



# REPOSITIONING AGRICULTURE

*For* SUSTAINABLE MILLENNIUM DEVELOPMENT GOALS  
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## HEALTH CARE ACCESSIBILITY ON FARM HOUSEHOLD PRODUCTIVITY IN AKWA IBOM STATE, NIGERIA: IMPLICATIONS FOR SUSTAINABLE DEVELOPMENT

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### **Abstract:**

*This paper examines the impact of farmers' access to orthodox health care on their agricultural productivity. Employing data obtained from farming communities in Akwa Ibom State, Nigeria, findings from regression analysis revealed that access to health care services positively impact on farm output. Farmers Plot size and planting materials were found to significantly impact on the output of farmers with access to health facilities while these, labour and fertilizer had positive impact on the output of farmers without access to medical facilities. However, both farmers with access to health care and those without were found to be technically efficient in the use of labour, fertilizer and planting materials but inefficient in the utilization of land.*

### **Introduction**

The problem of inadequate and inaccessibility to health care facilities particularly in the rural communities have occupied the attention of both national Government as well as international development agencies such as WHO, UNICEF, EU, USAID, etc. for the past couple of decades. The concern has arisen from the skewed distribution of health facilities between the rural and urban areas. Inyang (1994) had identified dichotomy in the health sector in rural and urban areas of Nigeria. He noted that Lagos State for instance, had 30% of health facilities in the whole country as at 1992. In the same vein, Onekhrage (1973 cited in Umoh, 2000) also reported that by 1973, 10 out of 17 functioning health facilities in Benin division were located in Benin City. The problem of accessibility has also been reported in the literature. Umoh (2000) reported that as at 1995 the population per medical practitioner was 3707 while access to health services was 67% and 56.6% in 1990 and 1994 respectively.

Inaccessibility to health services has a lot of implications for various sectors of a nation's economy. This is particularly so for the agricultural sector. According to IFPRI (2006), agriculture is tied to human health at the most basic level. Agriculture produces food, fiber, and medicine and provides livelihoods to millions of farmers so that they can purchase other necessities of life that contribute to their good health. The chain of cause and effect goes both ways. Good health affects agriculture by boosting people's capacity for work and thus increasing how much they can produce. It enhances their ability to take risks with new crops or farming method- risks that might pay off with better production and income. On the other hand, when unhealthy farmers are unable to produce enough agricultural goods to earn a decent livelihood, their poverty and consequent malnutrition further worsen their health.

A study by UNICEF (1987) further underlines the devastating effect of this lack of access. The study shows that Guinea worm diseases alone temporarily incapacitated 2.5 million people, mostly farmers. The study also revealed that apart from shortages of financing for agricultural activities due to diversion of fund to the treatment and probable eradication of guinea worm, the disease has over the years constituted a major impediment to not only sustenance but a rise in output. It estimated the loss to rice production alone from the disease at US 50million dollars in the 1980s.

From the 1980 decade to 2000, there have been several interventions in the health sector aimed at enhancing peoples' access to quality health services. It could be assumed that the ultimate aim of these efforts was to improve their health and productivity for national development. The objective of the study that culminated in this paper was to assess the impact of farmers' access to health services on their farm productivity.

## Research Methodology

### Data Collection Techniques

The data used in this research work were principally primary in nature. They were obtained through the use of a set of structured questionnaires, personal interview and discussions. A set of structured questionnaires which contained questions on demographic characteristics of the respondents, their health care service and agricultural production were administered on one hundred (100) farmers randomly selected from the urban and rural areas of the state. Households were selected through simple random procedure. Eighty-two (82) of the questionnaires were returned out of which two (2) were discarded for reasons of incomplete information and eighty were used for analysis.

### Methods of Data Analysis

The data obtained were analysed using descriptive statistics. The relationship between health care accessibility and farm resource use efficiency was analysed using the ordinary least squares method (OLS).

$$Q = f(LA, LB, FE, PL, MG)$$

The Cobb-Douglass production function was employed in the empirical estimation. It is extensively used in production function analysis. The implicit form of the form is:

$$Q = b_0 \cdot LA^{b_1} \cdot LB^{b_2} \cdot FE^{b_3} \cdot PL^{b_4} \cdot MG^{b_5}$$

The linearize forms of the four functions were;

$$\text{Double- log: } \ln Q = b_0 + b_1 \ln LA + b_2 \ln LB + b_3 \ln FE + b_4 \ln PL + b_5 \ln MG + e_i$$

Where Q = Output of crops (in grains equivalent)

LA = Land Area (in hectares)

LB = Labour (in mandays)

FE = Quantity of fertilizer used (in kilogram)

PL = Planting materials (in Kilogram)

MG = Management (proxied by highest level of education attained).

$e_i$  = Stochastic error term to be estimated.

Four equations were estimated: These were:

**Equation 1:** For respondents with access to modern health care. The sample size for equation 1 was 53 respondents.

**Equation 2:** For respondents without access to modern health care. The sample for equation 2 was 27 respondents. The same variables as in equation 1 were included in the equation.

**Equation 3:** For the third equation, the data on the respondents with access to health services and that of those without access were pooled together and the same equation and variables were employed. This attempt was aimed at ascertaining if there is any discerning improvement in the result that can be attributed to the quality of data or sample size.

**Equation 4:** For equation 4, a dummy variable was added to the pooled data. This was an attempt to ascertain if the variation in the result could be attributed to shift in the intercept. *A priori*, the coefficients of all the variables are expected to be positively signed.

## Results And Discussion

### Types of Health Care Services Available To Farming Households.

There are two broad types of health care services available to the farming households. These include the modern health care services: (i) General/Specialist Hospitals, Primary Health Centers and Chemists and other such institutions applying orthodox methods of treatment, herein referred to as modern medical services, and (ii) the Traditional Health care services. The result presented in Table 1 reveal that about 92 percent (74) of the respondents have access to primary health care facility, 63.75 percent (51) respondent have access to chemist facility and 33.75 percent (27) of the respondents have access to traditional medicine.

From the result, the respondents picked more than one health care services as being available and accessible to them. That majority of the respondents have access to primary health care facility is not unexpected since the study was conducted in rural communities. The focus in Nigeria is on the provision of primary health care facilities in the rural communities while the secondary and tertiary health institutions such as general hospitals and specialist/teaching hospitals are established mostly in the urban areas. Indeed general hospitals are only located in the Local Government Headquarters while the only Teaching Hospital – The University of Uyo Teaching Hospital is located in the State Capital – Uyo.

Nonetheless, that up to 60 percent of the respondents depends on the chemist shop for the medicare is instructive. It may imply that majority of the rural dwellers are indulging in self medication given that this source of medicare has no skills for diagnosis and prescription. The outcome of this could be fatal to the economy particularly that agrarian economy of the rural which stand to loose enormous manpower to concomitant drug abuse and possible death.

**Table 1: Distribution of Respondents by Types of Health Care Services Used.**

Types Of Health Care Services Available	No. Of Respondents*	Percentage*
General /Specialist Hospital**	1	1.25
Primary Health Center**	74	92.5
Chemist**	51	63.75
Traditional Medicine	27	33.75
<b>Total</b>		

\* There are cases of multiple access to health facilities. Therefore, the figures will not add up to 80 i.e. 100%.

\*\* These are considered as modern health care services/facilities

Sources: Field survey, 2001.

#### Level of Accessibility To Modern Health Care Services

The results of level of access to health care services by the respondents are presented in Table 2. The respondents were assessed based on how regular they have access to modern health care services. Three groups of respondents were identified. These include those with regular access health care services, those with irregular access and those without access to modern health care services. The respondents with regular access to health services made up 30 percent (24), 36.25 percent (29) respondents had irregular access to modern health care service and above 33 percent (27) of the respondents had no access to modern health care services. In summary, 66.25 percent (53) of the respondents dominantly use modern health care facility and 33.75 percent (27) Of the respondents claimed not to have access to modern health care services but traditional health facilities. If the number of respondents with irregular access and those without access to modern health care services are put together, it becomes obvious that quite a sizeable proportion of the rural population does not access health services as when they need it. Field observations show that primary health care centres are located far between on rural community and another. In some cases medical personnel are not regular at the duty post to attend to patients. This situation and the well known high cost of medical services from private care providers may account for lack of access of most of the respondents to modern health care services on a regular basis.

**Table 2: Distribution of Respondents By Regularity of Access To Modern Health Care Services.**

Regularity of Access to Modern Medicare.	No. Of Respondents	Percentage
Regular	24	30.00
Irregular	29	36.25
No Access	27	33.75
<b>Total</b>	80	100

Sources: Field survey, 2001.

### Impact of Health Care Accessibility on Farm Output

The impact of farmers' access to health services was estimated using the multiple regression. The results are presented in Table 3.

**Table 3: Result of Cobb- Douglas Production Function Estimation**

Variables	Coefficients			
	For Farmers with Access to Modern Health Care	For Farmers without Access to Modern Health Care	Pooled Data Without Dummy	Pooled Data with Dummy
Constant	-1.116 (- 0.749)	2.554 (2.598)	1.556 (1.671)	0.764 (0.804)
Land	0.110 (1.796)*	0.139 (3.922)***	0.151 (4.206)***	0.120 (3.287)***
Labour	0.310 (1.559)	0.267 (1.717)*	0.339 (2.456)***	0.366 (2.740)***
Fertilizer	- 0.133 (-1.133)	0.143 (2.902)***	0.05356 (0.893)	0.03894 (0.669)
Planting materials	1.170 (3.780)***	0.256 (1.987)**	0.455 (2.856)***	0.579 (3.591)***
Management	0.01687 (0.955)	0.0104 (-0.817)	0.01080 (0.863)	0.008816 (0.729)
Dummy				0.007197 (2.549)***
R <sup>2</sup>	0.59	0.90	0.67	0.70
R <sup>2</sup>	0.53	0.88	0.65	0.68
F-Value	11.260***	49.823***	30.592***	28.469***

\*\*\* = Significant at 1% probability level \*\* = Significant at 5% probability level \* = Significant at 10% probability level.

The regression results, presented in Table 3 shows that the include variables explain account for more variation in the outputs of farmers without access to modern health services than those without access. Comparing the adjusted R-square of the different groups of respondents, the group with no access to modern health care facilities has 0.88, while the adjusted R-square for the respondents with access to modern health is 0.53. This implies that all the independent variable explain 88 percent and 53 percent of the variation in agricultural outputs of the two groups respectively. The result further reveals that land and planting materials are important determinants of the output of farmers with access to modern medical services. They are significant at 10% and 1% levels respectively. On the other hand, land, labour, fertilizer and planting materials are the major determinants of outputs of farmers without access to modern health care facilities. They are significant at 1%, 10%, 1% and 5% levels respectively.

However, the result from the pooled data throws improvement in the explanatory power of the variables included in the model of farmers with access to modern health care services as compared to those without. This model confirms the importance of land, labour and planting materials on the quantity of output. Each is significant at 1% level. Introduction of a dummy, however, improved the explanatory power of the variables to 68 percent. This improvement simply shows that the difference observed in the model for the two groups of farmers is not by chance. The values of the F-statistics for the two groups were 11.26 and 49.82 for groups 1 and 2 respectively.

#### Resource Use Efficiency and Productivity:

The terms resource use efficiency and productivity are used interchangeably in this study and the efficiency referred to is technical efficiency. This, according to Farrel cited in Olayide and Heady (1982) is a measure of the farm firm's success in producing maximum output from a given set of inputs. It indicates all those undisputed gains that can be obtained by gingering up the management. The resource use efficiency was assessed by first computing the marginal value product (MVP) of individual input and then comparing this with the marginal factor cost (MFC) or unit price of the input in question. The MVP was computed thus:

$$MVP = MPP \times P_y$$

Where: MVP = Marginal Value Product.

MPP = Marginal Physical Product

Py = Price per Unit of Output (unit output price i.e. the unit price of grains equivalent).

Marginal value product was calculated for two groups of respondents.

**Group 1:** Farmers with access to modern health care facilities.

**Group 2:** Farmers without access to modern health care facilities.

A particular input was adjudged to be used efficiently when the marginal value product (MVP) is greater than marginal factor cost (MFC). The result from table 13 reveals that the respondents in group 1 were inefficient in their use of land as more is put in to get a little. The respondents in group 1 were efficient in their use of labour, fertilizer and planting materials.

**Table 4: Estimates of Efficiency Parameters: APP, MPP, MVP, MFC of Respondents with Access to Modern Health Care Facilities.**

Resource	APP	MPP	MVP	MFC	MVP/MFC
Land	0.37	0.06	0.6	200	0.003
Labour	249.04	84.42	844.2	300	2.814
Fertilizer	104.35	5.59	55.9	20	2.795
Planting materials	169.78	77.25	772.5	100	7.725

Unit output price = ₦10.00; Source: Field Survey, 2001.

Estimates of efficiency parameters presented in Table 4 indicate that a change in the size of land will bring about a less than proportionate change crop output while there are more than proportionate change from the use of labour, fertilizer and planting materials. The ratio of marginal value product and marginal factor cost ( i.e. the unit price of input)

From the result, it reveals that respondents in group 2, those who do not have access to modern health care facilities were not efficient in the use of land. However, they were efficient in the use of other resources: labour, fertilizer and planting materials.

**Table 5: Estimate of Productivity/Efficiency Parameters: APP, MPP, MVP, MFC Without Access to Modern Health Care Facilities.**

Resource	APP	MPP	MVP	MFC	MVP/MFC
Land	0.34	0.05	0.5	200	0.0025
Labour	251.68	82.32	823.2	300	2.744
Fertilizer	106.25	56.95	569.5	20	28.475
Planting materials	176.32	80.23	802.3	100	8.023

Unit output price = ₦10.00; Source: Field Survey, 2001.

### Production Elasticity

The double log function was found to be the lead equation for all the functional forms estimated. The elasticity of the various inputs are presented in Table 6. For farmers with access to modern health care (Group I), the elasticity of each input except planting materials is less than unity. Fertilizer has negative elasticity. The result obtained implies that a unit increase in size of land, labour and managerial ability will lead to a less than proportionate increase in crop output. Further use of fertilizer will reduce output. This is indicated by the negative elasticity of fertilizer (-0.133). The elasticity of planting materials is greater than unity. The result could be interpreted to mean that a unit rise in the quantity of planting materials will result in increase in output by a factor of 1.17. For farmers without access to modern medical services (Group II), the elasticity of all the factors of production is less than unity. The scale coefficient, which shows the return to all the factors of production employed by the farmers, indicate that there is increasing return to scale to inputs used by farmers with access to modern health services (scale coefficient is 1.473). In the contrary, there is decreasing return to scale to inputs employed by farmers without access to modern health services. This, to some extent, is reflection of the management ability of two groups of farmers. According Koutsoyiannis (1975), the most common cause of decreasing returns to scale is diminishing returns to management. It is also her position that increasing returns to scale are due to "technical and/or managerial

indivisibility". The result imply that access to modern health services enhanced the managerial ability of the farmers, translating to higher or increasing returns to changes in inputs.

**Table 6: Production Elasticity Estimates**

Input	Group I	Group II
Land	0.110	0.139
Labour	0.310	0.127
Fertilizer	-0.133	0.143
Planting materials	1.170	0.256
Management	0.017	0.010
Scale Coefficient	1.473	0.419

Source: Extracted from regression result

### Implications Of Findings For Sustainable Development

An analysis of productivity as is the case in this study is of fundamental importance to the national economy. This is because, among others, it helps to map out a strategy in accelerating the growth process of the nation. As evidence from the study a large proportion of rural dwelling farm households do not have access to modern medical services. This has serious implications to the Nigerian economy. This is particularly so when considered in the light of the other finding of the study that there is increasing return to scale to inputs used by farmers with access to modern health care services while those without record decreasing return to scale. Considering the importance of agriculture to the growth of the economy inaccessibility to modern health services and subsequent decreasing returns from this sector could negatively impact on all other sectors of the economy which depend on agriculture. These include agro-based industries, foreign earnings through agricultural export, the service sector (including public service and the military, even including the private sector) whose workers/members depend on the food from the agricultural sector. The results of this study calls for accelerated action on the provision of affordable modern health care facilities/services in agrarian community in order to raise farmers' productivity which ultimately would support national economic growth and development. It is a fact that if sustainable development of the economy must be attained, that sector which "oil the engine" of this growth must be maintained as distortion in this sector could make the much desired sustainable development which various Nigerian administrations have toiled for a mirage.

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