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Community-environment relations and development of rural communities in Uyo, Nigeria

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Primary production activity and environmental resources hold the key to rural development. The range of activities in primary production forms the basis with which rural communities relate with the environment and carry out rural development activities. This study examined the interactions in man-environment system and how such interactions could affect development processes. A multistage sampling framework was adopted in the selection of 400 respondents in eight rural communities in Uyo Local Government Area. Structured questionnaire was applied to collect data on 35 independent and 22 dependent variables. Factor analysis was applied to collapse the two sets of data. Both the 35 independent and 22 dependent variables yielded five new factors for each set of data. Step wise multiple regression analyses model was performed to regress all the five new x-components against each of the five y-components and the results showed strong and positive levels of relationships. The study recommended tripartite-P model to promote sustainable development in rural communities.

Key words: Environmental resources, exploitation, rural development.

INTRODUCTION

Human environment is integral to the overall process of development and includes the relationship and interdependences that exist between people and the natural resources. The environment in short is where we live and where development takes place. The two are inseparable yet their inter-relatedness causes enduring tensions (Evans, 1986). It is the resultant effects of this inter-relationship that indicates the level and trends of rural development in any community. According to Aniah (1995) man and his environment are intractably bound together. The land on which man lives, the air he breathes, the water he uses for domestic, industrial, transportation and other purposes, as well as the resources contained in these ecosystems all impinge on man and vice versa. Within each community, irrespective of the level of development, it is imperative that man determines the extent to which he can effectively exploit process and utilize the resources available to him. However, for such exploitation to be sustainable it has to be within the resources capacity for renewal. The underlying premise is that rural development effort should include the development of the rural population to enable them analyze their relationship with their environment and to raise awareness that natural resources should be exploited and utilized in a way that does not impair process of regeneration. Community-environment relations and rural development entail finding solutions to problems of poverty, malnutrition, health, roads, rural-urban migration, food and housing and planned exploitation of natural resources for better and more meaningful life.

In the developing countries of Africa, natural resource exploitation and utilization constitute the mainstay of rural economies. This ranges from activities such as farming, fishing and hunting to fuel-harvesting, lumbering, quarrying and rural craft. These ranges of activities form

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the basis with which community members relate with the environment and participate in rural development activities. Accordingly, Batten in 1957 asserted that "many communities have sought to perpetuate training in self-reliance among appropriate age groups all aimed at ensuring that the communities are appropriately equipped to change and control their environment" (Ekong, 2003). World Bank (1996) listed some of these factors that put rural environment at risk to include lack of capital, poverty and population growth. Environmental and socio-economic concerns that are consistently identified in rural areas include land degradation and deplorable state of infrastructure such as safe drinking water, paved roads, healthcare facilities and educational facilities.

The severity of these mutually re-enforcing constraints is the evidence of the increasing challenge of rural development when one considers the fact that up to 80% of people in the poorest countries still lives in rural areas and are dependant directly or indirectly on the land (Kohlmeyer, 2001). To the villager, for instance, wood fuel possesses the overwhelming advantage of being and it is commonly used as firewood. Being available source of income fuel, wood is harvested and carried over considerable distances into town for sale to urban dwellers (Sampson, 1992). Also, quarrying of sand gravel of building and road construction has contributed substantially to the degradation of the environment. NEST (1991) reported that one spectacular consequence of quarrying is the emergence of borrow pits along major highways and even within urban centres or their suburbs to mark to aid in the reshaping and modification of natural environment. On the other hand, while farming systems, technologies and cultural values and norms of rural communities have constructive and beneficial influence on the rural landscape they have also unleashed destructive measures that have seriously or permanently impaired the original productive power of the landscape. The obvious result of this negative impact is the increasing inability of the environment to provide the necessary sustenance to agricultural and rural development progammes.

In Uyo Local Government Area of Akwa Ibom State, rural communities occupy a major portion of the land mass. These communities depend directly or indirectly on the exploitation of land. Due to the changed status of Uyo to become a state capital and the gradual increase in population, the hitherto rural communities have increased in population, thereby exerting pressure on the rural land resources. The implication of this trend of development is that the quality of life of the rural dwellers is adversely affected. In most of the rural communities, literacy is still low, spatial inaccessibility is still high while basic social infrastructures such as portable water, electricity, healthcare and good housing are in deplorable state. As rural areas where productivity is predicated on the effectiveness of man-environment nexus and in spite of the rural-urban linkages, the level of underdevelopment, poverty and social deprivation prevalent in the rural communities pose enormous challenges for rapid rural transformation.

Therefore, the increasing inability in community-environment interaction to provide the necessary impetus for rural development calls for investigation. It is hoped that the understanding of the complex linkages of human activities in the rural communities will lead to productive management of naturally occurring resources and in the process will also help in the reorganization of the rural development initiatives for enhanced rural income, rural commerce and environmental health. The extensive ravines and relief in some of the communities have a marked influence on farming (a predominant occupation of the people) and on rural development programmes. Farming in these areas has led to accelerated soil erosion and soil infertilities hence poor yield or output. On the other hand, infrastructural development has greatly been hampered.

Economic activities in these commu-nities are largely subsistent and localized in scope. Commercial farming activities are hampered by land fragmentation. This affects the socio-economic status of the people and their contribution to rural development hence negative impact on community-environment rela-tions and rural development. Another characteristic in the study area that impinges on community-environment relations and rural development is the beliefs attached to sacred forests and shrines. The general belief of the people is that the gods and the spirit of their ancestors resides in sacred forests and shrines, therefore attempts at clearing such forests and shrines for rural infra-structural development is always resisted. Restrictions placed on entry into these grooves also influence community-environment relations and development.

MATERIALS AND METHODS

The research design used is the survey approach, aims at assessing the effects of primary occupations on rural community development. This design is most appropriate because it permits an accurate assessment of the activities and characteristics of the population under investigation. Data required for the study were on socio-economic activities of the communities and development indicators. Data on socio-economic indicators include farming methods, size of farm, levels of exploitation of land resources, belief systems and cultural practices of the rural communities. Data on development indicators include education and health infrastructure, agricultural storage and marketing facilities, source of drinking water, type of houses and nature of rural roads and levels of income. The striking feature of man-development relationship in the context of rural development is that it places primary production activities at the centre of economic life of rural communities. To examine these relationships, two groups of variables representing socio-economic activities (independent variables) and development indicators (dependent variables) were identified and measured. The socio-economic activities and their specific effects on the environment have wide applicability for rural development hence the variables are interrelated and interdependent. Primary data were obtained from interaction with rural dwellers in the com-

munities through structured questionnaire administration, semi-structured interview and observation.

This study employed a combination factor analysis and multiple regression analysis as statistical tools. The interest in multivariate analytical techniques arises from the fact that isomorphism, that is, the existence of one-on-one relationship is rare. An analysis of community-environment relations involves an understanding of causally related variables. The principal components analysis is a multivariate statistical technique which primarily facilitates the reduction of a large data matrix X1, X2, X3 …Xn into a smaller one Y1, Y2, Y3 …Yn without much loss of information. This it does by using an orthogonal transformation which converts a set of data of possible correlated variables into a set of uncorrelated data called factors. Multiple regressions technique was applied to measure the relationship between the dependent variable and a set of independent variables. It is a multivariate statistical tool which relates quantitatively variations in the dependent variable based on some independent variables. Uyo Local Government Area has 11 political wards. Three of these wards constitute the urban area while 8 wards constitute the rural areas. Due to the rural focus of the study, the 8 wards comprising 63 communities were used as population of the study. With a combined population of 129102 persons and a sample size of 400 respondents derived from Taro Yamane formula for finite population, an average of 6 household heads was sampled per community using proportional representation and systematic random sampling approach. The contribution of human activities to rural community development was investigated using the primary productive activities of the population (crop cultivation and extraction of sand, gravel, laterite and fuel wood). All the 35 socio-economic (independent) variables and 22 rural development (dependent) variables were subjected to factor analysis statistics so as to extract the major factor for X and Y as well as to achieve a parsimonious description of the sets of variables.

RESULTS

Extraction and naming of socio-economic factors

Of the 35 socio-economic (independent) variables (Table 1), the first 29 variables on socio-economic indicators were subjected to factor analysis and five major factors were extracted from the original 29 independent variables and thus, indicated the socio-economic activities and rural (Table 2) development initiatives of the people as shown in Table 3. Table 3 shows that the factor analysis procedure applied to the data set yielded a five-dimensional solution. The communalities, which are indicators of the importance of the variables selected for the study, were appropriate and relevant. The five factors altogether accounted for 93.9% of the total variance. The factors were named according to the high positive loadings of the variables that made up each of the factors.

Factor 1: Farm activities factor

This factor is so named as it has high positive loading on:
X25 = Cost of fuel wood, 0.95
X24= Quantity of fuel wood used, 0.92
X2 = Farm labour, 0.88
X7 = Farm additives, 0.88
X9 = Waiting period, 0.88
X6 = Fallow period, 0.74
X5 = Farm implements, 0.63

This independent X-variable accounted for 34.9% of the variation within the distribution of independent (X) variables and is so named because of its influence on productivity. The implication is that the farm activities factor could influence the volume of farm produce and thus, bring about increase in income and improved living conditions of rural dwellers.

Factor 2: Land cover factor

X18 = Sacred forest, 0.90
X26 = Income from hunting, 0.82
X19 = Sand/laterite extraction, 0.72
X1 = Farm size, 0.52

This independent variable accounts for 25% of the variation within independent (X) variables. The factor is so named because all the constituents facilitate conservation, and sustainability of resources. Where there is a cultural law that certain portion of land should not be cleared there is a regeneration of and conservation of forest resources including plants and protected habitat for endangered animal species. These areas could be reconfigured as tourism potential.

Factor 3: Complementary activities factor

X27 = Fishing income, 0.70

This factor accounts for 16.5% of the variation within independent (X) variables. Effective and efficient production calls for coordinated activities especially so in rural communities where there is no clearly defined direction of investment. The activities of the rural people are highly seasonal with the result that there is full utilization of labour during the peak period but there may be virtually unemployment during the slack season. Therefore, complementary activities could provide the population with possible areas of employment.

Factor 4: Labour factor

X3 = Age of farmers, 0.81

The factor is so named because of the high positive loading. This factor accounts for 10.1% of variation within

Table 1. Socio-economic activities (X- independent variables).

Variable		Parameter	Justification
X1	Farm size	Hectares (m^2)	The larger the farm size, the greater the volume of produce and vice-versa. Those having larger farm size cultivate more crops as against those with small farm size. This affects the level of income.
X2	Labour	Number	Availability and cost of labour determine how many rural farmers can afford to hire. Where labour is scares, the level of cultivation will be less hence reduces output.
X3	Age of farmer	Years	Farming activities in the rural area is stressful and energy intensive. The aged who are mostly engaged in farming in rural area lack the stamina hence productivity per unit of farmland is very low.
X4	Crops	Type and number	Certain types of crops being more income than others within a farming season. Thus the rates of earning overtime signify and influence the choice and type of crop and rural income.
X5	Farming implements	Type and number	Type and number on implement play major roles in farm output. In rural areas farming if rudimentary with the use of simple tools and implement. Farming practices where the hoe and matches are most use implement are not likely to yield much output compare to where mechanized implement are used.
X6	Land tenure period (fallow period)	Number of years	Fallow period affect rate of exploitation soil nutrient, hence farm output and rural income.
X7	Farm additives	Number	Influence soil fertility, output and income.
X8	Farm product sold	Percentage (%)	Determine rural income, savings and capacity building/utilization.
X9	Waiting period before harvest	Number of months	This represents slack period from farming and much influence the consumption pattern of the people thus affecting capital and any development projects.
X10	Price per bag of garri	Naira (₦)	Determine savings and capital accumulation.
X11	Price per bag of palm oil	Naira (₦)	Determine saving and capital accumulation.
X12	Price per bag of kernel	Naira (₦)	Determine saving and capital accumulation.
X13	Average cost of a plot of land	Naira (₦)	Affordability influences number of people in farming and income distribution. Increase contribution lead to development activities.
X14	Income from farming	Naira (₦)	Increase income may influence amount of money devoted or set aside for development projects.
X15	Loan received for farming	Naira (₦)	Facilitate volume of production, hence increased rural income.
X16	Farmer cooperative society	Number	Coordinates activities of rural farmers toward effective and efficient production. Also active on direction of investment.
X17	Average saving per farming	Naira (₦)	By savings a portion of income individual can afford to contribute substantially to the development of community.
X18	Sacred forest shrine etc.	Number	These could be reconfigured as tourism potential. Also conservation measures for sustainability of resources.
X19	Sand/laterite extraction sites	Number of trucks per month	These could reduce the land area for crop production besides the degradation effect on environment.
X20	Income from sand/literite per month	Naira (₦)	Quantity sold adds to the rural income and increased earning influences development.
X21	Amount of Osusu per month	Naira (₦)	This increases the amount of money available for investment by and individual overtime.
X22	Distance to farm	Km	The nearness to and from farm influences type of crops cultivated, care and yield
X23	Distance to market (accessibility)	Km	This influences what could be conveyed to the markets and the violence of sale hence rural income
X24	Fuel wood used per month.	Number of bindles	Determines level of exploitation and utilization of forest/vegetation resource and exposure of land to erosion.
X25	Price per bundles of fuel wood	Naira (₦)	As a source of rural income, the volume of sale contribute to rural economy and hence development
X26	Income from hunting	Naira (₦)	Determine what is set aside for development activities. Improves nutrient intakes and health of rural people

Table 1. Contd.

X27	Income from fishing	Naira (₦)	Determine what is set aside for development activities. . Improves nutrient intakes and health of rural people
X28	Income from cane craft (rural craft)	Naira (₦)	Determine what is set aside for development activities. Tourism potential hence rural income
X29	Income from sales of stakes for pumpkin	Naira (₦)	Determine what is set aside for development activities. Facilitates growth of related crops.
X30	Quantity of Sand extracted per week	Number of trucks in cubic meters	Determine level and rate of exploitation
X31	Quantity of gravel extracted per week	Number of trucks in cubic meter	Determine level and rate of exploitation
X32	Quantity of timber harvested per month	Number of logs	Determine level and rate exploitation
X33	Quantity of fire wood harvested per week	Number of bundle	Determine rate of exploitation
X34	Average quantity of farm produced per season	Number in the unit of crops	Determine rate of exploitation
X35	Quantity of 'ndisa' yam stakes harvested per season	Number of bundle	Determine rate of exploitation

Source: authors' field survey (2007).

Table 2. Rural development indicators (Y-dependent variables).

Variable		Parameter	Justification
Y1	School	Number	Development of human capital. Promotes literacy and education of the rural populace.
Y2	Drinking water	Distance in km	Enhance rural health hence improves economic activity and productivity. It affects quantity and quality available, which affect household hygiene and to a large extent affect environment health of the community.
Y3	Houses connected to electric		Electricity attracts rural enterprise, facilitates rural commerce and improve living condition. Create enabling environment for economic growth
Y4	Health facilities	Number	A healthy workforce is a productive one. Without good health no society or individual can develop. The richness of development depends on how healthy the populace is. Hence Millennium Development Goals number 4, 5 and 6 are directly link to the promotion of good health services in our society. Health care facilities is therefore essential for improve economic activities
Y5	Skill acquisition center	Number	Skill acquisition finds application Development Goals number 1with focus on poverty eradication, which focuses on development of skill to raise the component of people for income generation. The establishment of skill acquisition centres in rural areas is one means of empowering the people individually and collectively to contribute to rural economic development.
Y6	Community bank	Number	Create enabling environment for economics growth provides loan rural farmer. Efficient management of rural income. Also provides employment
Y7	Culture(sacred forest shrines etc)	Hectares (m^2) and Number and size	Biodiversity conservation could be reconfigured for tourism purpose

Table 2. Contd.

Y8	Agricultural storage facilities	Number	Efficient management and utilization of environmental resources. Enhance rural income. Provides employment
Y9	Co-operative development shop	Number	Co-ordinate rural commerce for efficient and effective exchange of goods and services. Improves employment
Y10	Length of paved roads	Km and number	Create enabling environment for economic growth facilitates movement of goods and persons hence improves rural investments and aesthetics.
Y11	Local industries	Number and type	The local industries offer employment especially for youth who otherwise will be idle and restive with adverse consequent to the community. As the saying goes'' an idle man is a devil workshop'' Local industries enhance economic growth. Ensures that some percentage of the bulk of the body of natural resources are retained or captured locally.
Y12	Adult literacy centres	Number	Provide education and training hence reducing literacy level. Improves rural living condition.
Y13	Motor park	Number	Facilitates movement of good, persons and services to and from rural areas. Enhance rural income and live ability. Farmer rely on these for easy movement production.
Y14	Markets	Number	Farmers rely on this for exchange of their products. Facilities rural commerce hence income.
Y15	Village hall	Number	Facilities effective administration and transmission of information. Rules and regulations within the community.
Y16	Children in school	Number	Indicates level and potentials human resources utilization for further development.
Y17	Income from farming	Naira (₦)	Indicate or measures development potentials of the community, as well as level of exploitation and utilization of resources.
Y18	Income from fuel wood	Naira (₦)	Indicate or measures development potentials of the community, as well as level of exploitation and utilization of resources.
Y19	Income from sand, laterite	Naira (₦)	Indicate or measures development potentials of the community, as well as level of exploitation and utilization of resources.
Y20	Income from hunting	Naira (₦)	Indicate or measures development potentials of the community, as well as level of exploitation and utilization of resources.
Y21	Income from fishing	Naira (₦)	Indicate or measures development potentials of the community, as well as level of exploitation and utilization of resources.
Y22	Income from rural craft	Naira (₦)	Indicate or measures development potentials of the community, as well as level of exploitation and utilization of resources.

Source: Authors' field survey (October, 2007).

the independent (X) variables. Rural development is handicapped by the quality and quantity of its human resources. With the pull exerted by the urban sector, rural areas are left with younger and older elements of the population who are less productive but more consumptive labour force. Fuller and effective utilization of available productive rural resources is therefore a function of the age of farmers.

Factor 5: Distance factor

X22 = Distance to farm, 0.56

This factor accounts for 7.3% of the variation within the independent (X) variables. This factor is so named because of its influence on primary production activities. The farm land activities are characterized by fragmented landholdings. Enormous time is wasted moving from one plot to another. The unprogressive nature of farm tenancy arrangement that is at work, the conditions of tenancy are fluid and informal and could involve plot allocation of several kilometers away from home. Therefore the distance to farm land does not only influence the number of people meaningfully engaged in farming but also the level of farmers' productivity.

Extraction and naming of rural development factors

Five major factors were extracted from the twenty two 22) original variables in the data set after being

Table 3. Rotated factor matrix for socio-economic activities in Uyo rural communities.

S/N	X-variable	F1	F2	F3	F4	F5	Communality
X1	Farm size	0.31755	0.53639	–0.70579	–0.15842	–0.29003	0.99591
X2	Labour	0.88429	0.16036	–0.12669	0.00800	0.35331	0.94863
X3	Age of farmers	–0.44526	–0.10423	–0.21707	0.81287	0.12724	0.93319
X4	Crops	0.70617	0.10213	0.56691	0.20923	–0.08073	0.88079
X5	Farming implements	0.63209	0.72180	0.21266	0.06726	–0.5435	0.97324
X6	Land fallow period	0.74333	0.00408	–0.35232	0.03794	–0.49928	0.92741
X7	Farm additives	0.88439	–0.16036	–0.12669	–0.00800	–0.35331	0.94863
X8	Farm product sold	–0.29484	0.46003	–0.66136	–0.44854	0.20536	0.97931
X9	Waiting period before harvest	0.88429	0.16036	–0.12669	0.00800	0.35311	0.94863
X10	Price per bag of garri	0.72180	0.35572	–0.52528	0.09238	0.24437	0.99169
X11	Price per ton of palm oil	–0.80995	0.31904	–0.45938	0.19013	0.29803	0.98874
X12	Price per bag of kernel	-0.11426	0.22861	-0.12075	0.05418	0.31106	0.90211
X13	Average cost of a plot of land	–0.60605	0.54806	0.34287	0.19013	0.29803	0.91020
X14	Income from farming	0.31755	0.53639	–0.70579	–0.15842	–0.29003	0.99591
X15	Loan received for farming	0.26625	0.41286	-0.14022	0.32171	-0.06441	0.84396
X16	Farmers cooperative society	–0.06448	0.72212	0.39988	0.42642	–0.02148	0.86781
X17	Average Savings per farming season	–0.43563	0.59174	0.29757	0.33431	–0.18072	0.77290
X18	Sacred forest shrine etc.	–0.11583	0.90470	0.11773	0.20242	–0.00237	0.88674
X19	Sand/laterite extraction sites	–0.04020	0.72394	0.46998	–0.16609	–0.17946	0.80638
X20	Income from sand/laterite per month	0.88429	0.16036	–0.12669	0.00800	0.35331	0.89533
X21	Amount of Osusu per month (saving)	–0.57400	0.73870	–0.24500	0.01255	0.24937	0.99775
X22	Distance to farm	0.43864	–0.06191	0.42490	–0.49444	0.56467	0.94010
X23	Distance to market (spatial access)	0.26299	–0.86524	0.19139	0.01619	–0.13458	0.87281
X24	Fuel wood used per month	0.92465	0.09509	0.08970	0.24101	0.21261	0.97353
X25	Price per bundle of fuel wood	0.95033	–0.09601	0.27968	–0.02683	0.08523	0.99855
X26	Income from hunting	0.47651	0.82390	–0.08573	–0.22757	0.12954	0.98180
X27	Income from fishing	0.27520	0.58130	0.69960	0.21882	–0.08434	0.95811
X28	Income from cane craft (rural craft)	0.78907	0.04023	–0.44354	0.36351	0.11376	0.96607
X29	Income from stakes for pumpkin	–0.32557	0.13147	0.46498	–0.78680	0.19742	0.99753
Eigen Value		9.42239	6.75068	4.45495	2.74039	1.97112	
Variance (%)		34.9	25.0	16.5	10.1	7.3	
Cumulative (%)		34.9	39.9	76.4	86.5	93.9	

Source: Authors' field data (2007).

(subjected to factor analysis. These were referred to as development factors and altogether accounted for 94.7% of the total variance in the data set of Y variables as Table 4 shows. The communalities are high and thereby indicating the importance of the variables considered in the study and were named according to the high positive loading of the variables.

Factor 1: Rural infrastructure factor

Y3– house connected to electricity, 0.92
Y11– Local industries, 0.90
Y4– Health facilities, 0.88
Y1– Schools, 0.77
Y10– Length o f paved roads, 0.79

This was so named because it loads highly and positively on all activities within the communities. This factor accounts for 44.8% of the total variation in the data set of Y-dependent variables it measures. An examination of this factor reveals lapses in the provision of rural infrastructures. The presence of adequate infrastructures enhances the production activities, promotes literacy and education in case of schools. It is also a measure of social satisfaction in the physical development of any community.

Factor 2: Rural income factor

Y21– Income from fishing, 0.74
Y9– Co-operative development shop, 0.68

Table 4. Rotated factor matrix for rural development indicators in Uyo rural communities.

S/N	Y-variable	F1	F2	F3	F4	F5	Communality
Y1	School	77088	-0.02276	-0.47269	0.23816	0.32761	0.98227
Y2	Drinking water	-0.37668	0.50684	0.66584	0.09368	0.37243	0.98960
Y3	House connected to electric	0.92394	-0.31659	0.10864	0.00102	0.04618	0.96783
Y4	Health facilities	0.88923	0.13129	-0.05704	0.32109	0.21019	0.95849
Y5	Skill acquisition centre	0.79814	-0.50953	0.28946	0.02881	0.13046	0.99828
Y6	Community bank	0.79814	-0.50953	0.28946	0.02881	0.13046	0.99828
Y7	Cultural centre (sacred forest, shrines)	0.73167	0.54044	-0.08939	-0.19931	-0.29808	0.96397
Y8	Agricultural storage facilities	0.34117	0.28401	-0.15721	0.29642	0.50162	0.91106
Y9	Co-operative development shop	0.36614	0.68142	-0.36414	0.39159	0.14475	0.90528
Y10	Length of paved road	0.79814	-0.80953	0.28946	0.02881	0.13046	0.90528
Y11	Local industries	0.90111	0.13453	-0.16535	-0.32165	-0.16698	0.98878
Y12	Adult literacy centres	0.79814	-0.50953	0.28946	0.02881	0.13046	0.99828
Y13	Motor park	0.14411	-0.42867	-0.24419	-0.27114	0.03886	0.80113
Y14	Markets	0.80661	31410	-0.10550	0.16953	0.08606	0.79655
Y15	Village hall	0.14393	0.21545	0.53037	0.61328	-0.32998	0.83343
Y16	Children in school	0.91603	-0.01998	-0.04117	-0.02869	-0.24846	0.90375
Y17	Income from farming	0.14389	0.27972	0.79775	-0.47634	-0.19003	0.99836
Y18	Income from fuel wood	0.71593	0.51084	0.15953	0.07999	-0.39105	0.95828
Y19	Income from sand, laterite	0.27302	0.16632	-0.10802	-0.83594	0.34616	0.93250
Y20	Income from hunting	0.46764	0.65838	0.35401	-0.29621	0.10917	0.97713
Y21	Income from fishing	0.41985	0.74274	-0.44112	-0.01537	0.18407	0.95663
Y22	Income from rural craft	-0.20150	0.45851	0.71585	0.24180	0.33398	0.93328
Eigen value		80.96382	30.89552	20.98492	10.95226	10.14234	
Variance (%)		440.8	190.5	140.9	90.8	50.7	
Cumulative (%)		440.8	640.3	790.2	890.0	940.7	

Source: Authors' field data (2007)

Y20– Income from hunting, 0.65
Y18– Income from fuel wood, 0.51

The factor accounts for 19.5% of the variables within the Y-independent variables. This measures level of income, the development potentials of the communities and the financial stability of the dwellers and ensures a level of livelihood that may be sustainable.

Factor 3: Rural employment factor

Y17– Income from farming, 0.79
Y2 – Income from rural craft, 0.71

This factor accounts for 14.9% of the variation within the Y-dependent variables. This is so named because it measures the level of stability and movement of human capital within rural communities. The entire population of labour force mostly the aged is involved in the factor. The introduction of modern farming techniques and adequate incentives may help to check rural-urban drift of the rural-farm labour force.

Factor 4: Rural administration factor

Y15– Village hall, 0.61

This factor accounts for 9.8% of the variance within the Y-independent variables and is so named because it demonstrates the capacity of rural communities to adapt to their cultural and traditional values with socio-economic development. The level and pattern of development of communities is thus a measure of the healthy relationship between families, communities and clans. Effective administrative set in rural areas could facilitate mobilization and sensitization of the people for collective developmental activities.

Factor 5– Agricultural storage facilities factor

Y8– Agricultural storage facilities, 0.50

This factor accounts for 5.7% of the variance within the Y-dependent variables. It loads highly and positively on the variable of development of rural communities.

Table 5. Impact of socio-economic activities on rural development.

Parameters	Y1	Y2	Y3	Y4	Y5
Multiple R			0.82403	0.86513	0.84130	0.93748	0.57854
R square			0.67903	0.74845	0.70779	0.87887	0.33470
Adjusted R^2			0.62554	0.11956	0.65909	0.57606	-1.32854
Standard Error			0.61193	0.93832	0.58388	0.65111	1.52596
F			12.69339	1.19012	14.53321	2.90235	0.20124
Sig. F			0.0119	0.5154	0.0088	0.2759	0.9352

Table 6. Level of resource exploitation and rural development.

Parameters	Y1	Y2	Y3	Y4	Y5
Multiple R	0.99976	0.75649	0.99976	0.71596	0.84003
R square	0.99952	0.57228	0.98433	0.51259	0.70565
Adjusted R^2	0.99663	0.50099	0.96891	0.43136	-1.06045
Standard Error	0.5806	0.70640	0.78236	0.75408	1.43543
F	345.941	8.02788	5.19384	6.31003	0.39955
Sig. F	0.0441	0.0298	0.3236	0.0458	0.8353

Agricultural storage facilities are vital to rural development. This is due to the perishability nature of rural produce. The provision of these facilities will reduce wastage during seasons of surplus harvest.

Impacts of socio-economic activities on rural development

This relationship was investigated using a multiple correlation/regression analysis. A multiple correlation/regression analysis of the five extracted X-independent variables on each of the five extracted Y-dependent variables defines the strength of association of the two sets of variables as well as the causal relationship between the variables. For the Y1 factor defined and named as Rural Infrastructure Factor, a multiple correlation coefficient of R = 0.82402 was obtained indicating that about 67.9% of this factor is impacted by the five extracted X- (components) factors. The square of the multiple correlations co-efficient R indicates the degree of predictability of the value of Y with all the X- components as inputs. This result of the multiple correlation/regression analysis is presented in Table 5.

In the same way, the multiple correlation/regression analysis for the second Y2 factor named as rural income factor showed strength of association of 0.86513. This means that 74.8% of the total value of Y is explained by the five extracted X independent factors. This indicates that the five X-component factors as inputs for factor 2 yields a very high significant. For the third Y3 factor (Rural Employment factor) the multiple correlation coefficient of 0.84130 indicates that about 70.8% of this factor is contributed by five extracted X-independent factors. The square of the correlation coefficient of 0.70779 indicates that about 70.7% can be predicted considering all the inputs of X. For the Rural Administration (Y4) factor, the multiple correlation coefficient of 0.93748 indicates that about 87.9% of this factor is contributed by five extracted X-independent factors. The square of the correlation coefficient of 0.87887 indicates that about 87.8% of Y can be predicted considering all the inputs of X. In the same way, the multiple correlation/regression analysis for the Y5 factor named as rural health reveals strength of association of 0.57854 as a multiple correlation coefficient R. This is about 33.5% contribution to the factor named as rural health factor. This is not very significant as F = 0.9352.

Level of resource exploitation and rural development

This relationship was investigated using the six X-variables (X30 – X35) to test the relationship between the rate of exploitation and rural development in the study area. Multiple regressions of the six X-independent variables were carried out on the five-y extracted development factors and the result is presented in Table 6. For Y1 factor defined and named as rural infrastructure, a high multiple correlation coefficient (R = 0.99976) was obtained. The square of the multiple correlations co-efficient is 0.99952 indicating that 99% of the total value of Y can be predicted with the six variables as inputs. This result is very significant as F = 0.0441. In the same way, the multiple correlation/regression analy-

Table 7. Number of rural infrastructure per community.

Infrastructure	Ifa Ikot Akpan	Ekpiri Nsukara	Nsukara Offot	Nung Asang	Ikot Ofong Ikono	Ndue Otong Ikono	Ndue Otong Oku	Iba Oku
School	3	2	1	3	1	1	2	2
Health	1	-	-	1	-	-	-	-
Skill Acquisition centre	-	-	-	1	-	-	-	-
Number of paved road	-	-	-	1	-	-	-	-
Village hall	1	1	1	1	1	1	-	1
Local industry	4	3	3	5	2	-	3	-
Adult literacy centre	-	-	-	1	-	-	-	-
Market	1	1	-	1	1	-	-	-
Total	10	7	4	13	5	2	5	3
Percentage (%)	20	14	12	26	10	4	10	6

Source: Authors' field Survey (October, 2007).

sis for all the factors yielded very high coefficients. The error term for Y5 was however positively high thereby indicating insignificant relationship with factors on the rate of resource exploitation.

DISCUSSION

The relationship between socio-economic activities and rural development in Uyo Local Government Area is expressed through the results of the factor analysis and multiple correlation/regression models.

Rural infrastructure

This can enhance efficient, effective and sustainable exploitation and utilization of rural resources. It also makes the society liveable. Data collected revealed the state of infrastructural development in the study area. Infrastructural development is generally poor in all the communities studied except for Nung Asang and Ifa Ikot Akpan that have some significant advantage (Table 7). This is likely due to abundance of natural resources. While infrastructure alone cannot induce economic growth, its absence is likely to constrain development especially in farm productivity and development of off-farm activities. This finding agrees with Aluko (1990) and Ekong (2003) who reported that infrastructures such as schools, health care facilities, transportation and roads will enhance rural dwellers production, distribution and consumption activities and ultimately the quality of their lives.

Rural income

The majority of rural dwellers derive their incomes from primary production, namely agriculture and extractive activities. Those with large farm sizes or plots tend to have income in a year. The reverse is true for those having smaller farm sizes. The agricultural system in rural communities of Uyo Local Government Area is dominated by (a) subsistence where market exchange is only incidental and (b) by farm size fragmentation due to land tenure system. Stating the obvious, most rural dwellers can rarely get rich as their incomes in many cases are not commensurate with the tasks involved in production and extractive processes. According to Olayide (1981), subsistence farming is oriented primarily to meeting the consumption requirements of the farmers and their households and as such any market exchange that takes place is peripheral and incidental. Similarly, Ekong (2003) and Anijah-Obi (2003) are of the view that subsistence farming is characterized by relatively isolated holdings, customs, rudimentary production techniques, tendency to self-sufficiency with regards to food production, and absence of any significant measure of economic calculations by producers.

Rural employment

Another development factor, which was significant in these communities, is rural employment. Data on employment distribution for farm activities in the study area was collected. Although every respondent is engaged in farming and other activities, the study reveals that farm labour is scarce and expensive (Table 8). The young and educated rural dwellers are not attracted to this form of employment given the relatively low status and prestige attached to farming occupation. Farming in these communities is dominated by aged who lacked the stamina to work the land effectively and thus, relied on hired labour to supplement family labour. Okoji (2000) in his study of Agriculture in South Eastern Nigeria agrees with this observation. Okoji maintained that the family constituted the major source of farm labour supply but

Table 8. Employment distribution in farming activity per community.

Community	Number of respondents (farmers)	Number employed in farming	Percentage of employed
Ifa Atai	76	228	25.3
Ifa Ikot Akpan	26	52	5.8
Ekpiri Nusara	55	57	6.3
Nsukara Offot	116	232	25.8
Nung Asang	36	108	12.0
Ikot Offong Ikono	19	57	6.3
Ndue Otong Oku	43	129	14.3
Iba Oku	18	36	4.0
Total	389	899	100

Source: Authors' field survey (October, 2007).

present supplies from this source have been drastically reduced and as a result farmers are increasingly dependent on hired labour, however, because of their lean financial resources, labour has become the most expensive and most restrictive of the factors of agricultural production in the region. Similarly, Todaro and Smith (2005) list three forces restricting the growth of output of rural subsistence farming to include labour scarcity during the busiest part of the growing season, planting and weeding times. They found out that the demand for workers during the early weeks of this season usually exceeds all available rural labour supplied.

Rural administration

Another development factor is rural administration. The rural communities' shared beliefs are nurtured and cherished by the people. This is expressed through restriction to sacred forests, streams and exploitation of palm fruits for some specified periods. There exist kinship relations, mutual trust and clean environment, built around local administrative rules and custom. An examination of this factor however reveals some lapses especially in the enforcement of restrictions covering the exploitation of certain naturally occurring resources. For instance, sand, gravels and laterite in some of these communities are extracted with little or no regards to its adverse effects on the environment. Streams, the main source of water supply in these communities, are polluted. Village roads are seriously damaged by heavy duty tippers which carry the sand and gravels. Also communities' forests are fast disappearing due to uncontrolled logging and firewood exploitation. The administration should strive to harmonize effective use of its natural resources with conservation and protection of its environment as cherished by its customs and tradition.

Rural health

The fifth factor, which is rural health, is crucial to human socio-economic activities. In fact, it constitutes a significant impact on primary production and other related activities. A healthy society is a productive society and the richness of development depends on how healthy the populaces are. Health indicator in Uyo rural communities is very poor as exemplified by the absence of orthodox health facilities. A close examination of the factor reveals a relative reflection and influence of belief and value system of rural dwellers. The rural communities rely heavily on indigenous and traditional health practices and their herbal knowledge than orthodox medicines. They prefer consulting the herbalists and prayer homes. This likely explains a low rating of health factor in socio-economic activities. However, a sub-group engaging in the extractive activities such as sand, gravel and logging seems to be more conscious of health need to maintain fitness for their strenuous work. This create in them appreciation for proper medical services. This subgroup tends to rely on the orthodox medicine; hence they visit the patent medicine shops where available for substitute to the herbal medicine. It should be noted that farming and extractive activities demand a great deal of energy and without good health there will be no stamina to carryout cultivation processes. Good health care facilities are therefore essential for any productive and sustainable development activities.

Conclusion and recommendations

The research focused on the numerous links between the community and environment that affects rural development. It highlighted major factors that significantly influence rural development in the study area using chosen statistical models. The implication of the results is that there are five major factors that could have significant influence on rural community development and thus, suggest the articulation of policies towards such issues. The farm activities factor has the potentials to influence rural development and therefore the existing customary land tenure practices, which are at variance with larger farm sizes, should be checked to permit

acquisition of larger farm plots for agricultural activities. Other activities such as labour, farm activities, cropping, fuel wood and fallow period dominate this sector. It has a paramount influence and needs a focus of rural development policy. In the health sector, it is recommended that collaborative efforts involving the public and private sectors should be encouraged. Adequate provision should be made for safe drinking water supply in rural communities while access to healthcare facilities should be made free for the rural populace. Above all, Sanitary Inspectorate Department should be set up to monitor levels of sanitation in rural communities. Given that rural infrastructure generate a number of positive externalities and facilitate rural commerce and income, the study recommends public-private partnership in the provision and maintenance of basic rural infrastructure. The exploitation of common resources such as sand and gravel could improve rural economy and as such should be carried out under the supervision of village development committee in order not to undermine the sustainability of the environment in the process of resources exploitation as well as to channel the monetary gain into useful community oriented development projects that will enhance welfare of the community as a whole rather than individual gain.

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