

ASSESSMENT OF GROWTH ENHANCEMENT SUPPORT SCHEME: PARADIGM SHIFT FOR POVERTY ALLEVIATION AND INCREASED FARM INCOME AMONG FARMERS' IN DELTA STATE, NIGERIA

OKOH, S.O.

Dept of Agric Econs & Extension
Faculty of Agriculture
Ambrose Alli University
PMB 14, Ekpoma
Edo State, **NIGERIA**
Email: solomega2003@gmail.com

Dr. OKWUOKENYE, G.F. (Corresponding Author)

Dept of Agric Econs & Extension
Faculty of Agriculture
Ambrose Alli University
PMB 14, Ekpoma
Edo State, Nigeria
gmail: okwuokenyegoddy@gmail.com
GSM No. : 08037568724

Urhibo, F.A.

Dept of Agric Econs & Extension,
Faculty of Agriculture,
Delta State university, Asaba Campus
Abraka
Email: urhiboade@yahoo.com

ABSTRACT

The study was carried out to assess the Growth Enhancement Support Scheme as a paradigm shift for poverty alleviation and increased farm income among farmers in Delta State, Nigeria. Primary and secondary sources of data were used for the study and they were respectively sourced from the respondents of the study (who numbered 377) and related literature. Multi – stage sampling technique was used to select the respondents from two senatorial zones (Delta north and central) of the State. The objectives and hypotheses of the study were respectively analyzed using descriptive and inferential statistics (t – test and Pearson Correlation Coefficient (r)). Results showed that the average age, farm size, household size, farming experience and annual farm income were 49 years, 2ha. , 5 persons, 25 years and ₦277,000.85 respectively. Majority of them were males (70.6%), married (77.5%) and had formal education (89.7%). The respondents were mostly satisfied with the services provided by GESS, though showed constraints in late arrival of fertilizers and seeds, inability to activate PIN/poor network and non-receipt of PIN. Pearson Correlation analysis showed significant but weak relationship between farmers satisfaction and their farm size ($r = 0.204$), income ($r = 0.191$) and farming experience ($r = 0.109$). Results also showed that participation in GESS has impacted positively on the farmers income. Based on findings, the study recommends that that for late arrival of inputs, efforts should be intensified by the government and the input suppliers in planning and delivery inputs ahead of the planting season.

Keywords: Farm income, poverty alleviation, agricultural programmes, farm inputs, communication, productivity, services.

INTRODUCTION

One of the 3-point agenda of the Delta State government and its policy thrust is the production of sufficient food for the ever increasing population of the State (DSMAN, 2012). The report stressed that one of the sure ways as perceived by the state, in achieving this goal is through partnering with the Federal government on several agricultural programmes. Some of which are Poverty Alleviation Programme, National Economic Empowerment and Development Strategy (NEEDS), River Basin and Rural Development Authorities, Green Revolution Programme, Operation Feed the Nation, Including The Growth Enhancement Support Scheme, among others too numerous to mention.

From the numerous programmes, it is clear that Nigeria did not lack brilliant agricultural policies, but implementation led to unsatisfactory or intended results. Conscious of the fact that poor implementation was the bane of past programmes and the need to incorporate lessons learnt in these programmes in formulating new ones, the federal government of Nigeria under the leadership of Goodluck Ebele Jonathan in the Agricultural Transformation Agenda (ATA) introduced the Growth Enhancement Support Scheme (GESS) as one of the components of ATA (FMARD, 2012). The report spelt that the scheme came up in July, 2012 and the primary aim of the scheme is to provide subsidized farm inputs such as fertilizer and seeds to farmers. The scheme also aimed to cut off corrupt fertilizer and other farm inputs merchants and promote private sector participation in order to reach the small scale farmers with needed inputs. In addition, the scheme seeks to put the agricultural sector at the centre of government's development objectives given its critical role in food security, economic development and diversification.

The growth enhancement support scheme (GESS) represents a policy and pragmatic shift within the existing fertilizer market stabilization programme and it puts the resource constraint farmer at its centre through the provision of series of incentives to encourage critical actors in the fertilizer value chain. The scheme is design to deliver government subsidized farm inputs directly to farmers via Global System for Mobile Communication (GSM) phones (CRCMA, 2012). The report has it that the system of delivery is powered by an electronic distribution channel that makes the whole system of purchase and distribution as efficient and transparent as possible.

The overall objective of GESS according to FMARD (2013) is to; Provide affordable agricultural inputs like fertilizers, hybrid seed and agrochemical to farmers, remove the usual complexities associated with fertilizer distribution, encourage critical actors in the fertilizer value chain to work together to improve productivity, enhance farmer's income and promote food security and shift provision of subsidized fertilizers away from the general subsidy to genuine small holder farmers. With these objectives in place, the farmers are sure of spending only a little, relative to how much they would have spent if not for the programme on fertilizer and other farm inputs, thus be assured of getting farm inputs paid for and saving a good proportion of their cash, thereby reducing their poverty status.

Poverty is multidimensional and it is characterized by lack of purchasing power, exposure to risk, malnutrition, high mortality rate, low life expectancy, insufficient access to social and economic services and few opportunities for income generation (Tokunbo, 2003). The author noted that poverty has no geographical boundary, that is, it is found in the North, West, South and East. Though the incidence of poverty in Nigeria is much higher in the rural areas than in the urban centres, the urban – slums form one of the more deprived groups. Okwuokenye

and Ikoyo-Eweto (2016) defined poverty as a lack of command over basic consumption needs which means in other words that there is an inadequate level of consumption giving rise to insufficient food, clothing and or shelter, and more over the lack of certain capacities, such as being able to participate with dignity in society. The authors further noted that poverty is either relative or absolute. For clarity purpose according to the authors, relative poverty indicates that people are poor in relation to other people, while absolute poverty suggests living below a certain “minimum standard” quality of life. The income dimension of poverty defines poverty as a situation as a situation of low income or low consumption. This has been used for constructing poverty lines. To this end in view, people are counted poor when their measured standard of living in terms of income or consumption is below poverty line.

Poverty alleviation simply means reducing poverty, and one of the sure ways of achieving this or moving above the poverty line is for the rural farmers to participate in government’s agricultural revamping programmes, of which the Growth Enhancement Support Scheme (GESS) is one. This study therefore sought to investigate the impact of GESS on productivity and farm income of farming households. More specifically, the study seeks to;

- i. Profile the socio – economic characteristics of GESS participants in Delta State.
- ii. Assess the participants (farmers’) satisfaction with the services provided by the scheme.
- iii. Examine the effects of farmers’ participation in GESS activities on farm income level of the farmers.
- iv. Examine the constraints affecting the operation of the scheme.

Hypotheses of the Study

The hypotheses of the study were stated in their null forms. They are;

H₀₁: There is no significant relationship between farmers’ socio-economic characteristics and their satisfaction with GESS

H₀₂: There is no significant difference in farmers’ farm income before and after their participation in GESS

Acronym

ATA-Agricultural Transformation Agenda

FEPSAN - Fertilizer Producers and Suppliers Association of Nigeria.

FMARD-Federal Ministry of Agriculture and Rural Development

GESS: Growth Enhancement Support Scheme.

GSM-Global System for Mobile Communication

PIN – Personal identification number. This is a number farmers receive on their cell phone and us used in claiming farm input at redemption centers.

METHODOLOGY

Area of study

The study was carried out in Delta State. The State was excised from the former Bendel State in 1991 and it is one of the major oil producing states in the Niger Delta region of Nigeria (DTSG Agric Policy, 2006). The State is bound on the north by Edo State, on the east by Anambra and Rivers States, on the south by Bayelsa State and on the west by Ondo State and the Bight of Benin of the Atlantic Ocean. It lies within Latitudes 5° 00’ and 6° 30’ N, and Longitudes 5° 00’ and 6° 45’ E. it covers an area of approximately 17,698 Km² (DTSG Agric Policy, 2006). The 2006 population census puts the population of the state at about 4.09m people. Delta State has 25 Local Governments Areas with its capital at Asaba. It has many major and important towns. They include Warri, Ughelli, Agbor, Sapele, Koko, Okpanam,

Oghara, Ogwashi-Uku, Burutu, Ozoro and Oleh, among others. Reports of AWC, 2006 indicated that the State has a heterogeneous population that comprises many ethnic groups. The major ethnic groups are Igbo, Itsekiri, Urhobo, Ijaw, Ika and Isoko. The report also noted that the sole source of revenue to the state government is mostly petroleum, while the indigenes of the State engage mostly in agriculture and fishing for their subsistence.

Sampling techniques

The population of the study was registered farmers in GESS and from this the sample was drawn. The study used the multi – stage sampling techniques. This is discussed as follows:

Stage I: The first stage was the random selection of two of the three ADP Zones namely, Delta North and Central zones, with a total population of 55,594 participant farmers in the GESS. Based on the Table of Sample Proportion, the appropriate sample for a population of 55,594 is 382 (Boyd, 2006). This figure represents 0.687% of the population of GESS registered farmers in the selected zones. Given this value, farmers that were sampled in Delta North and Central were 186 and 196 respectively.

Stage II: The second stage was the random sampling of 3 local government areas (LGA) each in Delta North and Delta Central. This makes a total of 6 LGAs that were used for the study.

Stage III: The population of GESS farmers in the selected LGAs were 2,982 (Ukwuani), 3,156 (Ika South) and 3,019 (Ndokwa West) in Delta North; In Delta Central zone, the number was 3,570 (Uvwie), 3,120 (Ughelli South) and 2,985 (Okpe), thus giving a total of 18,832. Since the target sample size is 382, which represents 2.03% of 18,832, this percentage was used to multiply the population of GESS farmers per local government area to give 61 (Ukwuani), 64 (Ika South) and 61 (Ndokwa West) in Delta North, and 72 (Uvwie), 63 (Ughelli South) and 61 (Okpe) in Delta Central Zone. (See Table1). From the retrieved instruments, 377 suitable for analysis were used for the study (they are 182 and 195 from Delta North and Delta central respectively).

Table 1: Sampling distribution by Local Government Areas

ZONE	LGA	Registered farmers	Sampled farmers (2.03%)
Delta North	Ukwuani	2982	$2982 \times 0.0203 = 61$
	Ika South	3156	$3156 \times 0.0203 = 64$
	Ndokwa West	3019	$3019 \times 0.0203 = 61$
Delta Central	Uvwie	3570	$3570 \times 0.0203 = 72$
	Ughelli South	3120	$3120 \times 0.0203 = 63$
	Okpe	2985	$2985 \times 0.0203 = 61$
Total		18832	382

(Delta Agricultural Procurement Agency, 2015)

Data were sourced directly from the farmers by means of a validated questionnaire (for the literate farmers) and interview schedule (for the non-literate ones). Cronbach alpha method was used to test for reliability of the instrument. The technique produced a coefficient value of 0.72, indicating the suitability of the instrument. Data collection instruments were personally administered to the respondents by the researcher. Trained enumerators were equally used for data collection purpose.

Data Analysis Technique

Descriptive and inferential statistics were used to analyze the data generated for the study. Descriptive statistics include frequency distribution, percentage, mean and standard deviation. This statistics was used to the objectives of the study. Inferential statistics on the other hand, include the use of t-test and Pearson Correlation analysis. The inferential statistics was used to analyze the hypotheses of the study, in that t-test was used to analyze the effect of farmers' participation in GESS, while the Pearson Correlation was used to analyze the relationship between farmers socio-economic characteristics and their satisfaction with GESS. Mean and standard deviation were used to assess GESS participants satisfaction with the services provided by the scheme. Respondents perception of the constraints faced by the farmers with GESS was obtained through a four point Likert Scale scored as follows: Strongly Agree (coded 4), Agree (coded 3), Disagree (coded 2) and Strongly disagree (coded 1). The weighted mean score was used to determine the outcome. The weighted score (2.50) was obtained as follows $[4 + 3 + 2 + 1] / 4 = 2.50$. Perceived factors with values of 2.50 and above were considered important, while those with values less than 2.50 are regarded as not important.

Pearson Correlation

Correlation is a technique for investigating relationship between two quantitative, continuous variables. Pearson Correlation Coefficient (r) is a measure of the strength of the association between two variables (Wikipedia, 2014). Its value ranges from -1 to +1. A positive correlation indicates that both variables increase and decrease together whereas a negative correlation mediates that as one variable increase, so the other decreases and vice versa. This statistic was used to analyze farmers' socio-economic characteristics in relation to their satisfaction with GESS. The formula is given thus:

$$r = \frac{\sum(x-\bar{x})(y-\bar{y})}{\sqrt{\sum(x-\bar{x})^2 \sum(y-\bar{y})^2}} \quad \text{Where;}$$

x = independent variable; y = dependent variable; \bar{x} = mean of independent variable; \bar{y} = mean of dependent variable

Categorization of the strength of association between the dependent and independent variables according to Wikipedia (2014) are given below: -1.0 to -0.7 is strong negative association; -0.7 to -0.3 is weak negative association; -0.3 to +0.3 is little or no association; +0.3 to +0.7 is weak positive association and +0.7 to +1.0 is strong positive association.

T-test

T-test is a statistical technique used to determine if a significant difference exist between two variables or groups (Wikipedia, 2006). The formula for t- test is as shown below:

$$T = \frac{\bar{x}_1 - \bar{x}_2}{\sqrt{(s_1^2/n_1 + s_2^2/n_2)}} \quad df = n_1 + n_2 - 2$$

Where:

\bar{x}_1 = the mean of group 1,

\bar{x}_2 = the mean of group 2

S_1 = standard deviation for group 1; S_2 = standard deviation for group 2

S_1^2 = variance of the first group; S_2^2 = variance of the second group;

n_1 = size of the first group; n_2 = size of the second group; $\sqrt{\quad}$ = square root

Decision rule for t – statistics: If $t_{cal} > t_{tab}$, reject null and accept alternative hypothesis and vice versa

RESULTS AND DISCUSSION

The socio – economic characteristics of the respondents is shown in Table 2. It reveals that the average age of the respondents was 49 years, with most (35.5%) of them belonging to the age range of 41 – 50 years. Few of them (16.7%) were below 41 years while the other respondents (47.8%) were above 50 years of age. The result indicated that the farmers are young and active and so could be an advantage to the success of GESS. The result is in line with the findings of Okwukenye and Onemolease (2010) who noted that farmers who participate in agricultural programmes like GESS are usually young and active. In the case of gender, most (70.6 %) of the respondents were males while females constituted the other fraction (29.4 %). The result suggests that the gender distribution regarding GESS participants in Delta State is skewed towards the male. This finding tends to agree with similar study by FEPSAN (2013), which showed male dominance over female (83% male and 17% female) in the Growth Enhancement Support Scheme in 12 states of Nigeria.

The marital status of the participants in the scheme (GESS) shows that majority (77.5%) were married. About 9%, 6.9% and 6.6% were single, divorced and widow/widower respectively. The result implies that the scheme is dominated by married farmers. The motivation behind married farmer's patronage of the programme could be the need to take care of their families. This assertion is supported by Aigbeakaen *et al.*, (2007), who asserted that married people are prompted to join in order to cater for their households. The educational level of the respondents also showed that most of them (89.7%) had formal education, while only few of them (10.3%) did not have formal education. Education had been shown to be a positive factor in the adoption of modern practices, including high yielding varieties of seeds and fertilizer as contained in GESS mandate. Supporting this assertion, Omoregbe and Ajayi (2009), noted that education enhances farmers' understanding of improved technologies and hence has a positive influence on farmers' adoption behaviour.

The average household size of the respondents was 5 persons with most of them (48.5%) having a household size of 4 persons and below. The dominance of small household size among respondents imply that farmers will resort to hired form of labour and this will constraint the farmers economically considering their poor status. On the other hand, small family size may improve the economic welfare of the household especially when the proportion of dependants is low (Onemolease, 2005). The average household size of the respondents was 5 persons with most of them (48.5%) having a household size of 4 persons and below.

The average farm size of the respondents was 2ha. Most of them (43.5%) cultivated farm size of between 1.1 – 2.0ha. While 31.8% and 24.6% respectively had less than 1.1ha and more than 2ha. The result indicated that the farmers in the study area were small scale farmers. This is confirmed by Ovharhe (2014) who reported similar result regarding farmers in Delta State. This finding confirms that GESS is targeted at addressing the input supply need of small scale farmers in particular.

The farmers average farm income was ₦277,000.85, and about 45.4%, that is majority, earned an annual farm income range of ₦200,000 – ₦300,000. About 34% earned above ₦300,000, while 21% earned less than ₦200,000. The result indicated that the farmers are average farm income earners, hence the thrust of the scheme (GESS). Similar results regarding positive effects of participating in agricultural programmes have been reported by Abegunde (2009).

Table 2: Socio-economic Characteristics of Participant Farmers

Characteristics	Categories	Delta North n = 182		Delta Central = 195		n Pooled n = 377	
		Freq.	%	Freq.	%	Freq	%
Age (years)	30 & below	11	6.0	3	1.5	14	3.7
	31 – 40	24	13.2	25	12.8	49	13.0
	41 – 50	54	29.7	80	41.0	134	35.5
	51 – 60	59	32.4	68	34.9	127	33.7
	> 60	34	18.7	19	9.7	53	14.1
Sex	Male	129	70.9	137	70.3	266	70.6
	Female	53	29.1	58	29.7	111	29.4
Marital status	Married	139	76.4	153	78.5	292	77.5
	Single	18	9.9	16	8.2	34	9.0
	Divorced	11	6.0	15	7.7	26	6.9
	Widow/Widower	14	7.7	11	5.6	25	6.6
Education	No former education	25	13.7	14	7.2	39	10.3
	Primary education	44	24.2	52	26.7	96	25.5
	Secondary education	62	34.1	88	45.1	150	39.8
	NCE/OND	31	17.0	26	13.3	57	15.1
	HND/BSc	18	9.9	10	5.1	28	7.4
	Postgraduate	2	1.1	5	2.6	7	1.9
Household size	4 & below	79	43.4	104	53.3	183	48.5
	5 – 8	73	40.1	71	36.4	144	38.2
	9 – 12	29	15.9	18	9.2	47	12.5
	> 12	1	5	2	1.0	3	8
Farm size (ha)	1.0& below	46	25.3	74	37.9	120	31.8
	1.1 – 2.0	76	41.8	88	45.1	164	43.5
	2.1 – 2.5	45	24.7	26	13.3	71	18.8
	2.6 – 3.0	11	6.0	6	3.1	17	4.5
	> 3.0	4	2.2	1	5	5	1.3
Annual income (₦)	100,000 & below	-	-	-	-	-	-
	100,001 – 200,000	30	16.5	49	25.1	79	21
	200,001 – 300,000	93	51.1	78	40.0	171	45.4
	300,001 – 400,000	36	19.8	44	22.6	80	21.2
	400,001 – 500,000	17	9.3	20	10.3	37	9.8
	> 500,000	6	3.3	4	2.1	10	2.7
Farming experience (years)	10 & below	24	13.2	10	5.1	34	9.0
	11 – 19	31	17.0	66	33.8	97	25.7
	20 – 29	61	33.5	72	36.9	133	35.3
	30 – 39	45	24.7	31	15.9	76	20.2
	40 – 49	16	8.8	16	8.2	32	8.5
	50 & above	5	2.5			5	1.3

Source: Field survey, 2015

In regards to farming experience, the average farm experience was 25 years with majority (35.3%) having farming experience of 20 – 29 years. Furthermore, about 34.7% had less than 20 years while, 30% had more than 29 years farming experience. From result, the farmers could be rightly declared to be well experienced in their farming activities and so obliges the farmers with the necessary skills and knowledge associated with farming operations

Respondents (farmers) Satisfaction with GESS

Table 3 reveals the level of satisfaction farmers derived from GESS services. From the table, farmers were mostly satisfied with the low cost of fertilizer given (Mean=2.95). This is closely followed by the quality of seeds supplied (Mean = 2.91) and quality of fertilizer supplied (Mean = 2.91). Other aspects of the scheme that farmers were satisfied with included proper treatment by GESS staff (Mean =2.90) and treatment by agro-dealers (Mean = 2.85) as well as the low cost of seeds (Mean=2.79).

Table 3: Respondents' Satisfaction with GESS

	Delta North		Delta Central		Pooled	
	Mean*	SD	Mean*	SD	Mean*	SD
Cost of fertilizer	3.10	0.72	2.80	0.83	2.95	0.79
Quality of seed given	2.97	0.80	2.86	0.79	2.91	0.79
Quality of fertilizer given	3.02	0.65	2.80	0.71	2.91	0.69
Treatment by GESS staff	2.96	0.78	2.84	0.83	2.90	0.80
Treatment by Agro dealers	2.96	0.72	2.74	0.77	2.85	0.76
Cost of seeds	3.03	0.72	2.55	0.81	2.79	0.80
Timeliness of input arrival	1.95	0.87	1.78	0.84	1.86	0.85

*Satisfied (mean >2.50)

Field Survey, 2015

Farmers' satisfaction regarding cost of fertilizer is attributed to the 50% subsidy they get from the federal (25%) and state (25%) government for every bag of fertilizer got from the agro – input dealers in the scheme. For the quality of seeds, farmers satisfaction stemmed from the seeds high quality at least when compared to those ones sold in the open market. Though personal communication, farmers expressed that the seeds are unadulterated, free from foreign materials, broken grains and are high yielding. Farmers were also satisfied with the quality of fertilizer supplied simply because they come straight from the manufacturing company and so void of adulteration. With respect to treatment by GESS staff, respondents expressed satisfaction with their attitude towards them (farmers). The good treatment may not be unconnected to the close supervision carried out by the coordinators of GESS in the zone. The satisfaction respondents derived from the treatment of the agro-input dealers is attributed to the timely and prompt attention giving to them in the purchase and delivery of farm inputs.

Respondents Farm Income Range

The perceived farm annual income range (Table 4) of the respondents revealed that most of the respondents (35.54% before being participants and 45.4% after participation being participants of the scheme) respectively earned an annual farm income range of annual ₦100,000 – 200,000 and ₦201,000 – 300,000 before and after being participants of the Growth Enhancement Support Scheme (GESS). The average annual income before and after being participants of the scheme was ₦199,000.34 and ₦277,000.85 respectively. About 41.91% and 33.7% of the respondents respectively earned above their modal values. From the result, the difference in the average annual earnings (₦78,000.51) in favour of farmers after being participants of the scheme, suggests that participation in GESS had enhanced farmers income. The findings indicate the positive role of GESS to farmers. Similar results regarding positive effects of participating in agricultural programmes have been reported by Abegunde (2009). He acknowledged that participating in farm based programmes would go a long way in enhancing the socio-economic development of the farmers in the study area.

Table 4: Respondents farm income range

Income Range (₦'000)	Before participation		Mean (₦'000)	After Participation		Mean (₦'000)
	Freq.	%		Freq.	%	
< 100	85	22.55	199.34	-	-	277.85
100 – 200	134	35.54		79	21	
201 - 300	71	18.83		171	45.4	
301 – 400	61	16.18		80	21.2	
401 – 500	26	6.90		37	9.8	
> 500	-	-		10	2.7	
Total	377	100.0		377	100.0	

Field Survey, 2015

Constraints faced by farmers in GESS

The constraint faced by farmers in GESS is shown in Table 5. Among the constraints, the serious ones were late arrival of fertilizer and seeds (Mean = 3.01), inability to activate PIN/ poor GSM network (mean=2.75) and non-receipt of PIN (mean=2.66). Farmers identified late arrival of inputs as a serious constraint due to the timeliness of planting operation. This finding is in line with Dayo and Habeeb (2013) who reported that farmers identified late arrival of inputs among others as one challenge they face with GESS.

Farmer' inability to activate the PIN they received/ poor GSM network (Mean = 2.75) was equally identified by the respondents as a constraint they face in the scheme. This implies that farmers registered in the scheme were unable to activate their PIN, and may therefore be unable to access the subsidized inputs. Reports of FEPSAN (2013) acknowledged the above constraints and stated further that this inability may be due to the fact that respondents had to dial a specific number for NPK or urea and another number for seeds. As regard network coverage, this is a technical quality that is outside the capability of the respondents. Xioalan and Akter (2009) identified network coverage as a constraint to the effective delivery of farm inputs. They explained that poor network makes it difficult to contact farmers and/or input providers.

Table 5: Constraints faced by farmers with GESS

Constraints	Delta North		Delta Central		Pooled	
	Mean	S D	Mean	S D	Mean	SD
Late arrival of fertilizer / seeds	2.89	0.87	3.12	0.83	3.01	0.86
Inability to activate pin / poor network	2.85	0.77	2.66	0.86	2.75	0.82
Non – receipt of PIN	2.59	0.79	2.72	0.87	2.66	0.83
Inadequate quantity of fertilizers	2.20	0.99	2.14	0.79	2.17	0.89
High cost of fertilizer / seeds	1.69	0.59	2.30	0.79	2.01	0.76
Unpleasant attitude of agro dealers	1.82	0.76	1.75	0.80	1.79	0.78

Source: Field survey, 2016

Result of Hypotheses Tests**Relationship between Farmers Socio-economic characteristics and their Satisfaction with GESS**

Hypothesis one states as follows: There is no significant relationship between farmers' socio-economic characteristics and their satisfaction with GESS. The relationship between farmers' socio-economic characteristics and their level of satisfaction with GESS was analyzed using the Pearson correlation analysis and the result is shown in Table 6. A significant but weak association was found between farmers' satisfaction and their farm size ($r = 0.204$), income ($r = 0.191$) and farming experience ($r = 0.109$).

The results are discussed as follows:

Farm size ($r = 0.204$) was significant and positively related to the respondents' satisfaction with GESS. The implication of this is that farmers with larger farm size tend to be more satisfied with the scheme. Such farmers probably realized how much it would have cost them to acquire inputs from the open market. Adeniyi (2002) was of the same opinion. He remarked that total output of crop will increase at an increasing rate as farm sizes increase, a situation which resorts from the satisfaction they (GESS farmers) derive from the agricultural programme they participate in. Respondents' annual income with a correlation value of 0.191 was also significant in determining farmers' level of satisfaction with GESS. This means that farmers with higher income were more satisfied with the scheme than those with lower income. A possible explanation for this could be that such farmers with higher income realized that the scheme has enhanced their profit by reducing production cost for them. The farming experience of respondents ($r = 0.109$) was also significant at 5% level of probability and positively influenced farmers' level of satisfaction with the scheme. This result implies that farmers with more farming experience are more satisfied with the scheme than those with less experience. The satisfaction may possibly be because of the subsidization of inputs by government and supplying high quality seeds and chemicals. The result of Abegunde (2004) bears relevance here: when he acknowledged that farming experience of the farmers participating in similar agricultural programmes was directly related with their level of satisfaction in group activities.

Table 6: Relationship between farmers' socio-economic characteristics and satisfaction with GESS (Correlation)

	Satisfaction index		
	Coefficient (r)	Prob. Level	Decision
Income	0.191*	0.00	Significant
Education	0.067	0.191	Not Significant
Farm size	0.204*	0.00	Significant
Farming experience	0.109*	0.035	Significant
Household size	0.032	0.536	Not Significant
Sex	-0.008	0.879	Not Significant

*Critical r at 5% = 0.098

Field Survey, 2015

TEST OF DIFFERENCE IN INCOME BEFORE AND AFTER FARMERS' PARTICIPATION IN GESS

Hypothesis two states that there is no significant difference in farm income of farmers before and after participation in GESS.

The results (see Table 7) showed that the average income of farmers after being a member of GESS was higher (₦277,000.85) than that of the same farmers before participating in the programme (₦199,000.34). The result suggests that farmers earn higher farm income after becoming members of the programme. The difference (₦78,000.51) in the revenue of farmers before and after participating in the scheme was significant since the calculated t-value (25.921) was greater than the tabulated t-value at the 5% level (1.645). Based on this finding, the null hypothesis was rejected in favour of the alternative hypothesis which states that there is a significant difference in farm income of farmers before and after participation in GESS. The result suggests that being membership of GESS enhances farmers economically. This finding is consistent with that of Taiye *et al.*, (2006). They acknowledged that participating in agricultural programmes (like GESS) enhances farmers' productivity and income.

Table 7: effect of participation in GESS on income level of respondents (t - test)

GESS participation status	n	Mean income	Difference	T - value
Before membership of GESS	377	₦199,000.34		
After membership of GESS	377	₦277,000.85	₦78,000.51	25.921*

Significant at the 5% level (Critical t - value = 1.645)

CONCLUSION AND RECOMMENDATIONS

Based on findings, the study concludes that the Growth Enhancement Support Scheme has fared well in the study area (Delta State). This is reflected in the high level of satisfaction of the farmers' in the scheme and the positive effect (increased farm income) which the programme has impacted on the farmers participating in the programme. The high level of satisfaction of the farmers in the programme is however influenced by farmers' farm income, farm size and farm experience.

Based on the findings of the study therefore, the following recommendations are made to improve the implementation of GESS:

The study recommends that for late arrival of inputs, efforts should be intensified by the government and the input suppliers in planning and delivery inputs ahead of the planting season.

Efforts should be made to ensure a 2 or 3 digit number, which will be easier to activate by farmers, should be used by Cellulant, the operator of the telecommunication network for GESS. This is to tackle the problem of farmers' inability to activate PIN, and

The biometric card reader can be used in the verification of farmer's data instead of relying on the epileptic network coverage of the GSM providers.

REFERENCES

- Abegunde, A. A. (2009). The role of community based organizations in economic development in Nigeria: The case of Oshobo, Osun State, Nigeria. *International NGO Journal*. 4(5): 236 – 252

- Abegunde, A. A. (2004). "Community based organization in the sustainable development of the rural area in Atiba L.G.A., Oyo State". *Journal of Institute Town Planning*. 17: 1 - 14
- Adeniyi, J. P. (2002). Farm size and resource-use efficiency in small scale agricultural production. The case of rice farms in Kwara State of Nigeria. *Agricultural Journal*. 23(2): 43 - 50
- Aigbekaen, E. O. Sanusi, R. I. and Ndagi, I. (2007). Constraints to the use of Global System of Mobile Communication (GSM) by crop farming household in South-West Nigeria. *Journal of Agricultural Communication*. 7 (1): 110-118
- AWC (2006). *Africa Women Championship, Special Souvenir*, 5th edition of the championship held in Delta State, Nigeria. A special publication of the Delta sports organizing committee of the championship. PP. 10 - 19.
- Boyd, P. C. (2006). Sample Size Table. *Research Advisors*. Accessed from <http://research-advisor.com> on Feb 18
- Cross River State Ministry of Agriculture and Natural Resources (2012). *GESS. Information handbook*. MANR, Calabar. Pp. 15-18.
- Dayo, A. and Habeeb, P. (2013). Fertilizer subsidy: How Nigeria shortchanged farmers. *The Punch Newspaper*, July 20, 2013.
- DSAP (2006). *Delta State Agriculture Policy*. Delta State Ministry of Agriculture and Natural Resources, Asaba. Published by Anglotimi (Nigeria) Ltd, Lagos. P.1.
- DMANR. (2012) Delta State Ministry of Agriculture and Natural Resources. *Information Handbook*. Asaba, Delta State. pp 8-10.
- FEPSAN (2013). *GESS Fertilizer Producers and Suppliers Association of Nigeria. Monitoring Report*. Abuja
- FMARD Growth Enhancement Support Scheme (2012). *GESS 2012 wet season farming Analytical report*. Nigeria. Federal ministry of agriculture and Rural Development.
- FMARD (2013). 2013 GES Farmers redemption dash board pro-forma Report .Accessed at www.fward.gov.ng/gesreport/2013/2013.Report_flg/sheet005.ht on December 15, 2014.
- Okwuokenye, G.F. and Ikoyo-Eweto, G.O. (2016). Farmers' participation in homestead fish production: implications for poverty alleviation in Bayelsa and Delta States, Nigeria. *Journal of Agriculture and Ecology Research International* 6(2): 1 - 13.
- Okwuokenye, G. F. and Onemolease, E. A. (2010). Evaluation of agricultural and inputs supply programme on rice production in Delta State. *International Journal of Agricultural and Rural Development*. 1(4): 176 – 185.
- Omogbe, F. E. and Ajayi, M. T. (2009). Assessment of training needs of extension staff of Agricultural development programme (ADP), Edo State. *Agro-Science Journal of Tropical Agriculture, Food, Environment and Extension*. 8 (2): 97-103
- Onemolease, E. A. (2005): Impact of the agricultural development programme (ADP) activities in arable crop production on rural poverty alleviation in Edo State, Nigeria. *Ph. D. Thesis*. Dept. of Agricultural Economics and Extension, University of Benin, Benin City, Nigeria. P. 276.
- Ovharhe, O. J. (2014). Factors affecting technologies adoption among Fadama III Farmers in Delta State, Nigeria. *The Nigerian Journal of Agriculture and Forestry* 4 (1) : 52-57.
- Taiye, O. F., Adebola, O. A. and Adebayo, E. K. (2006). Social activities and socio-economic state of rural farmers cultivating improved maize in kaduna State, Nigeria. *Global Approaches to Extension Practice*. 2(1): 29 - 36.

- Tokunbo, S. O. (2003). Urban poverty in Nigeria: A case study of Agege area of Lagos State, Nigeria. Retrieved at <http://www.gdnet.org/fulltext/osinubi.pdf>. February, 26th 2008
- Wikipedia (2006). Student's t-test. Wikipedia, The Free Encyclopedia. Retrieved at <http://www.en.wikipedia.org/wiki/Student's-t-test.html>. October 20th, 2012
- Wikipedia (2014). *Pearson product – moment correlation coefficient*. Assessed on February 18, 2015.
- Xiaolan, F. and Akter, S. (2009). The impact of ICT on agriculture system service delivery. Evidence from the Rural e-service Project in India. TMD Working paper series No 046 Oxford University.