

Determinants of Adoption Decisions of Rural Youths in the Niger Delta Region of Nigeria

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ABSTRACT The study assessed rural youth response to improved farming practices and determined those variables affecting their adoption decisions in the Niger Delta region of Nigeria. Data were obtained from 332 young farmers sampled from 4 states in the region and analyzed using frequency tables and logistic regression. Results show an above average response to fishery (66.7%) and livestock (60%) technologies by the youths while response to crop innovations was below average (40%). Contact with extension agents (odd ratio = 2.39), income (2.22) and gender (1.46) were important determinants of young farmers adoption of crop-related technologies. Income (odd ratio=1.43), stock size (1.23) and gender (0.78) had a significant influence on the utilization of livestock-related technologies while extension contact (1.24), stock size (3.96), income (3.13) and gender (1.77) played important roles in their adoption of fishery technologies. The study encourages the expansion of extension services and credit facilities to young farmers in the region.

INTRODUCTION

The Nigerian agricultural sector is confronted with a critical challenge – an ageing farm population that is fast depleting (Nonyelu 1997). Unfortunately, the youths who are supposed to replace them are either withdrawing from or reluctant to go into farming as a profession largely because of the low productivity and economic returns associated with the profession (Nwonuah 2000). This situation is worsened in the Niger Delta against the background of its resource wealth (crude oil and gas), which is perceived to be of high economic returns. Many youths thus opt for the oil and gas industry as a lucrative employment alternative leading to the neglect of the agriculture sector.

To hasten the agricultural development process would require motivating youths to become active participants in the sector. However, the drudgery and low productivity associated with farming constitutes a major impediment to young people participation in the sector (Apantaku 2004). Interest of youths in agriculture remains low and unless those presently engage in farming are encouraged and have their welfare

improved upon future withdrawal from the sector is inevitable. Hence, the need for concerted efforts aimed at enhancing farmers' income. The concept of agricultural development as the degree to which farmers adopt farm technologies to increase production and income (Ogbimi 1997) suggest that a critical factor in achieving sustainable development is in establishing an effective youth-centered extension programme (Jibowo 1989). Use of improved farm technologies is a major way of raising farm yield and income. By disseminating technology information to them the ADP empowers youths with relevant knowledge and skills required to upgrade their farming practices in a competitive economy. The present study is therefore interested in ascertaining the extent of adoption of improved farm practices among rural youths.

An important consideration in adoption studies is the assessment of factors influencing farmers' adoption of farm innovations. Research has shown that economic and household characteristics of farmers affect their response to innovations (Windapo 2002). Thus, over the years adoption studies have tended to focus on factors influencing the adoption decisions of farmers (Atala et al. 1992; Obasi et al. 1994; Obinne 1991; Odiaka et al. 1997). These studies usually treat or handle farm-level data without clear distinction along age lines i.e. differentiating between the old and young farmers, with the consequence that no clear understanding of factors influencing

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rural youth adoption decisions have been established. When delineated along age lines, young farmers may be influenced by certain characteristics which otherwise may go unnoticed when data on farmers are aggregated.

This study hopes to bridge this research gap and provide empirical data on young farmers' characteristics, response to farm technologies and identify those variables affecting their utilization of the improved technologies in the Niger Delta region of Nigeria as an important step towards having effective youth-targeted policies in the region. Hitherto, government youth policies in the region have focused on unemployed youths and are usually designed to eliminate youth restiveness and promote communal peace (Adesope et al. 2000)

The specific objectives of this study are to:

1. Examine the social profile of rural youth (young farmers) in the Niger Delta region.
2. Identify the type of agricultural activities practiced by the young farmers.
3. Assess their response to improved farm technologies.
4. Estimate the effect of farm – level and personal characteristics of young farmers on their adoption decisions.

Hypothesis of Study

H₀: Socio – economic characteristics of young farmers have no significant influence on their decision to adopt improved farm technologies.

METHODOLOGY

The Niger Delta region of Nigeria consists of 9 States namely Cross River, Rivers, Ondo, Bayelsa, Delta, Edo, Akwa-Ibom, Abia, and Imo States. The region lies approximately between Longitude 5° 00' and 6° 45' East of the Greenwich meridian and Latitude 5° 00' and 6° 30' North of the equator. Ojamruaye (1999) reports that the region constitutes Africa's largest delta and the third largest mangrove forest area in the world, covering an area of about 70,000 km² (i.e. about 7.5% of Nigeria land mass) with an estimated population of over 20 million. Two-third of the Nigeria coastline lies in the region with an estimated coastline of 560km. The average rainfall of the area is about 1722 cm³ per annum with a mean temperature of 80° F. The vegetation is

mainly characterized by mangrove forest with a terminal broad zone of deciduous and evergreen forest (Niger Delta Development Commission 2003). The economic importance of the Niger Delta lies in its crude gas and oil resources, and over 90% of Nigeria crude gas and oil is produced in this region.

A multistage random sampling procedure was adopted in the selection of respondents. Four (4) of the 9 States that make up the Niger Delta were randomly sampled in the first stage, which represents about 45% of the States in the Niger Delta region. The sampled states are Ondo, Edo, Rivers, and Delta States, with 17, 18, 25 and 23 Local Government Areas (LGA) respectively. Ten percent of the LGAs were proportionally sampled in the selected states to give a total of 10. Two communities were further sampled from the selected LGA while 20 farming households were sampled in each community bringing the total respondents to 400.

Data were collected from the respondents by means of a pre-tested questionnaire, administered by trained enumerators. Three hundred and thirty two (332) responses were retrieved and analyzed using frequency tables and logistic regression.

Measurement of Variables

Young Farmers (Youth): Individuals between the age bracket of 18 and 40 years were considered as youth in line with the proposition of Otumara (2000).

Contact With Extension Workers: 'Frequent contact' describes those respondents visited monthly or bi – monthly by extension workers; 'rare contact' refers to those visited once in 2 months or less; while 'no contact' describes those never visited.

Adoption: Adoption score was measured by number of improved farm technologies adopted by the farmer. The adoption performance index was determined by taking the average adoption score (or number of innovations adopted), and dividing by total technology package then multiplying by 100. The relevant technology package was obtained from the ADP offices in the study area.

For the purpose of hypothesis testing respondents were dichotomized into low (coded zero) and high (coded 1) adopters based on their average adoption score using the mean adoption score as the cut-off. The independent variables

were measured as follows: Age (years); primary occupation (dummy: full-time farmer = 1; part-time = 0); educational level (dummy: primary education or less = 0; secondary/tertiary education = 1); gender (dummy: male = 1; female = 0); farm size (hectares); income (in naira); marital status (dummy: married = 1; single = 0); household size (number of people living together and feeding from same pot); contact with extension workers (number of visits).

RESULTS AND DISCUSSION

From Table 1 it is seen that most respondents were males (74.1%), 34–40 years old (45.8%) and married (67.5%) with a modal family size of 5–9 (46.4%). While farming constitutes a primary occupation to the majority (60.2%), 39.8% practiced farming as a secondary occupation with most of this latter group being government or civil service workers (20.5%). Almost 40% of the youths had secondary education while about 33% attended tertiary educational institutions. This result shows their educational background was fairly high and contrasts with general farm-level survey data which asserts and classify most Nigerian farmers as illiterates i.e. having no formal or low (primary) educational status (Ekong 2003). Their average annual earnings was ₦156,626.97 (i.e. an equivalent of 1,134.97 US dollars).

Respondents' scale of production was small with most (65.1%) cultivating not more than 1 hectare. This agrees with Okunlola and Adekunle's (2000) assertion that most or 86% of farmers in the southern part of the country cultivate below 2 hectares. Such low production scale is likely to keep farm output low, thus young farmers are confronted with a similar challenge faced by other farmers in the country.

Table 2 shows young farmers contact with extension agents ranged from rarely (38%), frequently (34.9%) to none (27.1%), indicating that most of them (72.9%) have had at least contact with extension workers in the last farming season. It is possible that extension workers find it more convenient to work with younger farmers given their more positive disposition to use new farming practices unlike their adult counterpart. Another possible explanation for the result is that the Niger Delta region, particularly Rivers, Delta, Bayelsa, Cross River and Abia States, are host to oil companies which are actively involved in agricultural extension services. Contact with

Table 1: Characteristics of respondents (n = 332)

<i>Characteristics</i>	<i>Frequency</i>	<i>Percentage</i>
<i>Age (years)</i>		
18 – 25	48	14.4
26 – 33	132	39.8
34 – 40	152	45.8
<i>Gender Distribution</i>		
Female	86	25.9
Male	246	74.1
<i>Marital Status</i>		
Single	108	32.5
Married	224	67.5
<i>Household Size</i>		
4 and below	116	34.9
5 – 9	154	46.4
10 and above	62	18.7
<i>Occupational Status</i>		
Farming (primary occupation)	200	60.2
Farming (secondary occupation):	132	39.8
a. Self Employed	58	43.9
b. Government Employed	66	50.0
c. Private Sector	8	6.1
<i>Educational Status</i>		
No formal education	12	3.6
Primary education	78	23.5
Secondary education	132	39.8
Post secondary education	110	33.1
<i>Farm Size (ha)</i>		
1 and below	216	65.1
1.1 – 2.0	90	27.1
Above 2.0	26	7.8
<i>Income Categories (₦)*</i>		
100,00 & below	150	45.2
101,000 – 200,000	72	21.7
201,000 – 300,000	48	14.4
>300,000	62	18.7
Mean	156,626.51	

*exchange rate: ₦138 to one US dollar
Field Survey, 2004

Table 2: Respondents' contact with extension workers

<i>Level of contact</i>	<i>Frequency</i>	<i>Percentage</i>
No contact	90	27.1
Rarely	126	38.0
Frequently	116	34.9
Total	332	100.0

Field Survey, 2004

extension workers is known to facilitate farmers' adoption of improved technologies (Zegeye 1990).

Table 3 highlights the technologies adopted by young farmers in the Niger Delta region. The most widely adopted technology under crop farming was improved varieties (49.4%). Improved livestock practices widely adopted by the respondents include isolation of sick animals (85.3%), use of commercial feed (76.4%),

Table 3: Farm technologies adopted by young farmers

Technologies*	Frequency**	Percentage
<i>a. Crop – Related (n = 312)</i>		
Improved varieties	154	49.4
Pest control using chemicals	106	33.9
Crop spacing	124	39.7
Fertilizer	128	41.0
Herbicides for weed control	20	6.4
<i>b. Livestock (n = 68)</i>		
Improved breed	26	38.2
Animal vaccination	36	52.9
Animal nutrition (commercial feed)	52	76.4
Deworming	40	58.8
Isolation of sick animals	58	85.3
<i>c. Fishery – Related (n = 74)</i>		
Fingerlings	70	94.6
Post harvest techniques/preservation	72	97.3
Fertilizer	62	83.8

*Computation is based on frequency of respondents engaged in a particular farm activity.

**Multiple response hence total exceeds sample size
Field Survey, 2004

deworming (58.3%) and vaccination (52.9%). Their adoption level for recommended fishery practices was high for all recommended practices i.e. improved fingerlings (94.6%), post – harvest preservation techniques (97.3%) and fertilizer (83.8%).

An examination of the adoption categories (Table 4) reveals that the majority (68.2%) of the respondents were low adopters of crop-related technologies. Majority of those involved in livestock production were high adopters (67.6%) of improved livestock management practices. The fishery component recorded an average adoption score of 2 with most respondents classified as

Table 4: Adoption categories and performance of respondents

Categories	Frequency	%	Mean adoption	Performance score (%)
<i>a. Crop – Related (n = 312)</i>				
Low	212	67.9	2	40.0
High	100	32.1		
<i>b. Livestock – Related (n = 68)</i>				
Low	22	32.4	3	60.0
High	46	67.6		
<i>c. Fishery – Related (n = 74)</i>				
Low	20	27.0	2	66.7
High	54	73.0		

Field Survey, 2004

high adopters (73%). Thus, their adoption performance rating is high for the livestock (60%) and fishery (66.7%) enterprises but poor for the crop enterprise (40%). This result shows the need for greater emphasis on adoption of crop improvement technologies by young farmers.

Table 5 reveals significant parameters influencing the odd or likelihood of young farmers adopting recommended farm technologies in each of the crop enterprise. The model chi-square (χ^2) values for the 3 models shows they were significant at the 1% level, while the pseudo R² values indicates that the explanatory variables account for about 54%, 41% and 39% of variation in the adoption of recommended technologies in the fishery, livestock and crop sub-sector respectively with an overall percent correct predictability of about 82%, 73% and 77% respectively.

Contact with extension agents increases the odds of being a high adopter of crop technologies

Table 5: Relationship between socio – economic characteristics of young farmers and adoption of farm technologies (Logistic Regression)

Explanatory variables	Crop		Livestock		Fishery	
	Odd Ratio	t values	Odd Ratio	t values	Odd Ratio	t values
Extension contact	2.39*	2.730	1.01	1.077	1.24	1.648
Household size	1.31	1.388	1.08	1.233	1.10	1.544
Income	2.22	1.564	1.43*	1.868	3.13*	2.061
Farm size/Stock size	1.22	0.471	1.23*	2.311	3.96*	1.997
Gender	1.46	1.643	0.79*	1.927	1.77*	1.884
Education	1.18	0.794	1.35	1.041	1.55	1.449
Primary occupation	1.18	0.411	1.02	0.726	1.03	0.215
Age	1.08	0.178	0.99	0.337	1.02	0.177
<i>Statistics</i>						
Observations (n)	312		68		74	
Model Chi-square (χ^2)	34.78		33.62		28.09	
Critical χ^2 (1%)	20.1		20.1		20.1	
Pseudo R ²	0.395		0.411		0.543	
Overall right prediction (%)	77.0		73.4		82.3	

*Significant at 5% (critical t = 1.860)

by about 2.4 times, holding other variables constant. This was the only significant ($p < 0.05$) variable affecting young farmers adoption of crop technologies, and it means that respondents in contact with extension agents are about 2 times more likely to adopt crop-related innovations than those with no contact. This agrees with the finding of Agbamu (1993). Higher income (odd ratio = 1.43) and larger stock (1.23) significantly ($p < 0.05$) and positively increases the likelihood of the respondents adopting improved livestock technologies by about 1.5 and 1.2 times respectively. The odd ratio for gender (0.79) means that males are 0.7 times less likely to adopt livestock technologies than their female counterpart. This suggests the existence of a gender dimension to innovation adoption even among young farmers. This agrees with Onemolease (2003) result that a positive and significant relationship exists between gender (female) and adoption of improved small ruminant practices.

The result for fisheries shows that the likelihood of a young farmer adopting improved livestock management practices is influenced positively and significantly ($p < 0.05$) almost 3, 4 and 1.7 times by income (odd ratio = 3.13), stock size (3.96) and gender (1.77) respectively. Studies have confirmed the positive and significant role of income in adoption of farm technologies (Igbokwe and Okoye 2000). The odd ratio for gender means that males were about 1.8 times more likely than females to adopt fishery management practices.

CONCLUSION AND RECOMMENDATIONS

The study revealed crop farming to be the dominant farming type practiced by young farmers in the Niger Delta region. It also highlighted key characteristics of young farmers such as income, stock size and gender as significant variables affecting adoption of farm technologies. Contact with extension agents was also significant. An interesting aspect of the study is the revelation that for the different farm enterprise, some characteristics of the youths such as income, gender and stock size were consistently significant while others were not.

In view of the above findings the study recommends:

1. A sustained contact of extension workers with young farmers.
2. Any policy on young farmers in the region

should endeavour to pursue all available means to facilitate their access to capital since income showed a significant relationship with technology utilization. This may be accomplished through promoting young farmers access to credit facilities or cooperative organization.

3. Government policies targeted at young farmers should have a gender undertone. The study revealed a gender dimension in technology adoption decisions of young farmers in the study area.
4. Credit facilities extended to young farmers could be in kind i.e. animal stock particularly for those involved in fishery or livestock production as results shows stock size had a positive and significant effect on adoption of farm technologies.
5. The youth response to crop-related innovations was low. This observation may warrant a further study to investigate possible reasons for this.

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