PERCEIVED EXTENT OF RURAL INFRASTRUCTURAL SUSTAINABILITY AMONG RURAL DWELLERS IN ABIA STATE, NIGERIA

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Abstract:

The study assessed the extent of infrastructural sustainability in Abia State, Nigeria. A sample size of 108 respondents realized via multi – stage sampling techniques was used. Primary data were generated, using structured questionnaire and interview schedule. Data analysis made use of descriptive statistics and Spearman correlation coefficient. Results revealed that 59.3 % of the respondents were males while 40.7 % were females. Results equally, revealed that the mean age of the respondents was 40 years and that 18.5, 74, 5.6, and 1.19 % respectively of the respondents were single, married, divorced / separated and widowed respectively. About 35.2, 44.4, 9.3, and 11.1 % of the respondents were farmers, traders, civil servants, and others respectively. Results further revealed that 88.9 % of the respondents were literates, and earned a mean monthly income of ₦33,648.148 and a mean household size of about 4 persons respectively. The awareness level of the respondents on different dimensions of infrastructural sustainability was slightly high (55 %), while the practice level was low (1.86). Results equally revealed that the limiting factors to infrastructural sustainability were that of not involving the beneficiaries in all the stages of the project life cycle participation. $H0_1$ was rejected and the alternative accepted, $\Gamma s = 0.96$ which signifies that there was very high and positive relationship between awareness level and practice level. The study recommends that policy makers and other stakeholders in infrastructural development should ensure that the beneficiaries are involved in all the stages of project life cycle participations, mostly in the study area.

JEL: R10, O18, Q01, Q56

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Keywords: infrastructural sustainability, project life cycle, Abia State, Nigeria

1. Introduction

The concept "sustainability" arose in response to economic growth models which characterized development approaches in the 50s which did not adequately address social inequalities and this led to environmental degradation (UNCED, 1992). It was against this backdrop that IFAD (2007) defined sustainability as ensuring that the institutions that are supported through projects and the benefits realized are maintained and continue after the end of the project. In other words, for any project to be sustainable, it must be participatory and inclusive starting from project appraisal stage, design stage, implementation stage, monitoring stage and evaluation stage respectively. Therefore, protecting and managing natural resources in a sustainable and integrated manner is an overarching objective of – and an essential requirement for sustainable development. Hence, for development to be sustainable, it must be inclusive, both in terms of the people who serve as active designers and participants and also the ultimate beneficiaries. It must put in place practices and infrastructures that are renewable and adaptable (Leeuwis, 2000). It was in line with the above situations that IFAD (2007) identified different dimensions of sustainability which include: - **political sustainability** which involves government commitment, enabling policy environment, stakeholder interests, strong lobby groups and political influence/ pressure; - **social sustainability** which involves social support and acceptability, community commitment, social cohesion; - **ownership sustainability** which involves whether or not communities, local government and households accept and own the outcomes of the project in ways that are sustainable; - **institutional sustainability** which involves institutional support, policy implementation, staffing, recurrent budgets; **- economic and financial sustainability** which involves resilience to economic shocks, financial viability, reduced household vulnerability and increased capacity to cope with risk / shocks; - **technical sustainability** which involves soundness, appropriate solution, technical training for operations and maintenance, access to and cost of spare parts and repairs; and – **environmental sustainability** which involves projects' positive / negative contributions to soil and water preservation and management, resilience to external environmental shocks respectively. Similarly, Santash (2012) stated that education is essential to sustainable development and therefore, identified the different dimensions of sustainable development as follows: (a) **environmental; (b) economic, and (c) social sustainability respectively**. He further stated that **environmental sustainability** rests on the rationale use of (1) fossil fuel; (2)

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nuclear energy; (3) agriculture and livestock production; (4) forestry; (5) biodiversity; (6) water; (7) fisheries, and (8) minerals respectively. While he further, stated that **economic sustainability** focuses on (1) energy; (2) transport; (3) waste; (4) employment; (5) investment, competition and stability; (6) education and skills; (7) business and industry; (8) trade and tourism respectively. Equally, he stated that **social sustainabilit**y focuses on a strong, diverse and thriving social structure which results to social cohesion, cultural inclusion and people's empowerment respectively. It was on the above premise that UNDP (2003) reported that sustainability must be intentionally addressed from the earliest stages of project design. It further stated that in many cases that this will require: capacity – building for group members and organizations; investments in productive assets in access to markets, financial services and infrastructural improvements in markets, financial services and infrastructure; and support for locally appropriate approaches to resource management and conflict resolution. However, FAO (2007) defined sustainable agricultural and rural development as the management and conservation of the natural resource base and the orientation of technological and institutional change in such a manner as to ensure the attainment and continued satisfaction of human needs for present and future generations. Additionally, Ekong (2010) defined sustainable development as economic and social development that meets the needs of the current generation without endangering the ability of future generations satisfying their needs and choosing their lifestyle. Also, Leeuwis (2000) defined infrastructure as basic systems and structure, such as roads, railways, building, telecommunications systems and energy supply systems that a country needs for its economy to function. In the same context, Ekong (2010) saw infrastructure as those underlying or basic physical, social and institutional forms of capita1ls or facilities which a system needs to function properly.

On the other hand, many proponents: Ekong (2010); Nwosu (2011); and Obinna (2013) respectively reported that about 70 % of the Nigerian population live and work in the rural areas. They equally, reported that the conditions of rural infrastructure in Nigeria mostly in the southern Nigeria still remain very deplorable. This makes the rural areas very unattractive to the younger generations which pose a major constraint to the achievement of policy objectives. On earlier note, the authors observed that accelerated provision of rural infrastructure was the core of any effort to transform rural Nigeria. It was in confirmation to the above that Nwosu (2011) asserted that rural development could not be achieved without sustained provision and maintenance of basic infrastructure. Therefore, he reported that the World Bank executed through the Abia State Agency for Community Based Poverty Reduction (ABCPRP) a total of 147 projects in Abia State between 2001 and 2007 in the following order: electricity, health,

water- borehole, schools and feeder roads representing 40.8 %, 16.3 %, 13.6 %, 12.2 % and 10.9 % respectively. Additionally, several other studies: Apu and Leo (2015); and Obinna (2015) conducted in Abia State equally reported the frantic efforts made by the three tiers of governments in Nigeria through their agencies and ministries in-order to develop the rural areas mostly in Abia State. They also, reported on the contributions of the Non – Governmental Organizations (NGOs) and Community Based Organizations (CBOs) and philanthropists respectively to the provision of rural infrastructural facilities in Abia State. It was based on the above that the study sought to assess the perceived extent of sustainability of rural infrastructure among the rural dwellers in Abia State, Nigeria.

The following objectives guided the study to:
- examine the socio – economic characteristics of the respondents;
- ascertain the level of awareness of the respondents on the different dimensions of rural infrastructural sustainability in the study area;
- determine the practice level of the different dimensions of infrastructural sustainability among the rural dwellers; and
- identify limiting factors to infrastructural sustainability in the study area.

The hypothesis was tested in null form as follows:

$H0_1$ = There is no significant relationship between the level of awareness of the respondents on infrastructural sustainability and their practice level in the study area.

2. Methodology

The study was conducted in Abia Stae, Nigeria. The population of the study comprised all the rural dwellers in the State. Abia State is situated in the south – eastern part of Nigeria and is predominantly populated by the Igbo race (Obinna, 2013). The state is located on latitude 40^0 - 70^0 N and 7^0 - 8^0 E of the Equator and Greenwich Meridian respectively (NRCRI, 1990). The state has a total land mass of about 5833.77 Km^2 with a population of 2,833,999 and a density of 486 persons per Km^2 (NPC, 2007). The study made use of a sample size of 108 respondents, realized through multi – stage sampling methods. Firstly, the entire state of Abia was stratified in line with the three agricultural zones namely: Ohafia, Umuahia, and Aba agricultural zones respectively. Secondly, through a simple random method, 6 communities were selected from each of the three agricultural zones to give a total of 18 communities. Thirdly, through a purposive sampling methods all the chairpersons of the 18 selected communities via men's wing of the development unions, women's wing and the youth's wing respectively alongside with their secretaries were selected to give a total of 108 respondents that were used for

the study. Structured questionnaire and scheduled interviews were used in generating the primary data. Data analysis was carried out using descriptive statistical tools such as frequency counts, percentage, means, pooled means and Spearman rank order correlation coefficient respectively.

3. Results and Discussion

Table 1 shows that 59.3 % of the respondents were males while 40.7 % were females. It equally, shows the mean age to be 40 years and further shows that 18.5 % of the respondents were single, 74 % were married, 5.6 % were divorced / separated and 1.9 % were widowed respectively. About 35.2 %, 44.4 %, 9.3 % and 11.1 % respectively, were farmers, traders, civil – servants and others respectively (Table 1). Table 1 equally shows that about 88.9 % of the respondents were literates and about half (46.3 %) completed secondary school education. The mean monthly income of the respondents was about ₦33,648.148 and their mean household size was about 4.4 persons and about 83.3 % belonged to other organizations and about 85.2 % have held leadership positions respectively. The findings in Table 1 implied that as the respondents were within the active ages, literates and earned a mean monthly income that is above the National Minimum wage of ₦18,000.00 per month, coupled with high level of leadership positions respectively. Therefore, they were well qualified to have participated in all the stages of a project life cycle thereby being used to the different dimensions of sustainability.

Table 1: Distribution of the Respondents According to Socio – Economic Characteristics

S/No	Variables	Frequency	Percentage	Mean
01	Gender			
	Male	64	59.3	
	Female	44	40.7	
02	Age in Years			
	< 18	12	11.11	
	18 - 28	15	13.89	
	29 - 39	25	23.15	
	40 - 50	28	25.93	40.06 years
	51 -- 61	20	18.52	
	62 -- 72	08	7.4	
03	Marital Status			
	Single	20	18.52	
	Married	80	74.07	
	Divorced/ separated	06	5.56	
	Widowed	02	1.85	

04	Primary Occupation			
	Farming	38	35.19	
	Trading	48	44.44	
	Civil – Servants	10	9.26	
	Others	12	11.11	
05	Educational Attainment			
	No formal Education	12	11.11	
	Primary SCH. Completed	30	27.78	
	Secondary SCH. Completed	50	46.30	
	Tertiary Education	16	14.82	
06	Monthly Income in Naira (₦)			
	≤ 18,000.00	20	18.52	
	19,000.00 - 29,000.00	30	27.78	
	30,000.00 - 40,000.00	25	23.15	₦33,648.148
	41,000.00 - 51,000.00	20	18.52	
	52,000.00 - 62,000.00	10	9.26	
	63,000.00 and above	03	2.78	
07	Household Size in No. of Persons			
	≤ 2	25	23.15	
	3 -- 4	30	27.79	4. 4 persons
	5 -- 6	35	32.41	
	7 & Above	18	16.67	
08	Membership to other Organizations			
	Yes	90	83.33	
	No	18	16.67	
09	Leadership Positions			
	Yes	92	85.2	
	No	16	14.8	

Source: Field Survey 2016.

Table 2 shows that the level of awareness of the respondents on political sustainability was low with response score of 18.5 %, that of the social sustainability was high with a response score of 74 % and that of ownership sustainability was high with a score of 83.33 %. The institutional sustainability was low with a score of 16.7 %, the economic / financial sustainability was high with a score of 62.96 %, the technical sustainability was high with a score of 64.8 % and that of environmental sustainability was high with a score of 81.5 % respectively (Table 2). Table 2 equally, shows that the grand mean on the level of awareness of the respondents of the different dimensions of sustainability in the study area was high with a score of 55 %. The implications of the findings in Table 2 are that with the literacy level of the respondents and their positions in local leadership they are quite disposed to be aware of the different dimensions of sustainability.

Table 2: Distribution of the Respondents According to Their Level of Awareness of the Different Types of Infrastructural Sustainability

N = 108

S/No	Dimensions of Sustainability	Aware	Not – Aware	Level
01	Political	18.5 %	81.5 %	Low
02	Social	74.1 %	25 93 %	High
03	Ownership	83.33 %	16.67 %	High
04	Institutional	16.67 %	83.33 %	Low
05	Economical / Financial	62.96 %	37.04 %	High
06	Technical	64.8 %	35.19 %	High
07	Environmental	81.48 %	18.52 %	High
	Grand Mean	55.02 %	42.59 %	

Source: Field Survey 2016.

Decision Rule: Any Response ≥ 50 % was regarded as high, while any response < 50 % was regarded as not significant.

Table 3 shows that political sustainability has low practice level with a score of 1.09, social sustainability has a high practice level with a score of 2.2. Ownership has a high practice level with a score of 2.3, institutional has a low practice level with a score of 1.06. Economic / Financial sustainability has a high practice level with a score of 2.1. Technical sustainability has a high level with a score of 2.0 and environmental sustainability has a high practice level with a score of 2.25. The grand mean practice level was low with a score of 1.86. The implication of the findings is that given the fact that the respondents were aware of the different dimensions of infrastructural sustainability, their practice level still remain low.

Table 3: Distribution of the Respondents According to Their Practice Level of the Different Dimensions of Infrastructural Sustainability

N = 108

S/No	Dimensions of Sustainability	Often	Seldom	Never	Total	Mean	Level	Ranks
01	Political Sustainability	-	20	98	118	1.09	Low	6th
02	Social Sustainability	105	120	13	238	2.2	High	3rd
03	Ownership Sustainability	120	124	06	250	2.3	High	1st
04	Institutional Sustainability	-	12	102	114	1.06	Low	7th
05	Economic / Financial	120	80	28	228	2.1	High	4th
06	Technical Sustainability	120	96	20	216	2.0	High	5th
07	Environmental Sustainability	135	90	18	243	2.25	High	2nd
	Grand Mean					1.86	Low	

Source: Field survey 2016

Decision Rule: Any mean ≥ 2 was adjudged to be significant, while any mean < 2 was adjudged insignificant.

Determination of Practice Level = 0 - 1.99 = Low

$$2 - 3 = High.$$

Table 4 shows that the respondents indicated high level of limiting factors for infrastructural sustainability in all the stages of the project life – cycle in the study area. It equally, shows that project appraisal stage scored a mean of 1.19, project design stage mean of 1.33, project implementation stage mean of 1.93, project monitoring stage mean of 2.0, and project evaluation stage mean of 2.39 respectively. The implications of the result in Table 4, are that the respondents/ beneficiaries were not involved or carried along in all the stages of project life- cycle. This also signifies high level of limiting factors to infrastructural sustainability in the study area since the beneficiaries were not involved. This collaborates Nwachukwu (2008) who asserted that for any development project to be sustainable it must carry the beneficiaries along in all the stages of project life- ycle.

Table 4: Distribution of the Respondents According to Limiting Factors to Infrastructural Sustainability in the Study Area

N = 108

S/No	Stages of Project Life- Cycle	V/ M/ I	I	N/V/M/I	N/I	Mean	Level /Significance
01	Project Appraisal Stage	-	-	40	88	1.19	High
02	Project Design Stage	-	24	40	80	1.33	High
03	Project/Implementation/Stage	-	90	80	38	1.93	High
04	Project Monitoring Stage	-	105	80	33	2.00	High
05	Project Evaluation Stage	40	120	80	18	2.39	High

Source: Field Survey 2016

N/B; V/M/I = Very Much Involved, weighted and scored 4 points;
I = Involved weighted and scored 3 points;
N/V/M/I = Not Very Much Involved, weighted and scored 2 points;
N/I = Not Involved, weighted and scored 1 point.

Decision Rule: Any mean ≥ 2.5 was adjudged insignificant, while any mean < 2.5 was adjudged significant.

Level of Limiting Factors =

0 - 2.49 = High level

2.5 - 4.0 = Low Level

Test for $H0_1$ = There is no significant relationship between the level of awareness and practice level of the respondents on infrastructural sustainability in the study area.

The Spearman rank order correlation   coefficient represented as below:

$$\Gamma_s = 1 - 6 \frac{\Sigma D^2}{n (n^2 - 1)} \ldots (1)$$

Where

Γ_s = Spearman's rank order correlation coefficient.

D^2 = differences in the ranks of scores of the two sets of data (variables).

n = number of paired observations

Table 5: Test for HO_1

Dimensions of Sustainability	Awareness Ranks	Practice Ranks	D	D^2
Political Sustainability	6th	6th	0	0
Social Sustainability	3rd	3rd	0	0
Ownership Sustainability	1st	1st	0	0
Institutional Sustainability	7th	7th	0	0
Economic / Fin Sustainability	5th	4th	1	1
Technical Sustainability	4th	5th	-1	1
Environmental Sustainability	2nd	2nd	0	0
Total				2

Source: Field Survey 2016

$\Gamma_s = 1 - 6 \times 2^2 / 7 (7^2 - 1) = 1 - 24 / 7 \times 48 = 1 - 24 / 336 = 1 - 24 / 336 = 1 - 0.0714 = 0.9286$

$\Gamma_s = 0.9286$ implies that there exists a very high positive relationship between the two variables under study. The coefficient is close to one. Therefore, the null hypothesis which states that there is no significant relationship between the two variables is hereby rejected and the alternative is accepted.

4. Conclusion and Recommendations

The study was conducted in Abia State, Nigeria. It made use of 108 respondents realized via multi – stage sampling methods. Primary data were generated through the use of structured questionnaire and scheduled interviews. Data were analyzed through the use of descriptive statistics and Spearman rank order correlation coefficient. Results revealed that 59.3 % of the respondents were males while 40.7 % were females. The mean age is 40 years and 18.5, 74, 5.6 and 1.9 % respectively were single, married, divorced/ separated and widowed respectively. About, 35.2, 44.4, 9.3 and 11.1 % respectively of the respondents were farmers, traders, civil- servants and others. Results equally, revealed that 88.9 % of the respondents were literates and earned a mean monthly income of ₦33,648.15 with a mean household size of about 4 persons respectively. About, 83.3 % of the respondents belonged to other organizations and 85.2

% have held leadership positions respectively. Results further revealed that awareness level of the respondents on different dimensions of infrastructural sustainability was high (55 %), while the practice level was low (1.86). Results equally revealed that the major limiting factors to infrastructural sustainability in the study area was that the beneficiaries/ respondents were not appropriately involved in the different stages of the project life cycle. The HO$_1$ was rejected and H$_1$ accepted since Γ_s = 0.93 very close to one which implies that there very high relationship between the two variables under study. The study therefore recommends that the beneficiaries should always be carried along in all stages of project life cycle in-order for the project to be sustainable. The study has revealed that projects executed in Abia State within the period under study were not sustainable

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