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Corporate Social Responsibility and the role of Rural Women in Sustainable Agricultural Development in sub-Saharan Africa: Evidence from the Niger Delta in Nigeria ¹

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Research Department

Corporate Social Responsibility and the role of Rural Women in Sustainable Agricultural Development in sub-Saharan Africa: Evidence from the Niger Delta in Nigeria

Joseph I. Uduji, Elda N. Okolo-Obasi & Simplice A. Asongu

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Abstract

Low productivity among female farmers when compared with their male counterparts is considered an outcome of limited access to agricultural land and inputs. The objective of this investigation was to assess the impact of multinational oil companies' (MOCs') CSR on rural women access to modern agricultural inputs in the Niger Delta, Nigeria. A total of 700 rural female farmers were sampled across the region. Results from the use of a logit model indicated that CSR recorded significant success in agricultural development generally, but has undermined equality. This implies that if a woman's agricultural productivity is continuously hindered by unequal access to agricultural resources (or opportunities) and widespread inequality will limit poverty reduction efforts in Nigeria. The results also showed that women depended on CSR of MOCs for policy dialogue and advocacy for women's access to agricultural land and inputs. Supporting agricultural initiatives that focus on empowering women would boost food security in sub-Saharan Africa.

Keywords: gender equality; agriculture; corporate social responsibility; multinational oil companies; logit model; Nigeria.

JEL Classification: J43; O40; O55; Q10

Introduction

The most important sector for African economies in terms of employment remains agriculture (FAO, 2011). Despite its low productivity, agriculture remains the continent's largest employment sector with about 57 percent of Africa's labour force, and the main source of income for 90 percent of Africa's rural population (African Development Report, 2015). The majority of Africa's poor resides in rural areas and depends on agriculture as a source of livelihood (IFPRI, 2014). While productivity in this sector is largely undermined by its low mechanization, allocation of resources between men and women has left the continent with less than the desired level of productivity (Manyire & Apekey, 2013; Bayraktar & Fofack, 2018; Mannah-Blankson, 2018; Elu, 2018; Uduji *et al*, 2018a).

In Nigeria, the consequence of gender discrimination in land ownership is women's lack of direct participation in the Global Memorandum of Understanding (GMoU)² agricultural projects and programmes, which constitute major sources and means of accessing modern agricultural inputs. Hence women are vulnerable to poverty since most of them have limited access to agricultural land and their participation in the GMoUs programmes is often through their husbands or adult sons (Uduji and Okolo-Obasi, 2018b). As critically engaged in section 2.2, the extant literature has failed to assess the relevance of GMoUs programmes in African agriculture within the framework gender equality (see Idemudia, 2014; Frynas, 2009; Tuodolo, 2009; Uduji *et al*, 2018c; Renouard and Lado, 2012; Lompo and Trani, 2013; Eweje, 2006; Edoho, 2008; Akpan, 2006; Alfred, 2013; Uduji and Okolo-Obasi, 2017; Mukasa and Salami, 2016; Jafry and Sulaiman, 2013; Doss, 2018; Collins, 2015; Sharaunga *et al*, 2015).

Against this background and apparent gap in the literature, the positioning of this research has three main objectives which are consistent with the multinational oil companies' (MOCs) new corporate social responsibility (CSR) model (i.e. GMoUs) relative to gender equality in agricultural development:

- Analyze the level of multinational oil companies' CSR investments in policy dialogue and advocacy for women's access to agricultural land in Niger Delta, Nigeria.

² Background information and more insights into the GMoU are provided in section 2.

- Examine the impact of multinational oil companies' GMoUs on women access to modern agricultural inputs in the Niger Delta, Nigeria.
- Determine the consequences of closing the gender gaps in accessing agricultural land and inputs in the Niger Delta, Nigeria.

Study Hypothesis

Though women constitute about 75 percent of the farming population in the Niger Delta, working as smallholders and suppliers of labour, their possibilities in agriculture appear to be hindered by the cultural norms. Their low productivity when compared with their male counterparts is considered to be an outcome of limited access to agricultural land and inputs. Thus, we hypothesize that the new CSR model of multinational oil companies has not significantly impacted on gender equality in agriculture, in the Niger Delta, Nigeria.

In the light of the above, the main question this research aims to answer is the following: how do rural women in the Niger Delta region contribute towards sustainable agricultural development through GMoUs programmes? Results from the use of a logit model indicate that CSR recorded significant success in agricultural development generally, but has undermined equality. This implies that if the agricultural productivity of women is continuously hindered by unequal access to agricultural resources (or opportunities and, widespread inequality will limit poverty reduction efforts in Nigeria. The results also showed that women depended on CSR of MOCs for policy dialogue and advocacy for women's access to agricultural land and inputs.

The rest of this paper is organized as follows. Section 2 focuses on the background and related literature. Section 3 describes the materials and methods. Section 4 presents the results and corresponding discussion. Section 5 concludes with implications and future research directions.

2. Background and literature

2.1 Background

This section discusses the background of the study with emphasis on connections between CSR, MOCs, the government setup and the ultimate impact on woman. In Nigeria, the economy is heavily reliant on the oil sector (Ekhaton, 2014). The International Monetary

Fund estimates that the oil and gas sector in Nigeria accounts for over 95% of the foreign export earnings and about 65 percent of the Nigerian government revenue (IMF, 2018). The Niger Delta where multinational oil companies (MOCs) maintain a significant presence has become a theatre of incessant violent conflicts. The federal government of Nigeria (FGN) is in joint-venture agreements with the MOCs operating in the oil and gas sector of the country. The FGN owns and controls the land, including its natural resources in the subsoil. This is a major source of conflicts in the region (NDDC, 2001). Land can be acquired by the FGN for over-riding purposes by virtue of the country's land use Act 1978. Notwithstanding, the negative impacts of the activities of the MOCs in the region include gas flaring, oil spills, environmental pollution, negative social impacts, conflict and violence among others (Eweje, 2006; Edoho, 2008; Akpan, 2006). Consequently, MOCs have been involved in a plethora of CSR activities in the Niger Delta and other parts of Nigeria. Each year, MOCs invest in social projects and programmes in the communities of the region. Their initial investments were primarily in agricultural development programmes and have gradually grown to include health care, roads and civil infrastructure, water projects, small businesses and education, which could benefit the local communities (Uduji and Okolo-Obasi, 2017). Over the years, MOCs have sought to improve on how they engage with these communities to deliver the projects (Ite, 2007). In 2006, they introduced a new way of working with communities called the Global Memorandum of Understanding (GMOU). The GMOUs represent an important shift in their CSR approach, placing emphasis on more transparent and accountable processes, regular communication with the grassroots, sustainability and conflict prevention (Alfred, 2013).

A GMOU is a written statement between MOCs and a cluster of several communities based on local governments or clan/historical affinity lines, as advised by the relevant state government. The governing structure are defined with a 10-person community trust, called the Community Development Boards (CDBs) that function as the main supervisory and administrative organ; ensuring implementation of the projects and setting out plans and programmes (SPDC, 2013). Under the terms of GMOUs, the communities decide on the development they want, while MOCs provide secure funding for five years, ensuring that the communities have stable and reliable financing as they undertake the implementation of their community development plans (Chevron, 2014). By the end of 2012, MOCs had signed agreements with 33 GMOU clusters, covering 349 communities, which is about 35 percent of

the local communities around their business operations in the region; totaling about 723 projects worth of \$117 million (SPDC, 2013).

Nevertheless, traditionally, the people of the Niger Delta have been farmers and fishermen. But the decades of oil spillage and gas flaring, as well as a rapidly growing population, has meant that these traditional sources of livelihood are either no longer viable or have experienced significant decline (NDDC, 2001). Consequently, the region's unemployment rates are higher than the national average (NDDC, 2004). Though women constitute about 75 percent of the farming population in the Niger Delta, working as smallholder tenant farmers and suppliers of farm labour, their possibilities in agriculture appear to be hindered by the cultural and traditional contexts that regard their roles as just helping their husbands in providing food for their families (Uduji & Okolo-Obasi, 2018a). The prevailing characteristics of the gender disparities in the oil region are manifested in social rights and entitlements in a form which denies women equal economic and political empowerment and, in particular, women's right to own land and participate in GMoUs' agricultural interventions.

2.2. Literature review

Gender disparities in agriculture are mainly characterized by unequal access to agricultural inputs (Killic *et al*, 2015; Kristjanson *et al*, 2017). Pervasive inequality, especially over the ownership of agricultural land, continues to limit women's contribution to household food basket (Palacios-Lopez & Lopez, 2015). Most women do not have access to agricultural inputs, apart from their own labour (Rufai *et al*, 2018). Using data from some African countries, 41 percent of female and only 15 percent of male farmers indicated that they do not independently own land for agricultural purposes (Peterman *et al*, 2011). The extent and determination of gender gaps in agriculture across African countries showed large productivity gaps between men and women, and the shortfall when women's productivity is compared to that of men is as large as 66 percent (Farnworth *et al*, 2016; Palocio-Lopez *et al*, 2017). The low productivity among female farmers is considered to be an outcome of their limited access to agricultural inputs such as land, fertilizer and extension service (Mukasa & Salami, 2016; Jafry & Sulaiman, 2013; Uduji *et al*, 2018b). Low levels of education and limited access to markets have also contributed to the low productivity among female farmers

(Doss, 2018; Collins, 2015; Sharaunga *et al*, 2015). Women can play important and varied roles in agriculture, but they often have unequal access to productive resources and opportunities relative to men. Closing these gaps would be good for women and development in African agriculture.

The extent to which the CSR initiatives of the MOCs have contributed to community development in the region remains contested. For example, scholars such as Idemudia (2014), Frynas (2009), Tuodolo (2009) and others have argued that the CSR process in the Niger Delta region is not far-reaching or deeply entrenched. But in contrast, Renouard and Lado (2012), Lompo and Trani (2013), Uduji and Okolo-Obasi (2018d) support the CSR initiatives, arguing that MOCs have somewhat contributed to basic capabilities like water, electricity and shelter, material well-being of some people living close to oil production sites in these communities. Arguably, Muthuri (2012), relying on the extant literature on CSR in Africa, posited that CSR issues prevalent in Africa include poverty reduction, community development, education and training, economic and enterprise development, health and HIV/AIDS, environment, sports, human rights. Visser (2006) used the nature of CSR in an African context to argue against the accuracy of Carroll (1991) on priorities in developing countries, and proposed that Carroll's CSR Pyramid would not be the best model for understanding CSR initiatives in Africa. Philip (2006) posited that the motivation for CSR in Africa comes from the institutional failure of the government, unlike in USA and Europe where government pressure on multinational corporations has gone a long way in shaping CSR initiatives. Amaeshi *et al* (2006) proposed that CSR in Nigeria be aimed towards addressing the peculiarity of the socio-economic development challenges of the country (e.g. poverty alleviation, health care provision, infrastructural development, education, etc) and would be informed by socio-cultural influence (e.g. communication and charity); they might not necessarily reflect the popular Western standard/expectations of CSR (e.g. consumer protection, fair trade, green marketing, climate change concerns, social responsible investments, etc). Hence, philanthropic initiatives as CSR by MOCs are prevalent in Nigeria (Uduji *et al*, 2018).The positioning of this research in the relation to the engaged literature has been covered in the introduction³.

³ The positioning of this research also departs from contemporary literature on sustainable environmental development which has focused on, *inter alia*: the linkage between environmental degradation and inclusive human development (Asongu and Odhiambo, 2018); connections between environmental sustainability, economic development and conflicts (Fisher and Rucki, 2017); planning for improved sustainable development

3. Materials and methods

In this study, we adopted a quantitative method, given the scarcity of quantitative data on the intricacies of CSR impact in the region (Uduji and Okolo-Obasi, 2018c; Uduji *et al*, 2018c). This study made use of a survey research technique targeted at obtaining information from a representative sample of female farmers. It is essentially cross-sectional and describes and interprets what exists at present. Figure 1 identifies the constituents' administrative states of the Niger Delta, Nigeria.

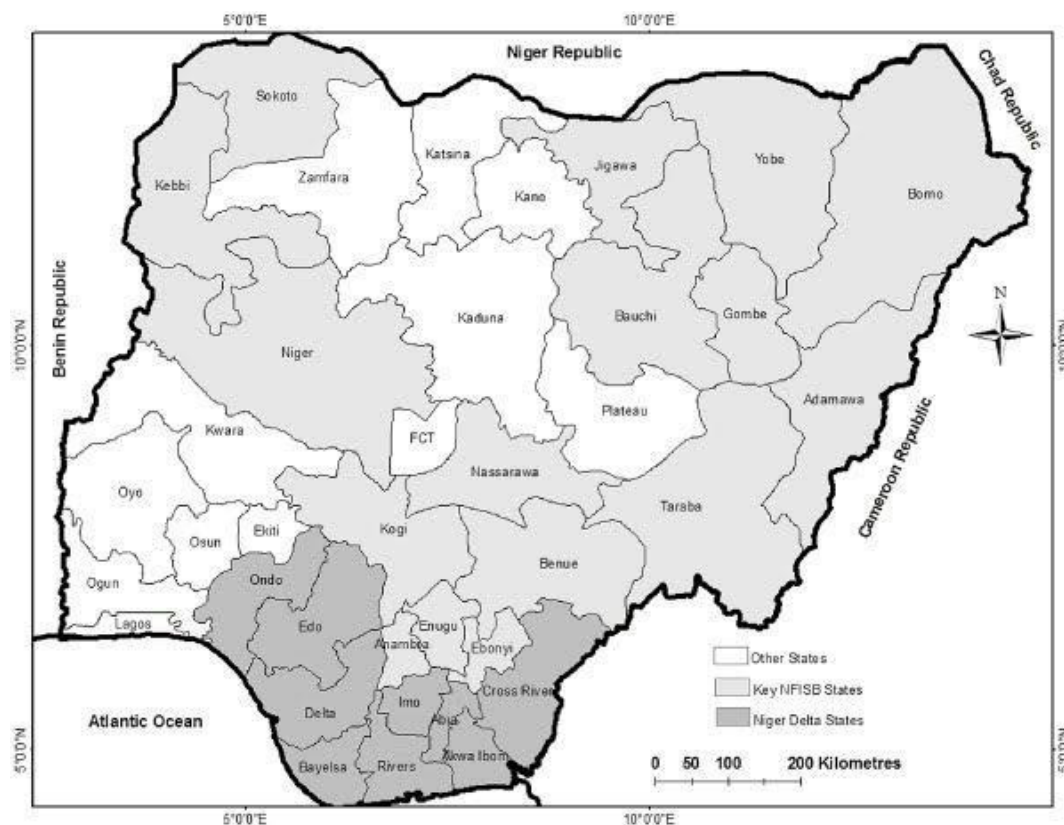


Figure 1: Constituents administrative States of the Niger Delta, Nigeria.

Source: NDDC, 2004.

3.1 Sample size

The sample size determination formula developed by Cochran (1977) was used to obtain a sample size of 700 respondents in the rural communities of the Niger Delta region of Nigeria as shown in Equation 1.

(Saifulina and Carballo-Penela, 2017); comparative sustainable development (Asongu, 2018) and the relevance of normative beliefs in attitudes towards environmental protection (Wang and Lin, 2017).

$$\text{Sample size} = no = \frac{Z \times Z(PQ)}{e \times e} \quad \text{Eq. (1)}$$

where, z = z-score = confidence level

P= The estimated proportion of the population that has the attribute in question (in this case that are rural farmers)

e = The desired level of precision, margin of error = confidence interval

Therefore, we chose a confidence level of 95 percent, with 5 percent margin of error and the estimated population of female farmer in the region is 0.65. Substituting the values in our equation, we have:

$$no = \frac{1.96 \times 1.96 \times (.65 \times .35)}{.05 \times .05}$$

$$no = \frac{3.8416 \times .2275}{.0025}$$

$$no = \frac{.873964}{.0025}$$

$$= 349.60$$

This was approximated to 350, and also doubled to further minimize the possible errors in the sample selection. Hence, a total sample unit of 700 respondents was chosen for the study.

3.2 Sampling procedure

The selection of the sample involved both purposive and simple random samplings. In the first stage, we purposely selected two local government areas (LGAs) each from the nine states of Niger Delta region. These LGAs were selected based on how rural they are. In the second stage, three rural communities were purposefully selected from each of the selected LGAs based on the communities that are more rural than others. This resulted in selecting fifty-four rural communities. Finally, out of the selected rural communities, female farmers were selected with the help of community gate keepers to make up the 700 respondent used for the study (See Table 1).

States	Population	% population of Female Farmers	% of Total Population	Total Sample Per Sate	Samples Per Community
Abia	2,881,380	1,872,897	9%	63	21
AkwaIbom	3,902,051	2,536,333	12%	84	28
Bayelsa	1,704,515	1,107,935	5%	42	14
Cross River	2,892,988	1,880,442	9%	63	21
Delta	4,112,445	2,673,089	13%	91	30
Edo	3,233,366	2,101,688	10%	70	23
Imo	3,927,563	2,552,916	13%	91	30
Ondo	3,460,877	2,249,570	11%	77	26
Rivers	5,198,716	3,379,165	17%	119	40
Total	31,313,901	20,354,036	100%	700	233

Table 1. Sample size determination table

Source: NPC, 2007/Authors' computation

3.3 Data collection

Data for the study were collected from primary sources using a participatory rural appraisal (PRA) technique of written semi-structured interview (SSI) questionnaire. The use of participatory research technique in collecting CSR impact data especially as it concerns the rural household in the host communities of the MOCs is based on the fact that it involves the people being studied, and their views on all the issues are paramount. The semi structure interview questionnaire was the major tool the study used for the household survey. It was directly administered by the researchers with the help of research assistants. The use of local research assistants was because of the inability of the researchers to speak the different local languages and dialects of the many ethnic groups in the sampled rural communities.

3.4 Analytical framework

The primary data generated in the field were cautiously treated and analyzed with both descriptive and inferential statistics. This was to enable us answer the research questions as well as test the hypothesis. Descriptive statistics was used in answering the research questions stated thus:

- What is the level of multinational oil companies' CSR investment in policy dialogue and advocacy for women access to agricultural land in the Niger Delta, Nigeria?
- Do multinational oil companies GMoUs impact on women access to modern agricultural inputs in the Niger Delta, Nigeria?

- What are the consequences of closing the gender gaps in accessing agricultural land and inputs in the Niger Delta, Nigeria?

The descriptive results were presented in tables, figures and charts and the hypothesis was tested using inferential statistical tool. A logit model of receipt and non-receipt of MOCs' corporate social responsibility via the GMoUs by rural women was estimated as functions of selected socio-economic variables were used. Adapting and modifying Uduji and Okolobasi (2017), we state that for binominal response variables, the logistic link is the natural logarithm of the odds ratios generally represented as follows:

$$\text{Log} \left(\frac{P_i}{1-P_i} \right) = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \dots + \beta_n X_n \text{Eq. (2)}$$

On this note, we estimate the impact of CSR activities of multinational oil company's using GMOU on enhancing the productivities of rural women in the Niger Delta region thus:

$$\text{Logit (RWE)} = \beta_0 + \beta_1 \text{Gmou} + \beta_2 \text{Age} + \beta_3 \text{Gen} + \beta_4 \text{PriOcc} + \beta_5 \text{HHSize} + \beta_6 \text{Edu} + \beta_7 \text{AY} + \beta_8 \text{YOHM.} \quad \text{Eq. (3)}$$

Where:

RWE = Rural women empowerment (in the area of advocacy to enhance access to lands, access to finance and access to farm inputs).

GMoU = Multinational oil companies' corporate social responsibility via GMOU

Age = Age of the respondent

HHcom = Household composition (having male child(ren) = 1 otherwise =0)

PriOcc = Primary occupation of the respondent

HHSize = Household size of the respondent

Edu = Highest level of education of the respondent

AY = Annual income of the respondent

Exp = Experience of the respondent in farming (experienced =1 otherwise =0)

MS = Marital status of the respondent

Ychild = Income of children of respondent

*In this model, the main parameter of interest is β_1 in terms of sign and significance.

4. Results and discussion

4.1 Socio economic characteristic of the respondents

The analysis of the gender equality in agriculture via GMoUs intervention in Niger Delta begins with a description of the social (education), demographic (age, marital status, household size), and economic (occupation, household income) characteristics. These characteristics are important in understanding the differences in the socio-economic status of the women participating in the GMoUs agricultural project interventions compared with their non-participating counterparts. The analysis of Table 2 shows the socio-economic characteristics of the respondents. The analysis indicates that about 56% of the respondents were full time farmers, whereas 15% engaged in fishing and only about 7% were employed by either the government or private sectors in non-farm activities. The average age of the respondent is 43 years, whereas average experience was 25years, with about 8% having more than 35 years of experience. The analysis also shows that about 24% of the rural female population could neither read nor write, whereas the rest had basic education level. Only 9% of the respondents were single, whereas 67% were married, 18% were widowed, likely as a result of incessant violence in the region, and 6% were separated. The average monthly income of the female farmer was less than NGN100, 000(equivalents to \$276 US dollar) per a month.

Variables	Freq	%	Cum	Household Size			
Primary Occupation				1-4 Person	238	34	34
Full Farming	389	56	56	5-9 Person	368	53	87
Trading	78	11	67	10-14 Person	72	10	97
Fishing	102	15	81	15 Person and above	22	3	100
Government/Private Paid Employment	48	7	88		700	100	
Handicraft	45	6	95	Monthly farm Income			
Others	38	5	100	1000 - 50,000	162	23	23
	700	100		51,000 - 100,000	125	18	41
				101,000 - 150,000	160	23	64
Years of Experience in Farming				151,000 - 200,000	102	15	78
None	55	8	8	201,000 - 250,000	73	10	89
1 - 15 Years	125	18	26	251,000 - 300,000	56	8	97
16 - 25 Years	176	25	51	Above 300,000	22	3	100
26 - 35 Years	290	41	92		700	100	
Above 35 Years	54	8	100	Monthly Off farm Income Level			
	700	100		None	289	41	41
Age of Respondents				1000 - 50,000	142	20	62
Less than 20 years	75	11	11	51,000 - 100,000	116	17	78
21-30 years	186	27	37	101,000 - 150,000	95	14	92
31-40 years	204	29	66	151,000 - 200,000	39	6	97
41 - 50 years	149	21	88	Above 200,000	19	3	100
Above 40 years	86	12	100		700	100	
	700	100		Household Composition			
Level of Education				Males Only	98	14	14
None	166	24	24	Females only	147	21	35
FSLC	343	49	73	Males and Females	392	56	91
WAEC/WASSCE	133	19	92	None	63	9	100
B.Sc and Equivalent and above	58	8	100		700	100	
	700	100		Monthly Income of children of respondent			
Marital Status				None	266	38	38
Single	66	9	9	1000 - 50,000	122	17	55
Married	469	67	76	51,000 - 100,000	102	15	70
Widow	123	18	94	101,000 - 150,000	75	11	81
Divorced/Separated	42	6	100	151,000 - 200,000	53	8	88
	700	100		201,000 - 250,000	34	5	93
				251,000 - 300,000	29	4	97
				Above 300,000	19	3	100
					700	100	

Table 2.Socio-economic characteristics of the respondents

Source: Computed from the field data by authors

4.2 Econometric Analysis

The important role of the agricultural sector in contributing to food security could be seen reflected in its prioritization in the CSR agenda of multinational oil companies (Figure 3). GMoUs agricultural projects and programmes intervention indicates that there is a growing recognition of agriculture's potential to spur growth and reduce poverty in Nigeria. According to the World Bank (2014), agriculture accounts for one-third of Nigeria's gross domestic product (GDP), and two-third of its citizens rely on the sector for their incomes. MOCs investment in agriculture is in line with development agenda, and will not only improve productivity and the country's ability to feed a growing population, but will also lift families out of poverty.

		B		Wald		Sig.		95.0% C.I. for EXP(B)	
		Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper
Step 1(a)	<i>Age</i>	.126	.009	3.205	1	.073	.983	.966	1.002
	<i>PriOcc</i>	.114	.212	.033	1	.856	.962	.635	1.459
	<i>HHSize</i>	.314	.021	.492	1	.483	.986	.947	1.026
	<i>Edu</i>	.017	.021	.652	1	.419	1.017	.977	1.059
	<i>AY</i>	.096	.114	.715	1	.398	.908	.727	1.135
	<i>EXP</i>	.047	.115	.171	1	.679	.954	.761	1.194
	<i>MS</i>	.073	.135	.291	1	.038	1.930	.713	1.212
	<i>HHcom</i>	-.219	.312	.033	1	.456	.562	.435	1.459
	<i>Ychild</i>	-.017	.115	.171	1	.679	.954	.761	1.194
	<i>GMOU</i>	.521	.061	7.137	1	.003	5.614	1.045	1.443
	Constant	3.219	.667	1.940	1	.164	4.331		

a Variable(s) entered on step 1: *Age, PriOcc, HHSize, Edu, AY, HHCom, MS, Ychild, GMOU, Gender*.

Table 3: Projected effects of multinational oil firms' CSR investment using GMOU on female farmers' empowerment (access to farm input) in the Niger Delta region

Source: Computed from the field data by authors.

The analysis of Table 3 indicates that GMoUs effects on women's access to modern agricultural inputs could yield enormous benefits for women and their families, communities and the country. The finding agree with Lamontagne-Godwin *et al* (2018) in Pakistan, in that closing the gender gap in accessing modern agricultural inputs would increase food security and improve livelihoods for the growing population of developing countries. Nonetheless, this observation is in odd with Seymour (2017) in rural Bangladesh, where women access to productive resources as men would not necessarily increase yields on farms and raise total agricultural outputs.

Predictor Variable	Coefficient	Z - Value
		$z = \frac{\hat{B}}{SE}$
Age	.126 (.009) ^a	3.205 (.073) ^b
PriOcc	.114 (.212) ^a	.033 (.856) ^b
HHSIZE	.314 (.021) ^a	.492 (.483) ^b
Edu	.017 (.021) ^a	.652 (.419) ^b
AY	.096 (.114) ^a	.715 (.398) ^b
Exp	.047 (.115) ^a	.171 (.679) ^b
MS	.073 (.135) ^a	.291 (.038) ^b
Ychild	.017 (.053) ^a	.171 (.679) ^b
HHcom	-.219 (.312) ^a	.033 (.456) ^b
GMOU	.521* (.041) ^a	6.328 (.003) ^b
Constant	3.219 (.667) ^a	1.940 (.164) ^b

* Significant at 5%; - a = this only refers to standard error (SE) b= Associated P Value of the Z value

Table 4: Z value table of analysis of the impact of multinational oil companies' CSR using GMoU on female farmers' empowerment (access to farm input) in the Niger Delta region

Source: Computed from the field data by author

A logistic regression analysis was conducted to predict the impact of the MOCs' GMOU on the empowerment of rural female farmer (access to farm input) using the variables in equation above as predictors.

$$\text{Logit (RWE)} = 3.219 + .521\text{GMOU} + .126 \text{ Age} + .114 \text{ PriOcc} + .314 \text{ HHSIZE} + .017\text{Edu} + .096 \text{ AY} + (.219) \text{ Ychild} + .047\text{YOMH} + .073\text{Ms} + .047\text{Exp}$$

A test of the full model against a constant only model was statistically significant, indicating that the predictors as a set reliably distinguished between the "yes" and "no" impact of CSR (chi square = 45.210, p <.000 with df= 8). Nagelkerke's R² of .814 indicated a strong relationship between prediction and grouping. Prediction success overall was 92%. (93% for yes and 91% for the no).The Z- value for GMOU is 6.328, with an associated p-value of .003. Based on the set 5% significant level, the study concluded that CSRs of the MOCs under

GMOU have not made a significant impact on *the Empowerment of rural women farmers (access to farm Input)*. However, the EXP (B) value of the Predictor – GMOU is 5.614, this implies that if the MOCs raise their CSR Program targeted to intervene in providing farm input to the rural women farmers by one unit, equivalent of 1USD, the odds ratio is 7.0 times as large and therefore rural women farmers are 7 times more likely to increase their productivity by investing more in farming.

		B		Wald		Sig.		95.0% C.I. for EXP(B)	
		Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper
Step 1(a)	<i>Age</i>	.037	.009	3.205	1	.073	.983	.966	1.002
	<i>PriOcc</i>	-.319	.212	.033	1	.856	.962	.635	1.459
	<i>HHSIZE</i>	.431	.021	.492	1	.483	.986	.947	1.026
	<i>Edu</i>	-.007	.021	.652	1	.419	1.017	.977	1.059
	<i>AY</i>	-.016	.114	.715	1	.398	.908	.727	1.135
	<i>Ychild</i>	-.017	.115	.171	1	.679	.954	.761	1.194
	<i>Exp</i>	.321	.124	2.895	1	.029	1.810	.635	1.033
	<i>MS</i>	-.013	.135	.291	1	.038	1.930	.713	1.212
	<i>HHcom</i>	-.319	.312	.033	1	.456	.562	.435	1.459
	<i>GMOU</i>	1.241	.061	5.174	1	.003	11.143	1.045	1.443
	Constant	1.816	.667	1.940	1	.164	5.131		

a Variable(s) entered on step 1: *Age, PriOcc, HHSIZE, Edu, AY, YchildExp, Ms, GMOU, HHcom.*

Table 5: Projected effects of multinational oil firms' CSR investment using GMOU on female farmers empowerment (advocacy for access to land) in the Niger Delta region

Source: Computed from the field data by authors

The analysis of Table 5 estimates the effects of MOCs interventions on policy advocacy for women access to agricultural land that could lift people out of hunger. This finding conforms with Slavchenska (2015) in Tanzania, in that control over and ownership of agricultural land is a critical component of well-being. Like income, land assets can be converted to cash, but they are also multidimensional. Nevertheless, this finding disagree with Rahman (2008), in that whosoever that controls these assets within the household is critical to household and individual well-being, and how these assets are allocated within households has important implications for a range of outcomes. Anyanwu *et al* (2016) agree that policy makers, donor governments and development partners should turn their attention to key drivers of income inequalities, especially in African countries.

Predictor Variable	Coefficient	Z - Value
		$z = \frac{\hat{B}}{SE}$
<i>Age</i>	0.037 (.019) ^a	3.205 (.073) ^b
<i>PriOcc</i>	-.319 (.142) ^a	.033 (.856) ^b
<i>HHSize</i>	.431 (.013) ^a	.492 (.483) ^b
<i>Edu</i>	-.007 (.012) ^a	.652 (.419) ^b
<i>AY</i>	.016 (.042) ^a	.715 (.398) ^b
<i>Ychild</i>	.017 (.053) ^a	.171 (.679) ^b
<i>Exp</i>	.321 (.132) ^a	2.895 (.029) ^b
<i>MS</i>	.013 (.130) ^a	.291 (.038) ^b
<i>HHcom</i>	-.319 (.205) ^a	.033 (.456) ^b
<i>GMOU</i>	1.241* (.052) ^a	5.174 (.003) ^b
Constant	1.816 (.667) ^a	1.940 (.164) ^b

* Significant at 5%; - a = this only refers to standard error (SE) b= Associated P Value of the Z value

Table 6 : Z value table of analysis of the impact of multinational oil companies' CSR using GMOU on female farmers' empowerment (advocacy for access to land) in the Niger Delta region.

Source: Computed from the field data by authors

A logistic regression analysis was conducted to predict the impact of GMOU on the female farmers' access to land using the variables in equation above as predictors.

$$\text{Logit (RWE)} = 1.816 + 1.241\text{GMOU} + .037\text{Age} + (.319)\text{PriOcc} + .431\text{HHSize} + (.007)\text{Edu} + (.016)\text{AY} + (.319)\text{HHcom} + (.017)\text{Ychild} + .321\text{Exp} + .013\text{MS}$$

A test of the full model against a constant only model was statistically significant, indicating that the predictors as a set reliably distinguished between the "yes" and "no" impact of CSR (chi square = 45.210, p <.000 with df= 8). Nagelkerke's R² of .916 indicated a strong relationship between prediction and grouping. Prediction success overall was 92%. (94% for yes and 90% for the no). The Z- value for GMOU is 5.174, with an associated p-value of .013. Based on the set 5% significant level, the study concluded that CSRs of the MOCs under GMOU have not made a significant impact on the productivity of female farmers by advocacy

for access to land among the rural people. However, the EXP (B) value of the Predictor – GMOU is 11.143, this implies that if the MOCs raise their CSR Program targeted to improve advocacy for female farmers to have free and unhindered access to land by one unit, equivalent of 1USD, the odds ratio is 11.1 times as large and therefore rural women farmers are 11.1 times more likely to increase their productivity through this access to land.

4.3 Main findings

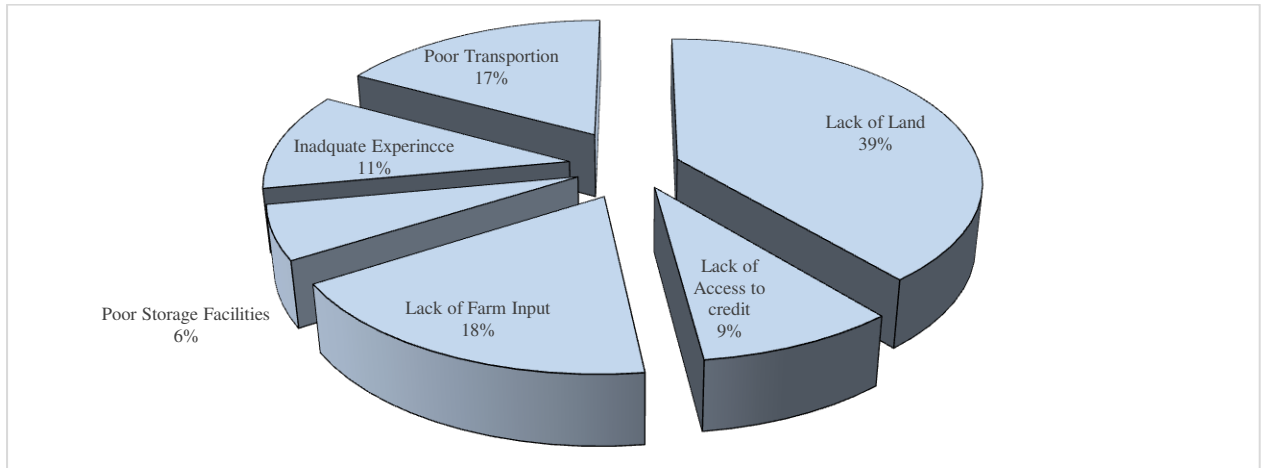


Figure 2: Percentage distribution of the rural women farmers according to their major challenge in the Niger Delta

Source: Computed from the field data by authors

The analysis of Figure 2 shows that the major challenge on the rural female farmers is access to land. About 39% of the rural female farmers complained that their major challenge is land, whereas 18% complained of input. Access to credit accounts for 9%, poor transportation 17%, inadequate experience to use the improved inputs accounts for 11%. It is on this note that we emphasize that any CSR intervention targeted to improve the rural women's access to land and inputs will amount to a lot of inclusive growth in the rural communities. Hence we advocate that emphasis on advocacy by the MOCs to change cultural practices that deny women access to land will be a positive step in right direction.

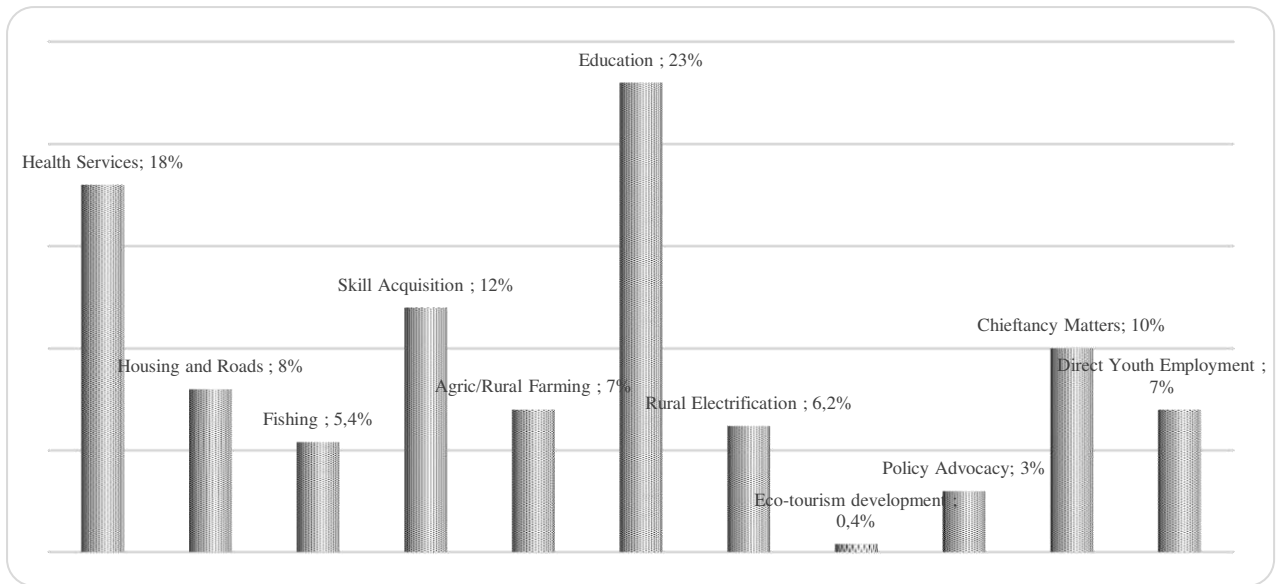


Figure 3.Percentage distribution of GMoUs intervention of MOCs by sectors in the Niger Delta.

Source: Computed from the field data by author.

The analysis of Figure 3 shows that education in the form of provision of infrastructure, library and laboratory equipment, scholarship and teachers training accounts for 23% of the CSRs of the MOCs, health services accounted for 18% of the CSR. Most interestingly is that it appears there is no deliberate effort targeted at women empowerment in the subject of our discussion; but youth empowerment (including male and female) through direct employment by the MOCs accounts for 7% of the CSR. Agriculture and rural farming which is not only for the women accounts for 7% and this is about the only intervention that is purely rural based; it is also interesting to note that, most of other forms of CSR are urban-based. Based on this finding, we posit that a deliberate effort targeted at the rural women farmers especially on advocacy for their access to land and farm input, will go a long way to enhancing the productivity of the rural women.

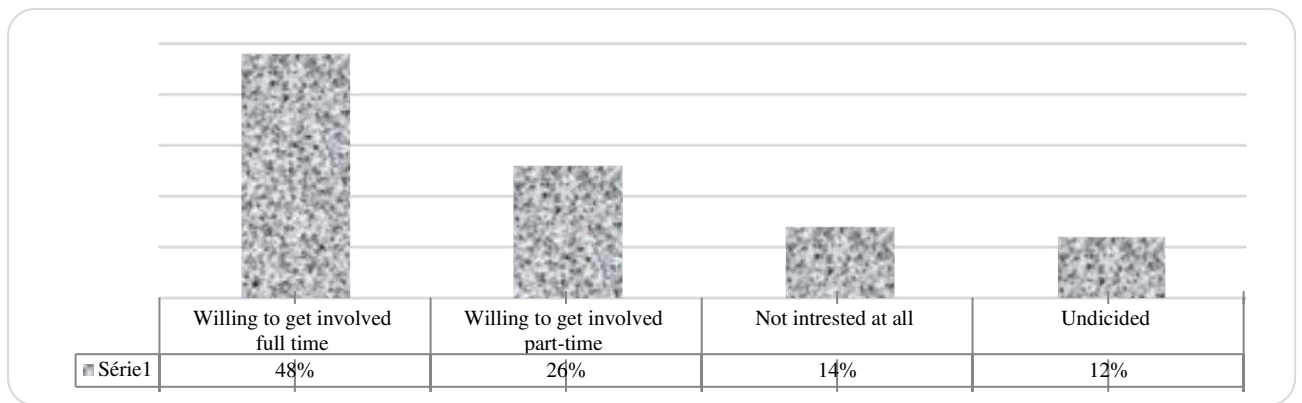
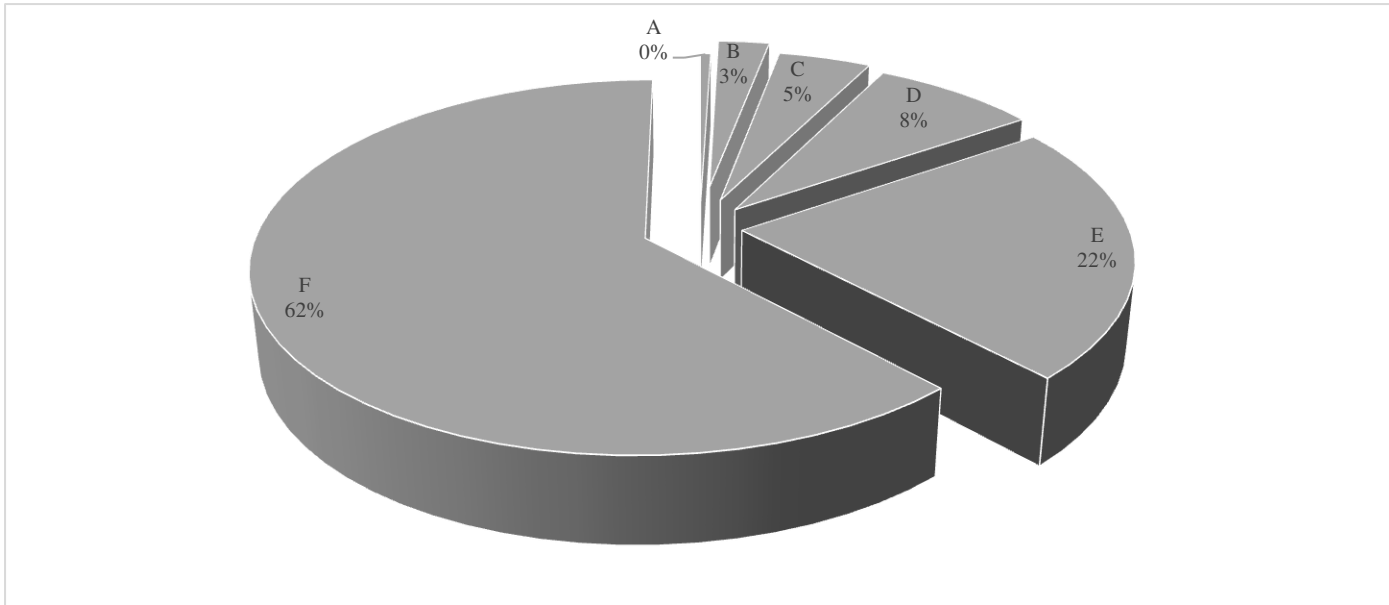


Figure 4.Percentage distribution of the women’s willingness to be involved in farming

Source: Authors’ calculation

The analysis of Figure 4 suggests that the interests of most rural women are in farming enterprises, but the 14% not willing to farm, probably were the riverine women occupied with helping their husbands in artisanal fisheries or petty trading of local gins (Kaikai). Hence, the key hindrance to agricultural development and broader growth in the region remains the wide and pervasive agenda gap in access to agricultural land asset and inputs in agricultural productivity. This finding tends to concur with Oseni *et al* (2015) in that women comprise nearly half of the labour force in Nigeria’s agricultural sector, but they produce less per hectare than men. Also Aguilar *et al* (2015) in Ethiopia agree that the numerous disadvantages that women in agriculture face include accessing the same resources, land assets, inputs, training, markets and opportunities as men. In Malawi, Karamba and Winters (2015) remarks that women also face ingrained norms and institutional barriers that further widen the gap. Therefore, tackling the barriers that hold back the participation of female farmers in the GMoUs could both enhance gender equality and usher in broader economic activities in the Niger Delta region.



Where

A = Above 200,000 B = 151,000 - 200,000 C = 101,000 - 150,000
 D = 51,000 - 100,000 E = 1000 - 50,000 F = None

Figure 5: Rate of receipt of intervention in cultural tourism development from the MOCs

Source: Authors' calculation

The analysis of Figure 5 suggests that GMoUs intervention in rural women's empowerment in the Niger Delta have not received significant attention. The result shows that 62% of the farmers could not access interventions from the MOCs, whereas 38% could access very little via the GMoUs. This suggests that agriculture in the Niger Delta may not fulfill its potential, due to lack of investment and insufficient attention for the GMoUs of MOCs. However, recognizing these opportunities and a better understanding of the cultural and traditional understanding of the underlying factors that actually cause the gender gaps, including how these factors vary across different ethnic groups, and what policies can be effectively employed to bridge the gap would require the CBDs attention.

Overall, our findings suggest that the relative priorities of MOCs' corporate social responsibilities in the Niger Delta, Nigeria should be different from the classic American version by Carroll's (1991). Instead, the CSR of MOCs in the Niger Delta should comply with Visser (2006) on the importance of a cultural context in the determination of appropriate CSR priorities and programmes for the host communities. There is also the need for flexibility as suggested by Amaeshi *et al* (2006) in addressing the peculiarity of the socio-economic challenges in the region, which involves closing the gender gap in agriculture; the

traditional source of livelihood of the people. However, in extension and contribution, we argue that if MOCs are to work towards an ideal CSR in the Niger Delta region, closing the gender gaps in accessing agricultural land and inputs would be good both for women and agriculture. To influence agricultural land policy for women in the region, various policy advocacy mechanisms can be used to improve gender equality in land access, such as traditional joint-tithing modalities, land leasing, land use certificate issuances, community and territorial land delimitation programmes, land allocation through state-managed land reform programmes, land law reforms, and other types of land interventions. However, to reach women with modern agricultural inputs, it may be better to work with traditional and cultural groups in which women already participate instead of focusing only on clusters or production-oriented groups; knowing that when a woman gains more control over her income, she gains more say over her important decisions that affect her family, especially her children; families in which women influence economic decisions would allocate more income to food, health, education and children's nutrition. It is therefore our contention in this paper that, MOCs are in a better position to improve gender equality through GMoUs agricultural project interventions; which in turn would translate the region (known with conflict and violence, rise of militant youth groups and sabotage of oil company equipment) into an enabling environment for more widespread responsible business; with people who are better fed, educated and equipped to make productive contribution to their local economies, within agriculture and beyond. Hence, embracing a more localized CSR approach should form the foundation of GMoUs practice of multinational oil companies in sub-Saharan Africa.

5. Conclusion and policy implications

Though women constitute about 75 percent of farming population in the Niger Delta, working as smallholders and suppliers of labour, their possibilities in agriculture appear to be hindered by cultural norms. Their low productivity when compared with their male counterparts is considered to be an outcome of limited access to agricultural land and inputs. Thus, we set out to assess the impact of a new CSR model of multinational oil companies (MOCs) on gender equality in agriculture in the Niger Delta, Nigeria. Results from the use of the logit model indicated that the General Memorandum of Understandings (GMoUs) model has recorded significant success in different areas of development goals, but has also undermined inequality in agricultural projects and programmes in the region. Cultural

obstacles to women's right to own agricultural land and access to inputs were key gender gaps in the region's agricultural development. This implies that if the agricultural productivity of rural women is continuously held back by unequal access to agricultural resources and opportunities, widespread inequality will limit both growth and poverty reduction in Nigeria. This inference is motivated by the documented evidence that the response of poverty to growth is a negative function of inequality (Asongu & le Roux, 2017; Tchamyou *et al.*, 2019). The results also showed that rural women farmers depended on GMoUs intervention in policy dialogue and advocacy for women access to agricultural land and inputs. The results suggested that closing the gender gaps in agriculture would require GMoUs reaching rural women with agricultural information and resources through the rural groups in which women already participate, instead of focusing only on clusters/cluster development boards (CDBs) or production oriented groups. Also addressing women's productivity in agriculture would require MOCs working with governments to improve cultural norms by supporting agricultural land reformsto boost food security in Africa.

This investigation adds to the literature on gender in agriculture in five notable ways. Firstly, we identified the key gender gaps in Niger Delta agricultural development. Secondly, the research provided insights into the usefulness of GMoUs in improving opportunities for women farmers in Africa. Thirdly, unlike former studies, this study makes use of a quantitative methodology, keeping in mind that quantitative works on the impact of CSR in the region are lacking. Fourthly, the investigation seeks to explore the nature of Africa's conceptualization of CSR models within the context of rural female farmers. Fifthly, we put forward policy suggestions that would aid MOCs to successfully tackle the challenges of CSR implementation in Africa. To our knowledge, this is the first study that surveys the relevance of GMoUs in African agriculture within the framework gender equality.

Disclosure statement

No potential conflict of interest was reported by the authors.

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