DETERMINANTS OF AGRO-INPUTS REDEMPTION UNDER THE ELECTRONIC WALLET INITIATIVE IN NIGERIA

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ABSTRACT

The study assessed the spread of farmers and participation in terms of input redemption and the determinants of farmers redeemed with agro-inputs under the electronic-wallet initiative of the Growth Enhancement Support Scheme of the On-going Agricultural Transformation Agenda. Secondary data covering the Nigerian nation, with states and zonal breakdowns were used for the study. Analytical tools included the use of descriptive analysis such as mean, percentages coefficient of variation and graphical analysis. Other non-parametric and parametric tools employed included the analysis of variance and multiple regression analysis. The study revealed that the northern parts of the country accounted for about 90% of the total number of farmers redeemed with agro-inputs under the scheme, with the north-west accounting for about 50% of this figure. The performance of local government participation was generally above par given the average performance of 81.47% across zones, with over 90% active LGA participation recorded in the south-south and south-west. The analysis of variance test showed that the zonal achievements in terms of agro-inputs redeemed were significantly different across the 6 zones within the country. Ironically, the coefficient of variation index revealed a higher stability in farmers redeemed in the south west zone with an index of 1.15, in-spite of the placement of the zone relative to the northern zones. Farmers turn-out and number of active local government areas were also observed to be significant determinants of farmers redeemed with agro-inputs at 1% and 10% respectively. The study recommended the need for enhanced political support for the scheme at the state and local government levels, effective farmer education and mobilization, enhanced supervision of agro-input dealers and redemption centers, effective alignment of all on-going food security projects with the scheme, while prioritizing the scheme for targeted budgetary allocation.

Keywords: Agro-input redemption, Electronic-wallet, Growth Enhancement Support Scheme,
Agricultural Transformation Agenda

INTRODUCTION

Nigeria is one of the lower medium economies in the world with a GDP of $510 billion dollars, following rebasing in 2014 and was among the few countries that witnessed growth in spite of the global economic downturn with a figure estimated at 7.3% in 2011 (Doreo Institute, 2013). The country's potential lies in its rich natural and human resources, with a population of 163 million people (NBS, 2012); there is also huge domestic market that attracts investors globally. Nigeria's agro ecology also sustains the cultivation of a wide variety of crops, including staples like rice, millet, sorghum, maize, cassava, yam, and cowpeas and cash crops like cocoa, groundnuts, rubber, and oil palm. Farming and livestock rearing are the main sources of livelihood for more than 70 percent of households (Banful *et al.,* 2010). Following the GDP rebasing, agriculture which used to be a huge contributor to the economy lost its place following the rise in the impact of the service sector which now contributes 52% of the GDP compared to the 23% from agriculture. Worse still, Nigeria's promising agricultural potential has yet to be realized. Between 1960 and 2005, Nigeria's cereal yield per hectare grew by only about 40 percent. This contrast to the 150 percent increase in India, and a 200 percent increase in Pakistan, countries that had similar levels of productivity at the beginning of that period (Nationmaster.com 2010). Ayinde *et al,* (2009) revealed that fertilizer usage, the quantity of fertilizer distributed, the price of fertilizer and the policy period as policy variables were found to have significant effect on to crop production. It was further argued that productivity increases in the country will be premised on science-based technology; the use of fertilizer, improved seed and crop protection products. To

enhance productivity in Nigeria, Ayoola (2001) affirmed numerous input subsidies have been implemented to enhance adoption of improved technologies (agro-inputs) and redistribute incomes to favour the poor resource famers. According to the researcher, agricultural subsidy policy had witnessed many changes dating back to the late 60s and early 70s. The policy direction became centralized and its scope widened to cover food crops. According to FGN (2010), 75% fertilizer policy was implemented by the FGN between 1976 and 1979, while states subsidies ranged from 0 - 50 %. Following these, various levels of subsidies have been implemented on improved seeds; agrochemicals and tractor hire which ranged from 25 percent to 50 percent. However, he noted that the implementation of these policies has not been effective, largely fraught with colossal leakages, corruption, with the subsidy not getting to the intended farmers. Other issues included the emergence of dependency syndrome among farmers, absence of poor allocative role of price following distortion created by subsidy, low morale among private sector participation to build up enterprise initiative, among others (Ayoola, 2001). Nagy and Edun (2012) noted that both state and federal governments have subsidized fertilizer, sometimes at rates as high as 95 percent. It was further argued that even though the subsidy programs absorbed large proportions of the national budget, the impact of the programs on agricultural productivity has been mixed at best given that the subsidy programs have been plagued by pervasive problems of late delivery of fertilizer, and delivery of inappropriate quantities and types of fertilizer. Rent-seeking activities and political manipulation have also resulted in diversion of subsidized fertilizer from the intended beneficiaries. Eboh *et al,* (2006) hinted that the history of fertilizer subsidy policy in Nigeria falls under seven distinguishable regime periods alternating between era of fertilizer regulation and non-regulation. According to them, levels of subsidy ranged between 25% and 85% at the federal and state levels, while it was noted that the reduction of import tariff on fertilizers from 10% in 1996 to 5% in 1997 and 0% in 2000 contributed to reduction in the rate of decline in fertilizer consumption. They however noted that fertilizer use declined from about 461,000 mt in 1993-94 to mere 173,000mt in 1999-2000, a decline of about 63%. The FMARD (2010) noted that between 1977 and 1996, the country implemented an annual programme of monopolized fertilizer procurement and distribution that was plagued by colossal wastages and diversions and that in 1997, the agriculture sector was abruptly liberalized but without the support of the private sector, which initially was unable or unwilling to respond. According to the source, fertilizer use fell from a peak of 1.2 million tons in 1992 to 56,708 tons

in 1997. This prompted a reintroduction of federal fertilizer subsidy in 1999 at a level of 25% which was implemented until 2011. In addition to this, states further subsidized fertilizer as they deemed necessary. However, evidence abound that a large majority of the subsidized product does not reach those it is intended for, or if it does it is either delayed to a point of being of little use, or it is available for sale to the target group at near commercial rates.

Against the aforementioned background, the FGN in 2008 made its intention known to withdraw completely from direct involvement in input procurement, particularly fertilizers when a veritable alternative is identified. Thus, following the successful use of vouchers as a means of targeting subsidies to identified groups in Kyrgyzstan, Malawi, Albania, Rwanda and Nigeria, International Fertilizer Development Corporation (IFDC) and the National Programme for Food Security (NPFS) started with pilot fertilizer voucher program in Kano, Bauchi and FCT in 2008 (NPFS, 2010). The basis for the Voucher Scheme is the consideration that the current fertilizer subsidies paid by the FGN and the States can be more efficiently delivered to targeted beneficiaries utilizing a voucher system, by encouraging the delivery of such through the development of a private sector distribution channel and facilitating the development of commercial credit products to aid in this development (NPFS, 2010). Abstracting from the success of the voucher scheme in pilot states in such areas like reach, cost effectiveness and private sector participation and given the need to further stimulate a thriving private sector fertilizer industry, the FGN in 2011, following the initiation of the Agricultural Transformation Agenda (ATA), introduced the Growth Enhancement Support Scheme (GESS) with a view to ensuring that government abdicate agro-input procurement and distribution, particularly fertilizers while supporting farmers through smart subsidies. The GESS is expected to move farmers from subsistence to commercialized farming through fiscal savings, greater returns on investment, targeting highest poverty level and providing exit strategy. The programme targets 20 million farmers by 2015 in phased manner and is expected to result in a total programme benefit of US$40 billion, a 16 fold benefit versus cost, aside the financial benefit of US$500 per farmer (FMARD, 2011). The initiative is also expected to leverage on the use of mobile technology to achieve scale (electronic wallet). The implementation of the programme is on-going with over 10 million farmers reached (over 50% achievement). According to Cellulant, the GESS in dollar terms effected $294m value of subsidies disbursement on behalf of the Federal and State Governments into the wallets of farmers. The organization noted that while farmers used $52million

of the subsidy deposits, agro-dealers received $50 million as matching funds from farmers, thereby accruing a saving of about $192 million (₦29.7 billion). In their work on the growth enhancement support and food security, Tiri *et al.,* (2014) revealed that the scheme has been an innovative approach to fertilizer subsidy and other input administration through electronic system that ensures that only registered farmers benefit through engagement of the private sector in the delivery and distribution of fertilizer and other input directly to the farmers. The researchers noted that the key issues in the scheme's success are institutional support, legislative backing and increase share of government budget to agriculture. According to them, the scheme will play a primary role in increasing farm productivity and incomes of rural farmers. Furthermore, FMARD (2014) affirmed that the GESS ended the 4 decades of corruption in the seed and fertilizer sector within 90 days. According to the Ministry, the scheme ended direct procurement and distribution of seeds and fertilizer by government; introduced cell phone based system to send subsidies via electronic vouchers and developed the first ever data base of farmers. Ojumu and Adeyelu (2014) further noted that the GESS is a self sufficiency strategy in rice production through the provision of agro-input such as fertilizers and other agro-chemicals to farmers.

In-spite of this development, there has been complaints on the inadequate access, inability to redeem and use agro-inputs in-spite of the coming of the e-wallet initiative of the GESS. An international organization argued that the GESS is more of hype while doubting the effectiveness of the initiative. Personal interaction with a farmer in the south western part of the country revealed that even though the input alert (e-message) through the mobile phone was received, his redemption center was at Ogun State whereas he resides in Lagos. Interaction with rice farmers under the programme in Kano also revealed that the programme was actually fraught with delays in first year of implementation, but picked up subsequently, with over 60% of farmers benefitting. Further interaction with rice farmers in three communities each in Badeggi, Bida and Wushishi Local Government Councils revealed that farmers were still not accessing the platform the way they would have wanted. It is thus against this background that this study reviews the spread and participation of farmers in the GESS and ascertained the determinants of farmers redeemed with agro-inputs under the scheme. The specific objectives of the study were to: (i) describe the spread of beneficiaries in terms of participation and input redemption under the GESS across states and zones in Nigeria; (ii) ascertain the determinants of farmers redeemed with agro-inputs under the scheme;

and (iii) discuss the challenges under the scheme and their implications for effective implementation of the on-going Agricultural Transformation Agenda. The justification of the study stems from the fact that policy makers will be interested in ascertaining the effectiveness of the scheme with the view for sustainability or fine-tuning the entire strategy. The private sector, especially the farmers and the agro-input dealers will also be desirous that the scheme progresses effectively with the view for sustainability, commercialization and improved well-being.

MATERIALS AND METHODS
Area of Study
Nigeria is derived from the word 'Niger' which is the name of the river that constitutes the most remarkable geographical feature of the country. The country attained independence from Britain on October 01, 1960, and became a Republic in 1963.The Country is located in West Africa and is bordered by Cameroon to the south east, Benin to the south west, and Niger to the north. Nigeria has a land area of 924,000km^2 and a population of 140,003,542 million (National Population Commission, 2007). The climate is semi-arid in the north and becomes increasingly humid in the south, with mean annual temperature ranging from 31^0-28^0c in the south. Rainfall is the most important climatic factor influencing agriculture and three broad ecological zones are commonly distinguished: the Northern Sudan savannah (500-1000mm), the guinea savannah zone or middle belt (1000-1,500mm) and the southern rainforest zone (1,500- 4,000mm). Generally, rainfall patterns are marked by an alternation of wet and dry seasons of varying duration. In the north, rainfall lasts from May to September with a peak in August, while in the south, rainfall is bimodal, increasing steadily from January and reaching its peak in September. About two thirds of the area cropped is located in the north with the rest equally divided between the middle and southern zones (ADB, 2006).

Over 60 per cent of the country's population lives in rural areas. The average population density of 118km^2 masks the considerable differences that exist between the densely populated south west of Nigeria, where much of the urban population live, and the less concentrated north. The economy is characterized by a large rural, mostly agricultural based traditional sector and a smaller, largely urban, more capital intensive sector. The average per capital income (estimated by the World Bank in 2006) was US$300 per annum. Although the country relies heavily on the petroleum sector which generates over half of government revenue and more than 90 per cent of foreign exchange earnings, agriculture continues to play a focal role in the economy. The sector currently contributes about 32 per cent to the GDP, with rain fed crop production

accounting for about 89.06 per cent of this total and livestock, forestry and fisheries for 6.38 per cent, 1.25 per cent and 3.31 per cent respectively. The sector makes a contribution to exports (mostly cocoa, rubber, leader and hides) but, prior to the oil boom (1972-1980s), Nigeria was a major exporter of a range of agricultural commodities. Nigeria now has to import large quantities of food with wheat and rice being the major crops imported. Mixed small scale farming is the predominant form of production and between 90 to 95 per cent of the total output is accounted for by households that cultivate about 2ha (0.5ha in the south and over 4ha in the north) of land. Deficiency of annual rainfall is the main constraint to agriculture in the north but, more importantly, the distribution in space and time and dependability of the rainfall is a constraint over most of the country (ADB, 2006). Coker *et al.,* established that output of major crops in the country has been on the rise between 2001 and 2011 from 103.6 million M/tons to 167.8 million M/tons in 2011. The mean output growth rate stood at 5.5%, fluctuating from 3.8% in 2002 to a peak of 8.5% in 2004 and then witnessed a decrease to 5.8% in 2010. However, output increases was observed to have been largely due to acreage expansion given that productivity per hectare has been low.

From Lagos as the economic capital, the nation now has Abuja as the Federal Capital and is currently made up of 36 States, 774 Local Government Councils, 6 Geo-political Zones and 3 major ethnic groups; Hausa, Yoruba and Igbo, reflecting also the major Nigerian languages. However, there are about 250 tribes in the country with their distinct dalects (languages).

Scope of Study and Sources of Data
The study covers the 36 States in Nigeria, including the Federal Capital Territory. The zonal categorization of the country was taken into cognizance for ease of data management and analysis. Data used were mainly secondary, complemented with primary information obtained from farmers in the course of regular survey mandate. Data sources for the accomplishment of the objectives of the study and specifically, for the estimation of the parameters of the models were from the Federal Ministry of Agriculture and Rural Development (FMARD), National Bureau of Statistics (NBS) and the National Programme for Food Security (NPFS).

Analytical Technique
This study made use of in-depth descriptive analysis of the spread of registered farmers, farmers turn-out and those redeemed with agro-inputs with focus on fertilizer. Descriptive analysis was undertaken to effectively conduct a cross-examination of the Federal Government growth enhancement support scheme with a view to ascertaining extent of performance, buy in across state and zones with the view to identifying issues and coming out with recommendations. Percentages, ratios, tabular presentation, analysis of variance, co-efficient of variation and graphical analysis were also used to explicitly bring out the trend and depth of farmers participation in the GESS across the 36 states of the Federation, including the FCT. These tools were used to achieve objectives one and three of this study, while objective two was accomplished by the use of multiple regression analysis.

Model Specification
The specification of economic-models is always based on economic theories and on available information related to the phenomenon being studied (Koutsoyiannis, 1979). For the purpose of this study therefore, the multiple regression model was utilized.

Multiple Regression Analysis
This was used to determine the influence of the independent variables on the number of farmers redeemed with agro-inputs. This was used to analyze objective II of this study

Hence, the model was specified as:

$$Y = (X_1, X_2, X_3, X_4, X_5 X_6 + e) \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (i)$$

Y = Total number of farmers redeemed with agro-inputs (₦)
X_1 = Registered farmers (No.)
X_2 = Farmers turnout (No.)
X_3 = No of active agro-input redemption centers (No.)
X_4 = Total no of agro-input redemption center (No.)
X_5 = No of active Local Government Areas (No.)
X_6 = Total no of Local Government areas (No.)
e =Error term

The explicit forms of the model are specified as follows:

i. Linear Functional Form:
$$Y=b_0 +b_1X_1+b_2X_2+b_3X_3+b_4X_4+b_5X_5+b_6X_6 +e\dots\dots (ii)$$

ii. Double Log (Cob Douglas) Functional Form:
$$LnY=b_0+b_1LnX_1+b_2LnX_2+b_3LnX_3+b_4LnX_4+b_5LnX_5+b_6LnX_6 e\dots(iii)_+$$

iii. Semi-log Functional Form
$$Y=b_0+b_1LnX_1+b_2LnX_2+b_3LnX_3+b_4LnX_4+b_5LnX_5+b_6LnX_6+e\dots (iv)$$

iv. Exponential:
$$Lny = b_0+b_1X_1+b_2X_2+b_3X_3+b_4X_4+b_5X_5+b_6X_6 +e\dots\dots.(v)$$

Where b_0-b_{10}= Regression coefficients.
e=Error term.

Analysis of Variance (ANOVA) was the test statistic employed and it is specified as the ratio of the *between* and *within* variation in the zonal data employed for this study. It follows an F distribution. Total Sum of Squares - the total variation in the zones. It is the sum of the between and within variation.

Hypothesis testing:

The null and alternative hypotheses tested were that:
Ho: $\mu_1 = \mu_2 = \mu_3 = \mu_4 = \mu_5 = \mu_5$ - The mean number of farmers redeemed with agro-inputs is statistically equal across the six zones.
Ha: At least farmers redeemed with agro-input in one zone are not statistically equal with those of the other zones.

RESULTS AND DISCUSSIONS
Beneficiaries Involvement across States and Zones under the GESS

A cursory review of available data revealed that 3,907,445 farmers were registered for the 2012 wet season under the GESS out of which 1,677,248 (42.92%) turned out and 1,128,673 (28.89%) were redeemed. A cursory review of the registered farmers established that Bauchi State had the largest numbers of farmers with 321,605 (8.23%) while Lagos accounted for the least with 20,317 (0.52%). Ironically however, Kano State witnessed the highest turnout of farmers with 279, 787 while Rivers State came rear with 2,048 farmers. With regards to the number of farmers redeemed with agro-inputs, Kano State topped the list with 189,300 farmers (16.77%). This came as a surprise, given that the fact that Bauchi State witnessed the highest number of registered farmers even though Kano State recorded the highest farmer turn-out. Rivers State witnessed the least number of farmers redeemed with 1,177 farmers; this did not come as a surprise given that the State witnessed the least number of farmer turn-out.

The zonal analysis revealed that the North West and North East Zones witnessed the highest numbers of farmer registration during the 2012 wet season, accounting for 24.82% and 24.05% of the 3,907,445 farmers registered respectively (Table 1). However, the North West had the highest numbers of farmer turn-out accounting for 49.04% of the total while the South East and South west Zones accounted for 3.17% and 3.11% respectively. This development is not unconnected to the low number of farming families in these zones, their size and peculiar terrain. The review established the North West accounted for 49.70% of the total farmer redeemed with agro-inputs (Figure 2) followed by the North East at 20.8% while South East and South West took the rear at 2.7% and 2.75% of the total respectively. With respect to the agro-input redemption centers, the North East had more active centers relative to the total targeted (9%), followed by the South West at 77.11% while the North West was active in 38.85% of the 157 redemption centers earmarked. This is worrisome given the top placement of the zone with respect to the number of farmers registered. The performance of Local Government participation was generally above par given the average performance of 81.47% across zones, with over 90% active LGA participation recorded in the South-South and South West. This becomes ironical when placed against the 13.25% and 9.35% farmer redemption relative to the population of farmers registered.The result of the Analysis of Variance (Table 2.0) showed that the F-Value of 5.43 was significant at 1 percent and was greater than the critical F Value of 2.53, implying that the null hypothesis is rejected and the alternative hypothesis accepted meaning that the zonal achievements are statistically significant from each other. It thus implies that the differences between the zones are not due to random error but as a result of the zonal effect which had caused the mean in one zone to be different from the other others. The Coefficient of Variation (CoV) across the zones revealed a higher coefficient of 1.15 for the South-South Zone, implying that there was higher stability in farmer redeemed with inputs in the Zone, followed by the North West and North East Zones which returned coefficient of 0.79 each. The South East Zone was the least stable in terms of farmers redeemed with agro-inputs with a coefficient of 0.2.
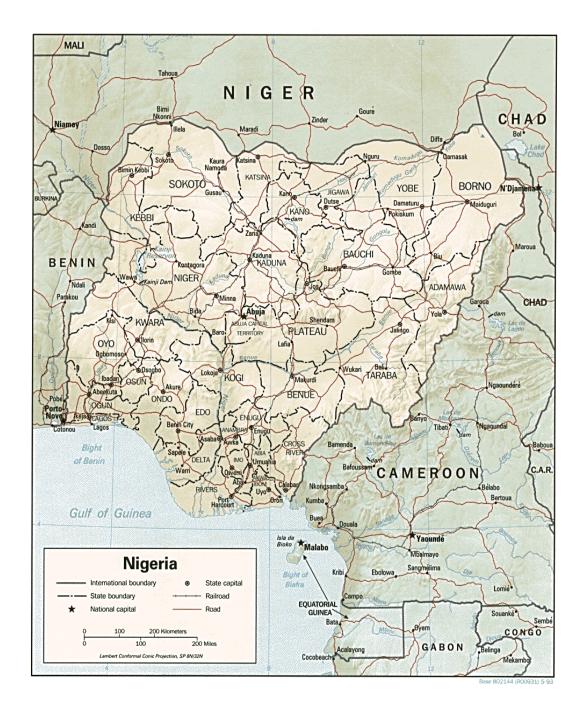
Figure 1: Map of the Federal Republic of Nigeria Source: Internet window

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Table 1.: Zonal Performance under the GESS

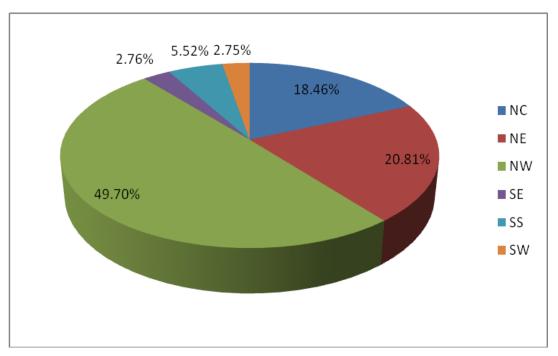| Zones	Farmers Redeemed	%	Farmers Regt.	%	Farmers Turnout	%	Total Redemption Centers	Active Redemption Centers	% of Active over Total Centre	No of LGCs	Active LGAs	% of Active over Total LGAs
NC	208,362	18.46	774,366	19.82	320,830	19.13	159	104	65.41	131	88	67.18
NE	234,821	20.81	939,613	24.05	322,879	19.25	125	107	85.60	91	75	82.42
NW	560,932	49.70	969,774	24.82	822,577	49.04	157	61	38.85	195	150	76.92
SE	31,175	2.76	420,867	10.77	53,146	3.17	84	56	66.67	95	72	75.79
SS	62,313	5.52	470,411	12.04	105,701	6.30	113	61	53.98	127	123	96.85
SW	31,070	2.75	332,414	8.51	52,115	3.11	166	128	77.11	138	125	90.58
	1,128,673		**3,907,445**		**1,677,248**		**804**	**517**	**64.30**	**777**	**633**	**81.47**

Source: FMARD 2013 Revised Score Card Team Report.

Figure 2: Farmers redeemed with agro-inputs

Table 2: Summary of ANOVA Result

Groups	Count	Sum	Average	Variance	Std Dev	COV
Zone 1	7	208362	29766	82027204	9056,887103	0.30
Zone 2	5	234821	46964.2	1,39E+09	37324,19194	0.79
Zone 3	7	560932	80133.14	3,98E+09	63078,83985	0.79
Zone 4	5	31175	6235	964224,5	981,9493368	0.16
Zone 5	6	62313	10385.5	1,43E+08	11965,6107	1.15
Zone 6	6	31070	5178.33	11382234	3373,756699	0.65

ANOVA						
Source of Variation	SS	Df	MS	F	P-value	F crit
Between Groups	2,78E+10	5	5559151829	5.429773	0.00113092	2.533555
Within Groups	3,07E+10	30	1023827731			
Total	**5,85E+10**	**35**				

Agro-input Redemption Performance across States and Zones

Analysis of agro-inputs redeemed by farmers showed that a total of 133,248.10 mt of assorted fertilizers, 5,044.73mt of maize and 6,781.65mt of rice seeds were redeemed by 1,128,673 farmers during the 2012 wet season (Table 3). Assuming that all redeemed farmers benefitted from fertilizers, available data revealed that fertilizer redeemed ranged from about 2 bags-3 bags of fertilizer per capita across the zones. This aligns with the 3 bags targeted per farmer under the GESS initiative. The average input redeemed per state stood at 3,701.34 mt, 144,135 mt and 188.38 mt for fertilizers, maize and rice seeds respectively.

Katsina State witnessed the highest quantities of redeemed fertilizers put at 49,811 mt (37.38%) while Kano State recorded the highest quantities of redeemed maize seeds (983.33 mt) and rice seeds (3482.74mt) representing 19.49% and 51.35% respectively.   review of the zonal agro-inputs redeemed revealed that the North West Zone recorded the highest quantities of fertilizers redeemed accounting for 62.53% of the total fertilizer redeemed followed by the North Central at 15.14% while the South East came rear accounting for 2.35% of the total (Figure 2). Similar trend was observed for maize and rice redeemed where the North Central accounted for 52.28% and 75.31% of the total redeemed with 2,637.21 mt and 5,107.54mt of maize and rice seeds respectively (Figures 3 and4).
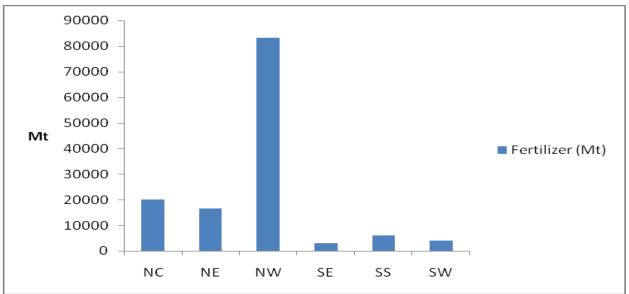

Figure 3: Quantities of fertilizers redeemed on zonal basis

Table 3: Agro-inputs Redeemed by Farmers

Indicator	Unit	Fertilizer	Maize	Rice
Total Agro-inputs Redeemed	Mt	133,248.1	5,044.73	6,781.65
Mean Quantities of Agro-inputs Redeemed per State	Mt	3,701.34	144.14	188.38
Max Input Redeemed	Mt	49,811*	983.33**	3,482.74**
Max Input as % of Total	%	37.38	19.49	51.35

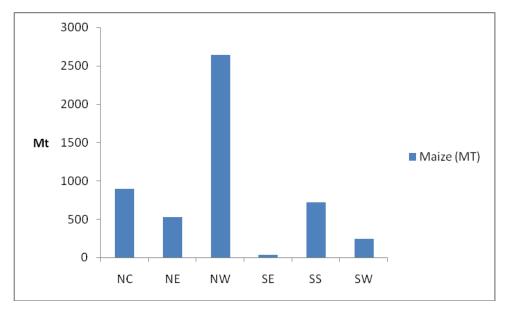* Recorded at Katsina State; ** Recorded at Kano State

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Figure 4: Quantities of maize seeds redeemed on zonal basis (Mt)
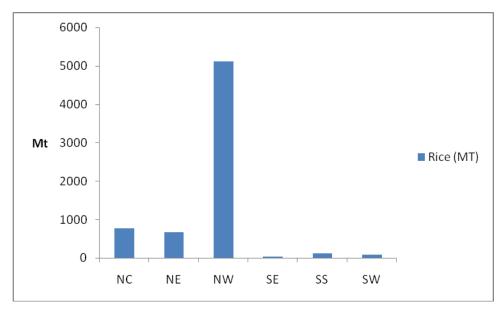

Figure 5: Quantities of rice seeds redeemed on zonal basis (Mt)

Table 4: Result of Multiple Regression Analysis

Variable	Linear	Semi-Log	Double-Log	Exponential
Constant	5948.37	-3526,5	-1,03306	9.317688
	(1.66)	(-4,43)***	(-2.88)***	(25.56)***
Farmers registered (X1)	0.0029.4	2079.927	0.03541	1.67E-06)
	(0.14)	(0.24)	(0.92)	(0.83)
Farmers turn out (X2)	0.717876	30732.07	1.047231	1.83E-05
	(31.07)***	(6.89)***	(52.14)***	(7.79)***
Active Input Redemption Centers (X3)	83.26952	4683.419	0.01769	-0,0016
	(0.54)	(0.62)	(0.52)	(-0,10)
Total Agro-input Redemption Center (X4)	-148,688	-15951,8	-0,05403	0.026369
	(-1,34)	(-1,56)	(-1,18)	(2.34)**
No of Active Local Govt. Areas (X5)	18.21815	13921.35	-0,00393	-0,04543
	(0.14)	(1.92)*	(-0,12)	(-3,34)***
Total Local Govt in State (X6)	-313,698	15714,14	-0,06129	-0,02146
	(-1,96)*	(-1,32)	(-1,15)	(-1,32)
R Square	0.98	0.77	0.99	0.92
Adj. R Square	0.98	0.72	0.99	0.85

Source: Output of Regression Analysis based on secondary data

Notes:
*** Implies statistical significance at p<0.001 probability
** Implies statistical significance at p<0.005 probability
* Implies statistical significance at p<0.10 probability
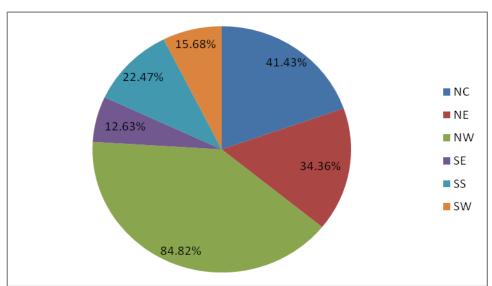- Figures in parentheses are t-values

Figure 5: Farmer Turnout to Farmer Registration Ratio

Determinants of Farmers Redeemed with Agricultural-inputs (Fertilizers)

From the results presented on Table 4, the semi-log functional form was chosen as the lead equation in-spite of it having the least R^2 given the logical nature of the significant variables and its adherence to a priori expectations. The R squared of .77 shows that 77% of the variation in the numbers of farmers redeemed with fertilizers was accounted for by the six included independent variables put together. The adjusted R square also supported the claim with a value of 0.72 or 72%. This implies that the independent variables explain the behaviour of the dependent variables at 72% confidence. The calculated F-statistics probability value of 0.000 also implies that there is a significant impact between the dependent variables and the independent variables. From the result, farmers turn out and numbers of active LGAs have a positive and significant effect on the number of farmers redeemed at 1 percent and 10 percent level of significance respectively. The implications of these results are that for every round of farmers' turn out for the GESS about 30,732 new farmers will be redeemed with agro-inputs across the country. Every additional LGA made active under the programme could result into about 13, 921 more farmers being redeemed with agro-inputs across the country.

Coker A. A.

Challenges under the GESS and their Implications for Effective Implementation of the On-going Transformation Agenda

Numerous issues have cropped up in the course of the implementation of the on-going GESS. Analysis of available secondary data on farmer registration and turn-out suggested that aside the North West Zone where the ratio of farmer turn-out to registration stood at 84.82% (Figure 5), the performance across the other zones which ranged from 12.6%-41.43% suggested that there may have been mobilization related issues in most of the other zones bordering on either capacity limitations on the part of the personnel involved, administrative problems arising from limited registration materials, ignorance or inadequate information on the part of the farmers on registration modalities or probably, hijack of the registration process by the elite or political class. Similarly, the ratio of farmer turn-out to farmer redeemed (Figure 6) which ranged from 58.66% in the North West to 72.72% in the North East, though encouraging, indicated some operational weaknesses relating to inadequacy of available agro-inputs to cater for the registered farmers, ineffective operations of the agro-input dealers and redemption centers, sharp practices on the part of farming households, where numerous household members from a single household benefit at the expense of other qualified farming households, mobile phone network related issues, distance of redemption centers to farmer's abode, shortage of supplies or budget limitations to cope with the targeted number of farmers arising from the low allocation to agriculture sector in the national budget. NANTS (2012) revealed that though a capital budget of ₦41,190,240,000 is proposed for agriculture sector in 2012, only about less than 2% may directly affect the Transformation Agenda. According to the organization, this meager percentage demonstrates a lacuna between the commitments made by the government in the budget speech and indeed the Transformation Agenda and resource allocation. According to Osinowo (2012), specific issues constraining effective implementation of the GESS included bureaucrats' resistance to change, over dependence on foreign institutions and models, low technical capability of farmers amongst others. Coker *et al.,* (2013) also noted that the limited access to mobile phones by the rural households and limitations of telecommunication network coverage as at 2013, delay in the supply of inputs by agro-dealers, limited supervision and monitoring of agro-input dealers and inability to effectively operationalize the electronic scheme in some states and locations may have constrained implementation of the scheme.
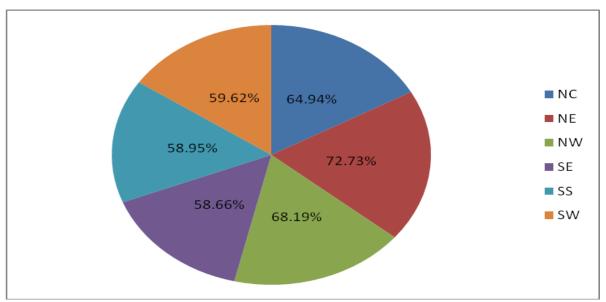

Figure 6: Farmer Turnout-Farmer Redeemed Ratio

CONCLUSIONS AND RECOMMENDATIONS

Arising from the outcome of the analysis, the study revealed that farmer turn-out and the number of active LGAs were significant determinants of farmers redeemed with inputs across the country. Locational differences in farmers redeemed with agro-inputs were also observed to be significant across the 6 zones. Expectedly, the northern parts, comprising the North West, North East and North Central which is the food production hub of the country accounted for about 90% of the total numbers of farmers redeemed with agro-inputs across the country. Aside these, numerous issues were observed to have constrained effective implementation of the scheme bordering on weakness in farmer mobilization, administrative issues, sharp practices on the part of farming households, budget limitations, and associated technology related problems, amongst others. To enhance the effective implementation of the initiative and expand coverage, with the view to enhancing productivity and standard of living of the farmers, it is thus recommended that: (i) the State Offices of the Federal Ministry of Agriculture and the State Ministries of Agriculture /State Agricultural Development Programmes should up-scale the on-going awareness, farmer education and mobilization efforts aimed at wooing and accommodating more farmers under the scheme; (ii) effort should be made by the FMARD Regional Offices across the country to upscale supervision of field implementation, especially the activities of the agro-input redemption centers and the agro-input dealers, with a view to ensuring better service delivery; (iii) the Federal Department of Rural Development ensures that all on-going smallholder focused donor supported food security related projects and programmes such as the IFAD Assisted Community Based Natural Resource Management Programme, Value Chain Development Programme and World Bank Assisted Fadama-III Plus are effectively aligned with the scheme with a view to complementing achievement and covering farmers yet to benefit from the scheme; the Federal Government should upscale and embark on targeted budgetary allocation to specific initiatives like the GESS within the overall allocation to the agriculture sector;(iv) the FMARD should engage more service providers to complement the efforts of Cellulant, the organization overseeing the implementation of the GESS implementation; (v) there should be targeted mobile phone support rather than blanket approach, but, with focus on the resource poor farmers or core poor, particularly women and the disabled; (vi) there is need for more political will and support from the Chief Executives of the 36 States of the Federation and the Local Government Chairpersons of the 774 LGAs in making the scheme a success.

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