rural residents' use of extension services was linked to 76% of the probabilities of high perception of rural residents on utilization of EIA for rural development projects. In Oyo State, there is an extension services center on every block. These centers play a vital role in helping rural residents receive knowledge, research, and innovative practices by using integrated development approach for rural development projects.

Table 5: Socio-economic characteristics and perception of rural residents on utilization of EIA

Factors	Coeff.	Std. Err.	Odd ratio
Intercept or Constant	0.68	0.13	0.61
Age	-0.72	0.17	1.11
Sex	-0.17	0.23	0.61
Marital status	0.11	0.31	1.32
Level of education	0.36**	0.09	1.27
Household size	0.31	0.17	1.16
Access to extension services	0.53***	0.15	0.76
Monthly income	0.37	0.05	0.78
Religion	0.09	0.41	0.47
R^2	0.23		
Chi-square	76.44**		
Df	26		

***, **, * Sig. at 1%, 5% and 10%, respectively.

Association between the Perception of Rural Residents on Utilization of EIA and Factors Affecting the Utilization of EIA for Rural Development Projects

Results of Spearman-rho analysis presented in Table 6 reveal a positive and statistically significant association ($p<0.05$) between perception of rural residents on utilization of EIA and factors affecting the utilization of EIA for rural development projects ($r= 0.417^{**}$, $p=0.002$). This implies that any major factor affecting the utilization of EIA will influence the high perception of rural residents about the utilization for rural development projects. The null hypothesis is therefore rejected.

Table 6: Test of relationship between perception of rural residents on utilization of EIA and factors affecting the utilization of EIA

Variables	N	r-value	p-value	Decision
Perception of rural residents and factors affecting the utilization of EIA	450	0.417**	0.002	S

** = Correlation is significant at 0.05 level, S = significant, r = correlation

CONCLUSION

The inability of rural residents to perceive and utilize EIA before decisions are made on any rural developmental project or proposed action, and also to evaluate for its anticipated effects on all areas of their environment, and to appropriate responses towards the problems that may be highlighted in the assessment had rendered them vulnerable to the risks associated with their socioeconomic, cultural, and human right effects that may be both positive and negative.

The emergence of EIA aims as the process of assessing a project's or development's anticipated environmental effects that may be both advantageous and detrimental to rural residents. This study aimed at assessing rural residents' perception on utilization of environmental impact assessment for rural development projects in Oyo State, Nigeria. The study found out that more than half of the respondents perceived that the public should participate in Environmental Impact Assessment, and also when starting EIA activities, they attested that surveys and public opinion polls should be taken into account. However, lack of transparency and communication which associated with rural development projects was the major factors compelling the rural residents to utilize EIA. In view of this, exerting pressure on project sponsor/ donors to address the negative environmental impacts on some rural development projects that will impel rural residents in utilizing EIA should be done. Finally, rural residents should be profitable from the methods implemented in the form of projects offered to them because they should be involved in the project design and implementation processes; for this reason, the emphasis on community participation in rural development projects is compulsory.

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