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Mainstreaming Gender Sensitivity in Cash Crop Market Supply Chains: the Role of CSR in Nigeria's Oil Producing Communities

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Abstract

Purpose -The purpose of this paper is to critically examine the multinational oil companies' (MOCs) corporate social responsibility (CSR) initiatives in Nigeria. Its special focus is to investigate the impact of the global memorandum of understanding (GMoU) on mainstreaming gender sensitivity in cash crop market supply chains in the Niger Delta region of Nigeria.

Design/ methodology/ approach – This paper adopts an explanatory research design, with a mixed method to answer the research questions and test the hypotheses. A total of 1200 rural women respondents were sampled across the Niger Delta region.

Findings - Results from the use of a combined logit model and propensity score matching indicate a significant relationship between GMoU model and mainstreaming gender sensitivity in cash crop market supply chains in the Niger Delta.

Research limitations/implications – This study implies that MOCs' CSR intervention that improve women's access to land and encourage better integration of food markets through improved roads and increased mobile networks, would enable women to engage in cash crop production.

Originality/ value – This research contributes to gender debate in agricultural value chain from a CSR perspective in developing countries and rational for demands for social projects by host communities. It concludes that business has an obligation to help in solving problems of public concern.

Keywords Gender, cash crop market, supply chains, corporate social responsibility, multinational oil companies, sub-Saharan Africa

Research type Research paper

1. Introduction

The fresh emphasis on agriculture since the 2007-2008 worldwide food crises has brought a growing acknowledgment over past efforts having failed to invigorate agricultural market in workable, equitable, and commercially viable ways (FAO, 2014). Besides, they have not put in the full range of actors, from smallholder farmers to broad-based food corporations (World Bank, 2009). Arguments are on the increase that realizing an end to hunger and poverty will entail addressing gender disparities in agricultural value chain development, presented in terms of business, social justice, or progression cases (African Development Report, 2015). Gender–specific limitations on production and marketing of cash crops have significant implications for men and women having the ability to partake in market–leaning agricultural growth and development (African Economic Outlook, 2017). Women make vital contributions to agriculture in emerging countries, but their roles vary considerably by region and are altering rapidly in some areas; their input into agricultural work varies even more extensively, in line with the specific crop and activity (Adamon and Adeleke, 2016). Both women in agriculture and those in the rural areas have this in common across regions: not being able to access productive resource and openings like men (African Competitive Report, 2017). This gap in gender is found for many belongings, inputs, and services – land, education, livestock, labour, technology, as well as extension and financial services. Costs are, thus, imposed on the agricultural sector, the broader economy, the society, and even on women themselves (African Development Bank, 2011). Closing the gender gap in agriculture is not that easy, yet, progress can be made and simple interventions turn out to be very effective in generating significant gains for the agricultural sector as well as the society. According to FAO (2014), policy interventions can assist in closing the gender cavity in agriculture and rural labour market.

As it stands, Nigeria's economy still rests heavily on the oil and gas sector, which contributes 95% of export incomes, and 80 - 85% of government proceeds, and about 32% of gross domestic products (African Economic Outlook, 2017). Nigeria is the major oil producer in Africa and is one of the top ten globally; her recoverable reserves were projected to be 36.2 billion barrels in January 2007. With the country's relative oil wealth, GDP per capita is 2,400 USD, and impoverishment is prevalent – about half of the populace live on less than $1.25 per day (African Competitiveness Report, 2017). Oil and gas reserves are mostly located in the Southern part of the country – the Niger Delta. This expanse of the nation is mapped by lack and under development. Oil extraction

is a capital rather than labour-intensive industry, therefore, it makes available little employment (Francis *et al,* 2011; NDDC, 2001). To worsen matters, the region has difficult geographical terrain which makes the cost of infrastructure higher; then, there are the effects of environmental degradation, caused in part by the consequences of oil extractions – oil spills, gas flaring etc – on traditional industries like fishing and farming (UNDP, 2006; NDDC, 2004). All the same, the multinational oil companies (MOCs) that have sustained significant presence in the region have participated in a plethora of corporate social responsibility (CSR) activities in the region and other parts of Nigeria. Over the years, MOCs have made better how they engage with local communities to deliver this projects. In 2006, they introduced a novel way of working with communities called global memorandum of understanding (GMoU). The GMoUs represent a vital shift in method, placing emphasis on clearer and responsible processes, steady communication with the grassroots, sustainability and avoidance of conflict (SPDC, 2013; Chevron, 2014). Under the terms of the GMoUs, the communities choose the development they want while MOCs provide safe funding for five years, which enable them successfully undertake the execution of their community development plans (Chevron, 2017; SPDC, 2018).

However, scholars like Asongu *et al* (2019a), Okolo-Obasi *et al* (2021), Uduji *et al* (2020), Frynas (2009), Idemudia (2014), Tamuno (2020), Egbon *et al* (2018), Ekhator (2019, 2020), and others have reasoned that the CSR process in Nigeria is not far reaching or deeply rooted. Thus, it has been argued that some of the CSR initiatives are not implemented on a coherent basis nor are they always sustained (Uduji *et al,* 2019, 2023; Amaeshi *et al,* 2006). Arguably, despite the embracing of various CSR mechanism by MOCs in Nigeria, the oil producing communities have enjoyed a proportionately low amount of gain when compared to the high social as well as environmental costs of extractive activities in their lands (Uduji and Okolo-Obasi, 2022a, 2022b). In contrast, Ite (2007), Lompo and Trani (2013), Renouard and Lado (2012) support CSR initiative, insisting that the CSR initiatives of MOCs have actually backed the development of communities in the region, when the failures of the government of Nigeria is put into consideration.

Against the afore-mentioned background, this paper seeks to determine the level of CSR investment that MOCs have made in line with agricultural value chains as well as establish the level of gain from such investment that accumulate for the rural women entrepreneurs in addition

to finding out the effect of such on their trade. The five areas of focus stated below, similarly represent five main questions:

- Can MOCs CSR involvement in agricultural value chains be said to be effective in the Niger Delta region of Nigeria?
- What is the measure of gender involvement in the GMoU activities of MOCs in the host communities of Niger Delta?
- Has MOCs' GMoU undertakings been helpful in women's accessing of land and in better integration of food markets via improved roads and increased mobile networks?
- Are female farmers groups or marketing groups to which female farmers can belong reinforced by MOCs' GMoU activities so that women may achieve scale in marketing?
- Has MOCs' GMoU activities been effective in women's access to credit and extension services to relieve female farmers' of obstacles in purchasing quantity (or quality) enhancing inputs?

1.1 Study hypothesis

By tradition, the people from the Niger Delta region of Nigeria are farmers and fishermen. Decades of oil spillage and gas flaring, in addition to rapidly growing population, however, brought about these traditional sources of livelihood either no longer being viable or experiencing significant decline (Idemudia, 2014; Kalama and Asanebi, 2019). Thus, the region's rate of joblessness are higher than the national average (NDDC, 2001, 2002). Though, as accounted for by Uduji and Okolo-Obasi (2022a, 2022b, 2022c), women farmers get below 10% of the credit offered to small-scale farmers in the Niger Delta; they are prevented from applying for formal loans because of the intricacy of the administrative processes, inappropriate loan sizes and terrible credit rates. Typically, women are lacking in farmer clusters in the region.

According to the record of Okolo-Obasi and Uduji (2021, 2023), in 2017, some 20,098 men accessed loans against a low number -- 8,550, by women, in the Niger Delta expanse of Nigeria. Thus, the resultant hypothesis is shown below:

- CSR of MOCs using GMoU failed in contributing towards the betterment of women's access to land and enhancement of food market via improved roads and increased mobile networks in Nigeria's Niger Delta region.

- CSR of MOCs using GMoU could not boost female farmers groups or marketing groups to which female farmers can belong so that women may achieve scale in marketing in the Niger Delta region of Nigeria.
- CSR of MOCs using GMoU has not effectively added to the accessing of credit and extension of services to relieve female farmers' limitations in purchasing quantity (or quality) improving inputs in the Nigeria's Niger Delta region.

The positioning of this paper breaks away from existing mainstreaming gender equality across value chains in agriculture, which has centred on, *inter alia*: thresholds of external flows for inclusive human development (Asongu *et al,* 2019b); distribution of agricultural productivity gains (Moss and Schmitz, 2019); multi-stakeholder partnerships in value chain development (Mutebi *et al,* 2018); fighting African capital flight (Asongu *et al,* 2020); farmers groups, collective marketing and smallholder farm performance (Abdul-Rahaman and Abdulai, 2020); agricultural innovation and inclusive value chain development (Devaux *et al,* 2018); profitability and technical efficiency of cocoa production (Fawole and Ozkan, 2018); responding to uncertainty in high quality cassava flour value chains (Lamboll *et al,* 2018); value chain for sorghum beer (Orr, 2018); smallholder value chains as complex adaptive systems (Orr *et al,* 2019), and mainstreaming gender equality in African agricultural research and development (Manyire and Apekey, 2013).

Other parts of the paper are presented as follows: examining of the theoretical underpinning (Section 2); describing the methods and materials (Section 3); presenting the results and corresponding discussion (Section 4), and conclusion -- implications, caveat, and future research directions (Section 5).

2. Theoretical underpinnings

A core focus of corporate sustainability is stakeholder relations, of which corporate social responsibility can be one facet (Carroll, 1991). Gender in the facet of CSR with appropriate argumentation, based on theories, approaches and models of CSR, is found rather challenging (Uduji *et al,* 2023). Yet, later debate on gender and socially accountable decision-making appears to suffer from quite simplified view on CSR model, despite the ambitions for a more accurate measure of continued commitment to social responsibilities (Vilkie and Agota, 2014). Four activities considered as measurable evidence for CSR (obligation to employees, community

participation, financial contributions, and environmental awareness) seem to be rather speculative and might inaccurately lead to nonexistent relation between gender concerns and real facet of CSR; enabling both scientific and empirical evidence in this facet might really profit from using triangulation line of attack or additional blending of several research techniques (Vilkie and Agota, 2014). Nevertheless, this study utilizes quantitative methodology, but reflects on the outcome from the African perspective, while putting into consideration the role of cultural context in determining apt CSR priorities and programmes for mainstreaming gender sensitivity in the market supply chains of cash crops in Nigeria's Niger Delta region. Carroll's (1991) CSR pyramid is likely the most recognized model of CSR, with its four levels showing the relative significance of economic, legal, ethical, and philanthropic responsibilities in that order. Yet, the exploration of CSR in Africa (Visser, 2006) questions the correctness and relevance of Carroll's CSR pyramid; in that if its basic four-part model is putative, it suggests that the relative priorities of CSR in Africa may end up varying from the classic, American ordering. Amaeshi *et al* (2006) have reasoned that the Nigeria idea of CSR is remarkably dissimilar to the Western version.

3. Materials and Methods

The adopted design for this study was that of explanatory research where we applied quantitative methods (quantitative research is the process of collecting and analyzing numerical data; which can be used to find patterns and averages, make predictions, test casual relationships, and generalize results to wider populations; notwithstanding the weaknesses of quantitative methodology, it is valid for the sort of research that was conducted in this paper). We got data for the study by using survey research methods on a representative sample of female population of the region. Cross-sectional data came from the survey as well as the key informant interview (KII). While there are disagreements about the geographical boundaries of the Niger Delta, officially, it comprises the following nine states, most of which fall within the South-South geographical region of the country (Figure 1): Abia, Akwa Ibom, Bayelsa, Cross River, Delta, Edo, Imo, Ondo and Rivers states.

Figure 1: Constituent administrative states of the Niger Delta, Nigeria
Source: NDDC, 2004 /Authors' modification

3.1 Sample size

To acquire sufficient sample size to be surveyed from the population, we used Cochran (1997) formula in working it all out. The formula is mathematically stated thus:

$$N = \frac{Z^2 P(1-P)}{e^2}$$

Where, N is the sample size; Z *is* the standard normal deviation for a given level of confidence, (95% confidence =1.96) *e* is margin of error at 0.05 for CI at 95%; P is proportion to be estimated. Hence:

$N = \frac{1.96^2(0.5)(1-0.5)}{0.05^2}$ = $N = \frac{0.9604}{0.0025}$ = 384.

To guarantee that only minimum error is allowed, we made up the size to 400, and further multiplied it by three. With this, we arrived at the total sample – 1200 respondents.

3.2 Sampling procedure

In choosing the sample population (1200 respondents) used, we made use of multi-staged sampling. In the first stage, we made a list of the nine states of the region from which two local government areas (LGAs) each were purposely picked on the basis of having MOCs facilities and presence there. In the next stage, four communities were chosen from each of the picked LGA purposefully based on the intensity of MOC's presence in their communities. There was also a purposeful selection of two communities that belong to a cluster development board (CDBs) and another two communities not belonging to such. The respondents from the communities that belong to CDBs were seen as the "treatment group" while respondents from communities without CDB are termed "control group". Finally, out of these chosen communities, community gate keepers assisted in arbitrarily picking the final 1200 respondents we put to use. Table 1 illustrates the spreading of the sample.

Table 1.Sample size determination table

States	Total Population	Female Population	% of total population	State Sample	Community sample
Bayelsa	2,277,961	1,161,760	5	64	16
Rivers	7,303,924	3,725,001	17	206	51
Delta	5,663,362	2,888,314	13	159	40
Edo	4,235,595	2,160,153	10	119	30
Akwaibom	5,482,177	2,795,910	13	154	39
Cross River	3,866,269	1,971,797	9	109	27
Imo	5,408,756	2,758,466	13	152	38
Abia	3,727,347	1,900,947	9	105	26
Ondo	4,671,695	2,382,564	11	131	33
	42,637,086	**21,744,914**		**1200**	**300**

Source: FGN, 2017/Authors' computation

3.3 Method Data collection

Participatory appraisal (PA) method was used to derive primary data for this study. A written semi-structured questionnaire (SSQ) and KII guides were engaged in the gathering of data. We used this method because the views of the people being studied on all the issues of CSR in their various communities are very important. The SSQ was the main tool used for the survey to collect data

from the 1200 respondents samples picked. The instrument was administered straightaway to the respondents by the researchers with the aid of local research assistants. This local research assistants were engaged as a result of the roughness of the terrain and the range of local languages and dialects scattered through the ethnic groups in the area of study.

3.4 Analytical framework

After the collected data were collated, the data were carefully handled and thoroughly analyzed using both descriptive and inferential statistics. We presented the result of the descriptive statistics in tables, charts and figures. We also made use of inferential statistic of logit model of receipt and non-receipt of MOCs' CSR evaluated as functions of picked socio-economic variables for testing the hypothesis of the study. To assess the logit model, we embraced with some modification Uduji and Okolo-obasi (2022a, 2022b, 2022c, 2023) in asserting that for binominal response variables, the logistic link is the natural logarithm of the odds ratios generally denoted as:

$$\log\left(\frac{P_i}{1-P_i}\right) = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \cdots \beta_t X_t + \mu \qquad (1)$$

Putting this equation to use, we evaluated the effect of CSR of MOCs on: improving on women's ability to access land and enhancing the integration of food market via provision of better roads as well as increased mobile networks in the Niger Delta expanse of Nigeria (denoted as ALIFM); solidifying female farmers groups or marketing groups available to female farmers so enable women achieve scale in marketing in the Niger Delta expanse of Nigeria (denoted as SFFGSM); and intensifying access to credit and extension services to relieve female farmers' limitations in purchasing quantity (or quality) enhancing inputs in the Niger Delta expanse of Nigeria (denoted as HACES).

$$\log(ALIFM) = \beta_0 + \beta_1 GMoU + \beta_2 C_{1-n} + \beta_3 M + \mu \qquad (2)$$

$$\log(SFFGSM) = \beta_0 + \beta_1 GMoU + \beta_2 C_{1-n} + \beta_3 M + \mu \qquad (3)$$

$$\log(HACES) = \beta_0 + \beta_1 GMoU + \beta_2 C_{1-n} + \beta_3 M + \mu \qquad (4)$$

Where:

ALIFM, SFFGSM and HACES = are the dependent variables as noted above.

GMoU = represents the corporate social responsibility of the MOCs' using GMOU

C = stands for the other socio economic variables of the respondents (Age, family size, job/occupation, revenue, etc.)

M = stands for other moderating variables and

μ = stochastic error term.

**our emphasis in* this model is the β_1 which is the key parameter of interest in terms of sign and worth.

3.5 SCOTDI

Adding more to the above analytical framework, it is necessary to note that MOCs operational in the Niger Delta still face the problem of how to determine the success or failure of their CSR initiatives either as it concerns its effect on community development or its influence on corporate – community relations. To effectively view this problem, Shell Petroleum Development Company (SPDC) in 2013 launched the Shell Community Transformation and Development Index (SCOTDI). SCOTDI stands for an innovative framework that integrates and adapts a number of international principles into a fused index in a way that is accessible to local content (SPDC, 2018). The framework is put to use in this study to access and rank the percentage distribution of the women facing the main problems preventing access to land in the region.

4. Results and discussion

4.1 Descriptive characteristics

Analysis of data collected in this study begins with descriptive analysis of some of the economic (occupation, household revenue); demographic (age, marital status, household/family size) and social (education) features of the respondents. The significance of these features is to understand the variances in the demographic and socio-economic status of the treatment group (CDB respondents) in comparison to the control (non-CDB counterparts) in the Niger Delta region. The result (Table 2) shows that while 32 years is about the average age of respondent in the treatment

group, that of the control group is almost 34 years. By implication there is not much difference in the ages of respondents in both the treatment and control groups. Also, while only about 5% of the respondent from the treatment group were not exposed to formal education, about 16% in the control group share similar weakness. This shows that CSR may have influenced the accessing of female education in the communities.

Table 2: Socio- economic Characteristics of the Respondents.

	Treatment Group			**Control Group**		
Variables	**Freq**	**%**	**Cum**	**Freq**	**%**	**Cum**
Age of Respondents						
Less than 20 years	10	2	2	24	4	4
21-25 years	110	18	20	86	14	18
26-30 years	139	23	43	113	19	37
31 - 35 years	109	18	61	121	20	57
35 - 40 years	96	16	77	102	17	74
41 - 45 years	62	10	88	71	12	86
45 - 50 years	48	8	96	51	9	95
Above 50 years	26	4	100	32	5	100
	600	**100**		**600**	**100**	
Level of Education						
None	27	5	5	97	16	16
FSLC	273	46	50	282	47	63
WAEC/WASSCE	222	37	87	143	24	87
Degree and above	78	13	100	78	13	100
	600	**100**		**600**	**100**	
Primary Occupation						
Fishing	165	28	28	178	30	30
Trading	74	12	40	46	8	37
Farming	222	37	77	241	40	78
Paid Employment	58	10	87	38	6	84
Handicraft	43	7	94	62	10	94
Others	38	6	100	35	6	100
	600	**100**		**600**	**100**	
Marital Status						
Single	102	17	17	110	18	18
Married	348	58	75	420	70	88
Widow	63	11	86	23	4	92
Divorced/Separated	87	15	100	47	8	100
	600	**100**		**600**		
Household Size						

1-4 Person	315	53	53	292	49	49
5-9 Person	198	33	86	214	36	84
10-14 Person	75	13	98	72	12	96
15 Person and above	12	2	100	22	4	100
	600	**100**		**600**	**100**	
Annual Income						
1000 - 50,000	19	3	3	92	15	15
51,000 - 100,000	85	14	17	105	18	33
101,000 - 150,000	125	21	38	155	26	59
151,000 - 200,000	128	21	60	97	16	75
201,000 - 250,000	119	20	79	73	12	87
251,000 - 300,000	82	14	93	56	9	96
Above 300,000	42	7	100	22	4	100
	600	**100**		**600**	**100**	
Value of receipts Through CG						
1000 - 50,000	32	5	5			
51,000 - 100,000	53	9	14			
101,000 - 150,000	79	13	27			
151,000 - 200,000	90	15	42			
201,000 - 250,000	95	16	58			
251,000 - 300,000	211	35	93			
Above 300,000	40	7	100			
	600	**100**	**200**	-		

Source: Computed from the field data by authors

The analysis reveals that while almost 28% of the treatment group are fishers and sea food collectors, about 30% of the control group are involved in similar occupation. Also, about 12% of respondents in the CDB communities are traders, while just about 8% of the control are in the same category. In terms of farming as primary career, about 37% of the treatment group farm while the control recorded about 40 %. This shows that while about 65% of the treatment are in traditional industries; that of control is about 70%. This finding agrees with the views of Egbon *et al* (2018) in that most CSR of the MOCs should be channeled towards making the traditional industries better. Also worthy of note is that about 7% of the treatment are in handicraft while 10% are employed by others. On the other hand, about 10% of the control are in handcraft with 6% employed by others, revealing that the employment status of the respondent are almost the same. Very essential to note in this result is that, irrespective of being in the treatment or control, the average annual earnings of the respondents are still very poor. While the average income in the

treatment group is about NGN200, 000 (about 400 USD) yearly, that of the control group remains NGN90, 000 (about 180 USD) yearly, showing that though revenue level of the treatment is greater than that of the control, the rate of impecuniousness in the study area is still very high.

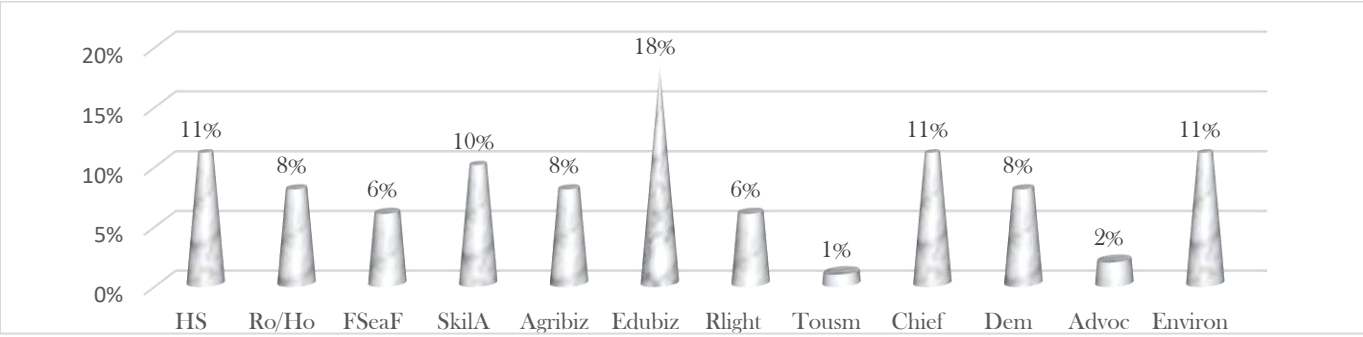

Figure 2: Percentage distribution of GMoUs intervention of MOCs by sectors in the Niger Delta[1].
Source: Computed from the field data by authors.

Analysis (Figure 2) reveals that while tourism has the least attention in the CSR investment at 1%, educational business has a record of 18% as the highest. Educational record is in the area of provision of education infrastructure, equipment of both library and laboratory, making scholarship available, then bursary, and the training of both teaching and non-teaching staff. Health service was as high as about 11% of the intervention while provision of electricity in rural communities took 6%. Others include: rural roads and housing taking up 8%; agribusiness and farming having 8%, as well as sea foods collection and fishing going with about 5%. Policy advocacy that plays a major role in any gender mainstreaming issue got as low as 3% and, funny enough, chieftaincy matters went with a high 11%, thus, sharing same level with environmental control and management (11%). This looks like there is no rigorous effort deliberately aimed at women. To be noted is that agribusiness, which is about the major employer of the rural people particularly women, did not get much and, yet, that stands as the major intervention that is mainly rural based. Much of the other forms of CSR undertakings of the MOCs are urban-based. This finding concurs with Ekhator (2020) in that the actions of these multinational oil companies have brutally affected the agribusiness of most of the women, as a result, any thoughtful effort aimed at bettering these women's access to cash crops will really enhance the rural women's yield.

[1] **HS** = Health Services, **Ro/Ho** = Road and Housing, **FSeaF** = Fishing and Sea Foods, **SkilA** = Skill Acquisition, **Agribiz** = Agriculture Business, **Edubiz** = Education, **Rlight** = Rural Electrification, **Tousm** = Tourism, **Advoc** = Policy Advocacy, **DEm** = Direct Youth Employment, **Chief** = Chieftaincy Matter, **Environ** = Environmental Control and Management.

Table 3: Percentage rating of MOCs' CSR in helping women in cash crop market supply chains in the Niger Delta.

Activities	**Chevron**	**Total E&P**	**Agip**	**Exxon Mobil**	**Shell**	**Others**	**Average**
Provision of short loans targeting only women farmers and marketers	18	15	16	17	15	15	16
Advocacy for changes in laws and norms to strengthen the right and voice of women	10	11	7	11	9	13	10
Skill training for women on efficient use of available lands and cash crops	26	28	25	23	22	24	25
Inclusive business development targeting women	10	14	11	12	10	14	12
Provision of seed grant for women to acquire land and plant cash crops	11	14	19	20	20	18	17
Provision of high yielding cash crops and subsidized farm inputs for women	25	18	22	17	24	16	20
	100	**100**	**100**	**100**	**100**	**100**	**100**

Source: Computed from the field data by authors

The analysis of Table 3 reveals the percentage rating of CSR investment in assisting women in the cash crop supply chain stretching from production to final consumption. The rating indicates that in the view of the women, making available short loans aiming only women cash crop farmers and marketers accounted for about 16% of the CSR undertaking in the area of mainstreaming gender in cash crop value chain. Advocacy for changes in laws and norms to toughen the right and voice of women in order to be involved where they were excluded in the past accounts for about 10%. Others are, skill training for women on effective use of accessible lands and cash crops variety to ensure stable flow of supply accounting for 25%, and inclusive business development targeting women to certify their goods and products are sold at satisfactory and profitable margins accounting for about 12%. Further still, provision of seed grant for women to obtain land as well as plant cash crops, and making available high yielding cash crops as well as subsidized farm inputs for women as incentive towards their involvement accounted for about 37% of the

intervention. This result consents to Okolo-Obasi *et al* (2021) in that to a substantial extent, the MOCs have tried in assisting in the mainstreaming of women in cash crop value chain.

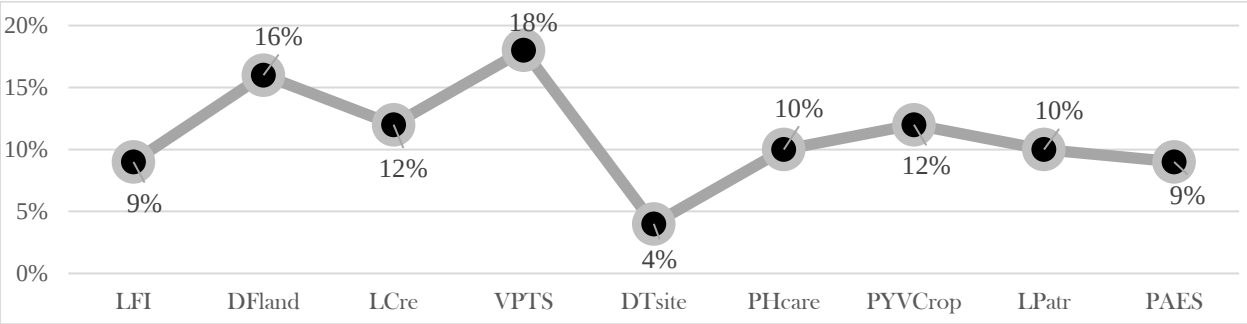

Figure 3: Percentage distribution of women according to their major challenge in the Niger Delta[2]
Source: Computed from the field data by authors

The analysis of Figure 3 indicates the major problems of women as it concerns gender participation in the cash crop value chain. While shortage of farm input is ranked 9%, damaged farm lands by the undertakings of MOCs is rated at 16% and lack of credit for start-up got as much as 12%. The major ranking went to very poor transportation system as it was a great obstacle to the value chain starting from input transportation to output transportation. It got as much as about 18% of the rating. Others are: destruction of tourism site (4%), privation of patronage from the MOCs (10%), poor access to health care (10%), poor crop yielding varieties (12%) and lack of access to extension agent getting 9%. This finding is in line with Uduji *et al* (2019) in that more CSR investment aiming at rural road infrastructure will really assist in attaining gender mainstreaming of cash crop value chain.

4.2 Gender participation level in the MOC's CSR intervention

To determine the depth of women's participation in the CSR undertakings of the MOCs, the opinions of the picked women were sought and assessed using a structure of innovation called

[2] LFI = Lack of farm input, DFLand = Destroyed farm land, LCre = Lack of access to credit, VPTS = Very poor transportation system, DTsite = Destroyed tourism sites, PAHCare = Poor access to health care, PYVCrop = Poor yielding varieties of cash crops, LPatr = Lack of patronage, PAES = Poor access to extension service.

SCOTDI to analyse their contribution in the cluster development boards. The valuation was carried on the basis of the women's view about, honesty in the management of CDBs, inclusiveness in the making of decision, control of the CDBs, and continuity of the CDBs after MOCs' CSR activity. These views of the women were necessary as they were compared to that of men as shown in the secondary data derived from published reports. The report shows a counter opinion of what the men have paraded as participation in the CSR intervention of MOCs.

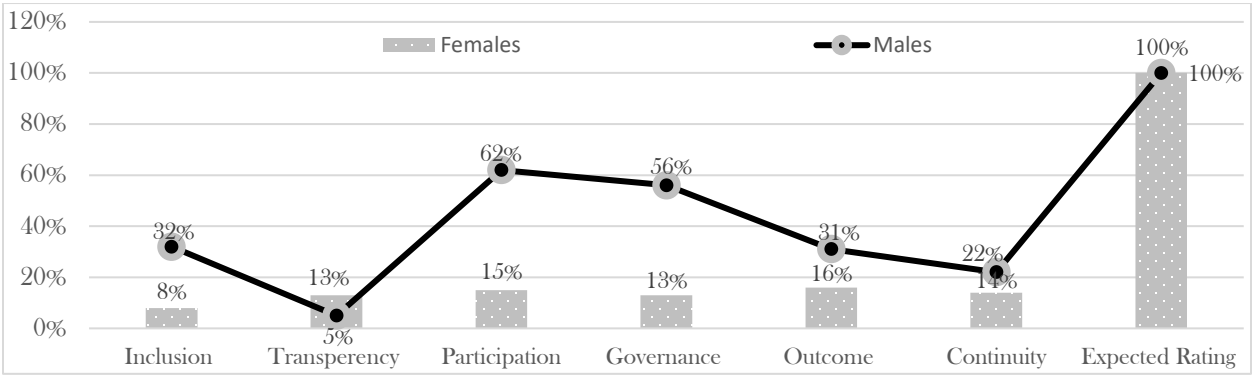

Figure 4: Gender involvement in CDBs and CSR interventions in the Niger Delta region.
Source: Computed from the field data by authors

Analysis (Figure 4) shows that inclusion in the CDBs for women is rated 8% by women compared to men that they rated 32% in other studies. This shows that the involvement of women in the CDB is so low when compared to their male counterpart. On participation of men in the CSR undertakings, the literature has it as a very high 62%, yet, when women rated their own participation, they put it at 15%. This shows that the women that partake are only about 24% of the total percentage of men that participates. The analysis also reveals that women who participate are more transparent than the males. The secondary data placed the men at 56% while women are placed at 13%. In governance, while men are rated a high 56%, women rated their contribution to governance 13%. This finding agree with Lompo and Trani (2013) in that this might be the reason much male inclined decision are often taken in deciding on projects to be executed. Thus, the women commonly believe that men highly dominate the receipt of empowerment from the CSR of MOCs using GMoU. Nevertheless, the effort of some of the multinational oil companies in giving women voice has started yielding significant result in women's access to training, extension agents, credit, some markets and crops and, of paramount importance, land. Such CSR, however,

should be sustained and improved upon. This result agrees with Renouard and Lado (2012) in terms of women being consigned to the back in CBDs clusters as well as tribal community council. Women are not empowered to negotiate with the MOCs directly (with the exception of a few groups in River States having their husbands as staff of oil companies). Therefore, women view it all as not being able to access the GMoU resources and job opportunities that were made available in concessions.

4.3 Econometric analysis

In order to get the treatment effect of CSR on the recipients, we projected the average variances in the basic propensity scores and independent observable characteristics between the treatment and control groups. The variance in means reveals that at 5% significant level, the scores on both the treatment and the control sides are considerably different.

Table 4: Comparison of mean score and observable characteristics across Treatment and Control (N = 1200)

Score in Percentage of maximum score	Recipients	Non Recipients	Difference
Score on women's access to land	32.52	29.34	3.18 **
Score on improved access to extension	31.65	24.93	6.72 **
Score on heightening access to credit	34.73	18.82	15.91**
Score on women achieving scale in marketing	37.55	23.43	14.12**
Score on increase in integration of food markets	31.32	22.46	8.86**
Scores on improved roads and increased mobile networks	42.58	31.35	11.23**
Score on reduction of constraints in accessing inputs	36.72	27.31	9.41**
Scores on strengthening female farmers or marketing groups	21.67	14.78	6.89**
Score on economic capability of respondents	34.12	23.87	10.25**
Observation	**600**	**600**	

Source: Computed from the field data by authors

The following are the variance in scores: women's ability to access lands increased by about 3% in the treatment group while access to extension services in same group improved with about 7%. Also, intensifying access to credit improved by about 16% due to women in the CDB communities having access to credit 16 times more than their counterparts in non-CDB. The result shows that women attaining scale in marketing changed by as much as 14%; increase in integration of food markets, on the other hand, changed by about 9%. Women in the CDB communities witnessed

better roads and increased mobile networks with as much as 11% when compared to their counterfactual in the control and their constraints. Furthermore, accessing inputs was made less by about 9%. We also noted that reinforcing female farmers or marketing groups in the treatment group increased by about 7%, and all these increases combined generally surged the economic ability of CDB respondents by about 10%. By implication, from these results, it is noticeable that the CSR interventions of the MOCs is making impact in the CDB communities.

4.4 Effects of MOCs' CSR investment using GMOU on enhancing women's access to land and cash crops in the Niger Delta region of Nigeria.

The result (Table 5) makes it clear that CSR interventions MOCs in the Niger Delta has been effective in enhancing women's access to land thereby bettering women's capacity to cultivate cash crops. The finding shows that the MOCs have made sensible investment in cleaning degraded lands, as well as addressing cultures cum traditions that limits the ability of women to access land and cash crops. We projected a logistic regression analysis to predict the effect of the CSR of MOCs using GMOU in bettering women's access to land, making use of the variables in our model as the predictors.

Table 5: Projected effects of multinational oil firms' CSR investment using GMOU on enhancing women's access to land and cash crops in the Niger Delta region

		B	S.E.	Wald	df	Sig.	Exp(B)	95.0% C.I. for EXP(B)	
		Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper
Step 1(a)	*MS*	053	.135	.291	1	.038	1.930	.713	1.212
	PriOcc	.224	.212	.033	1	.856	.962	.635	1.459
	HHcom	-.115	.312	.033	1	.456	.562	.435	1.459
	Edu	.043	.021	.652	1	.419	1.017	.977	1.059
	AY	.126	.114	.715	1	.398	.908	.727	1.135
	HHSize	.021	.021	.492	1	.483	.986	.947	1.026
	Age	.076	.009	3.205	1	.073	.983	.966	1.002
	EXP	032	.115	.171	1	.679	.954	.761	1.194
	Ychild	-026	.115	.171	1	.679	.954	.761	1.194
	CSR	1.521	.061	6.175	1	.003	8.721	.645	1.443
	Constant	3.136	.567	1.140	1	.064	3.331		

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

Source: Computed from the field data by authors.

Logit (ALCC) = 3.136 + 053MS +1.521CSR + .076 Age + .224 PriOcc + .021HHSize +.043Edu +.126 AY + (.026) Ychild + (-115)*HHcom* + 032Exp

A test of the full model against a constant only model was statistically significant, showing that the predictors as a set unfailingly distinguished between the "Yes" and "No" effect of CSR (chi square = 36.101, p <.000 with df= 8). Nagelkerke's R^2 of .762 showed a strong relationship between prediction and grouping. The Overall success prediction was 90%. (92% for Yes and 88% for the No). The Z- value for CSR is 6.175, with an associated p-value of .007. Based on the set 5% significant level, the study resolved that CSRs of the MOCs under GMOU have had a substantial effect on bettering women's access to land and cash crops in *Niger Delta.* However, the EXP (B) value of the Predictor – CSR is 8.721, implies that if the MOCs raise their CSR Program aimed at bettering women's access to land and cash crops in the Niger Delta by one unit, equivalent of 1USD, the odds ratio is 8.7 times as large. Thus, the women will be about 9 times more likely to be empowered to have access to lands and cash crops.

4.5 Effects of MOCs' CSR investment using GMOU on strengthening female farmers or marketing groups to achieve scale in marketing.

Table 6 reveals the effects of MOCs' CSR interventions using GMoU on reinforcement of female farmers or marketing groups to attain scale in marketing in the Niger Delta region. The implication of the finding is that MOCs' CSR have had a significant effect in the reinforcement of female farmers groups and female marketing groups to accomplish scale in marketing in the host communities. This was attained by the rehabilitation and constructions of roads that lead to several farm lands. To predict the effect of CSR of MOCs undertakings using GMOU on consolidating female farmers groups and female marketing groups to accomplish scale in marketing, we projected a logistic regression analysis making use of the variables in our model as predictors.

Logit (SFFMG) = 1.236 + .941CSR + .075Age + .217PriOcc +.432HHSize + .104 Edu +. 221AY + .141HHcom + (028)Y*child* + 336Exp + (034)MS

Table 6: Projected effects of MOCs' CSR investment using GMOU on strengthening female farmers or marketing groups to achieve scale in marketing

		B	S.E.	Wald	df	Sig.	Exp(B)	95.0% C.I. for EXP(B)	
		Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper
Step 1(a)	*AY*	.221	.114	.715	1	.398	.908	.727	1.135
	PriOcc	.173	.212	.033	1	.856	.962	.635	1.459
	HHcom	.141	.312	.033	1	.456	.562	.435	1.459
	Edu	104	.021	.652	1	.419	1.017	.977	1.059
	Age	.075	.009	3.205	1	.073	.983	.966	1.002
	Exp	.336	.124	2.895	1	.029	1.810	.635	1.033
	MS	-034	.135	.291	1	.038	1.930	.713	1.212
	HHSize	. 432	.021	.492	1	.483	.986	.947	1.026
	Ychild	-028	.115	.171	1	.679	.954	.761	1.194
	CSR	.941	.061	4.734	1	.003	6.042	1.305	1.443
	Constant	1.236	.667	1.940	1	.164	5.131		

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

Source: Computed from the field data by authors.

A test of the full model against a constant only model was statistically substantial, showing that the predictors as a set unfailingly distinguished between the "Yes" and "No" effect of CSR (chi square = 39.010, p <.000 with df= 8). Nagelkerke's R^2 of .716 showed a strong relationship between prediction and grouping. The overall prediction success was 89%. (90% for Yes and 88% for the No). The Z- value for CSR is 4.734, with an associated p-value of .011. Based on the set 5% significant level, the study resolved that CSRs of the MOCs under GMOU have had a substantial effect on the reinforcement of female farmers groups and female marketing groups to accomplish scale in marketing in Niger Delta. However, the EXP (B) value of the Predictor – GMOU is 6.042, this means that if the MOCs increase their CSR Program aimed at consolidating female farmers or marketing groups to attain scale in marketing by one unit, equivalent of 1USD, the odds ratio is 6.0 times as large and, thus, women groups will be 6 times more likely to be strengthened to attain scale in marketing.

4.6 Effects of MOCs' CSR investment using GMOU on heightening access to credit in the Niger Delta

Analysis of (Table 7) reveals that the multinational oil companies' CSR interventions have had noteworthy effect on surging women's access to credit particularly in the rural host communities of Niger Delta. This access to credit helps in improving not only access to land but also inputs for

cash crops. The finding indicates that the MOCs have made reasonable investment in providing low or no interest credits to rural women's involvement in cultivating, processing and marketing of cash crops mostly in rural Niger Delta region of Nigeria. After assessing logistic regression analysis, we predicted the effect of the CSR of MOCs using GMOU on enhancing access to credit. The variables in equation below were used as the predictors.

Table 7: Projected effects of multinational oil firms' CSR investment using GMOU on heightening women's access to credit in the Niger Delta

		B	S.E.	Wald	df	Sig.	Exp(B)	95.0% C.I. for EXP(B)	
		Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper
Step 1(a)	*CSR*	1.526	.016	7.317	1	.003	12. 614	1.051	1.443
	PriOcc	. 204	.221	.023	1	. 456	1.017	.761	1.459
	HHcom	-.219	.321	.0313	1	. 398	.562	.435	1.459
	Edu	.036	.012	.652	1	.419	.954	.977	1.059
	AY	.134	.141	.715	1	. 856	.908	.761	1.135
	HHSize	.213	.012	.492	1	.483	.986	.947	1.026
	Age	.161	.090	.205	1	. 769	.983	.966	1.194
	EXP	.027	.115	.171	1	.679	.962	.727	1.194
	Ychild	-213	.151	.171	1	.073	.954	.635	1.002
	MS	052	.153	.291	1	.038	1.930	.713	1.212
	Constant	5.214	.617	1.140	1	.064	3.331		

a Variable(s) entered on step 1: *CSR, MS, Age, Edu, PriOcc, AY, HHCom, Ychild, EXP, HHSize.*
Source: Computed from the field data by authors.

Logit (AC) = 5.214 + 1.526CSR + .161Age + .204 PriOcc +.213HHSize + 036 Edu +.134AY + (.219) HHcom + (213)Y*child* + 027Exp + 052MS

A test of the full model against a constant only model was statistically substantial, showing that the predictors as a set dependably distinguished between the "Yes" and "No" effect of CSR (chi square = 45.221, p <.000 with df= 8). Nagelkerke's R^2 of .775 revealed a strong relationship between prediction and grouping. Prediction success overall was 92%. (94% for Yes and 90% for the No). The Z- value for CSR is 7.317, with an associated p-value of .010. Based on the set 5% significant level, the study resolved that CSRs of the MOCs under GMOU have had a substantial effect on increasing women's access to credit in Niger Delta. However, the EXP (B) value of the Predictor – CSR is 12.614 this means that if the MOCs take up their CSR Program aimed at heightening women's access to credit in the Niger Delta by one unit, equivalent of 1USD, the odds ratio is 12.6 times as large. Therefore, the rural women will be 13 times more likely to be enabled to have access to credit.

4.7 Effects of MOCs' CSR investment using GMOU on increasing women's access to extension services in the Niger Delta region

Analysis (Table 8) evaluates the effects of MOCs' CSR interventions using GMoU on surging women's access to extension services in rural communities of the Niger Delta region. This finding confirms that the MOCs' CSR have had some effect in the health care delivery of women in the rural host communities. A logistic regression analysis was carried out to predict the effect of CSR of MOCs intervention using GMOU on bringing up the ability of women to access extension services in the rural communities in Niger Delta using the variables in equation above as predictors. Logit (AES) = 3.826 + 1.061CSR + .057Age + (.231) PriOcc +.413HHSize + 047 Edu +. (016) AY + (.139) HHcom + (028)Y*child* + 231Exp + .313MS

Table 8: Projected effects of MOCs' CSR investment using GMOU on increasing access to extension services in the Niger Delta region

		B	S.E.	Wald	df	Sig.	Exp(B)	95.0% C.I. for EXP(B)	
		Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper
Step 1(a)	*AY*	-023	.114	.715	1	.398	.908	.727	1.135
	PriOcc	.- 231	.212	.033	1	.856	.962	.635	1.459
	HHcom	-.139	.312	.033	1	.456	.562	.435	1.459
	Edu	047	.021	.652	1	.419	1.017	.977	1.059
	Age	.057	.009	3.205	1	.073	.983	.966	1.002
	Exp	.231	.124	2.895	1	.029	1.810	.635	1.033
	MS	.313	.135	.291	1	.038	1.930	.713	1.212
	HHSize	. 413	.021	.492	1	.483	.986	.947	1.026
	Ychild	-.028	.115	.171	1	.679	.954	.761	1.194
	CSR	1.061	.061	8.746	1	.003	10.641	1.045	1.443
	Constant	3.826	.667	1.940	1	.164	5.131		

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

Source: Computed from the field data by authors.

A test of the full model against a constant only model was statistically substantial, showing that the predictors as a set dependably distinguished between the "Yes" and "No" impact of CSR (chi square = 42.102, p <.000 with df= 8). Nagelkerke's R^2 of .816 showed a strong relationship between prediction and grouping. Prediction success overall was 90%. (94% for Yes and 86% for the No). The Z- value for CSR is 8.74, with an associated p-value of .011. Based on the set 5% significant level, the study resolved that CSRs of the MOCs under GMOU have had a noteworthy effect on increasing women's access to extension services in the Niger Delta region. However, the

EXP (B) value of the Predictor – GMOU is 10.641, revealing that if the MOCs take up their CSR Program aimed at increasing women's access to extension services by one unit, equivalent of 1USD, the odds ratio is 10.6 times as large and, thus, rural women's are about 11 times more likely to have access to extension services.

Overall, the results of this study add to the understanding of the constraints women face in partaking in cash crops markets. First, it settles a point that women are as productive as men and should be given comparable prices to those given to men when they farm with equal resources and sell their crops in the same way. Second, hardly do women have comparable access to assets and market as men and this has a serious influence on how they produce and market cash crops. The results suggest that MOCs' CSR interventions that reinforce female farmers' groups or marketing groups to which female farmers can belong, would allow women to attain scale in marketing. This interventions could in the form of group leadership training, financial management training, training group leaders on how to find buyers, or making known a local buyers to female marketing groups. Directly lowering transaction costs that are specifically faced by women would be vital. The results also suggest that the relative priorities of MOCs' CSR interventions in the Niger Delta should vary from the classic, American ordering, as proposed by Carroll (1991). Importance being placed on cultural context in the determination of suitable CSR priorities and programmes, as suggested by Visser (2006), is essential in the context of rural Niger Delta. Flexibility is also needful, as suggested by Amaeshi *et al* (2006), in addressing the distinctiveness of the socio-economic problems in the region, which involve mainstreaming gender sensitivity in cash crop market supply chains. But in addition and contribution, if we are to have a say on how CSR intervention can progress mainstreaming gender sensitivity in cash crop market supply chains in the Niger Delta, we would maintain that MOCs' CSR can play a vital role when intervention that reinforce female farmers' groups or marketing groups is fashioned for the intricacies of real life. It is our disputation that the private sector, generally, is well positioned to address some of the logistical and cultural challenges that women face while trying to access agribusiness in the Niger Delta. Hence, taking on gender equality in agricultural business development has to be prioritized in CSR practices in the Niger Delta because it is likely to help in improving the environment for engaging in business in the region.

5. Policy implications, caveat, and future research directions

We surveyed the influence MOCs' CSR using GMoUs had on mainstreaming gender sensitivity in the market supply chains of cash crop in Niger Delta, Nigeria. Putting to use explanatory research design, the study embraced mixed methods to answer the research questions and put the hypotheses of the study to test. Primary data were derived from a sample of 1200 respondents picked from the nine states of the region using multiple sampling techniques. We executed both survey with structured questionnaire and key informant interview to establish the effect of CSR on mainstreaming gender sensitivity in the market supply chains of cash crop in the region. Outcomes from the use of a logit model and propensity score matching to decide the key variance between variables in the treatment and control reveals that though the noted upsurges were small, they are significant in proving that CSR interventions of the MOCs have been able to influence mainstreaming gender sensitivity in market supply chains of cash crops. The finding suggests that MOCs' CSR intervention that enhance women's access to land and boost the integration of food markets via better roads and improved mobile networks, would empower women to take part in cash crop production. Secondly, GMoUs interventions of MOCs that reinforce female farmers' groups or marketing groups, which is open to female farmers, would allow women to realize scale in marketing. Thirdly, enhancing access to credit via GMoU cluster farming aimed at female farmers would better access to finance and extension services for women in the production of cash crop in the expanse of Niger Delta.

In terms of implication for practice, it is obvious from the findings that women's productivity in agricultural value chain can be made better by MOCs' CSR using GMoUs in Nigeria's oil producing communities. Hence, more women, particularly those in the informal agricultural business sector need to leverage on the GMoU clusters so as to gain from associated rewards. The effects on policy largely surround the consolidation of CSR by policy makers to act as an agribusiness development interface in oil host communities. GMoUs interventions can be used to strengthen female farmers' groups or marketing group to which female farmers can belong, and allow women to achieve scale in marketing. Also improving access to credit through GMoU cluster farming targeted at female farmers would improve access to finance and extension services for women in cash crop production in the Niger Delta. Furthermore, it is time to go further than merely recognizing the value women, as well as men provide in agribusiness in terms of decision making or philanthropy. The finding calls for taking down the glass ceiling, close the gender gap and

realize those thoughtful benefits of gender equality to the private and public sectors in much broader than that of social responsible decision-making and philanthropic sense of CSR.

The main constraint of the study is that it only covers the scope of oil communities in Nigeria. Hence, the findings will go beyond its limit when applied on other African countries with the same policy challenges. In the light of this shortcoming, reproducing the analysis in other countries will be useful in order to check if the established nexus withstand empirical scrutiny in dissimilar context of emerging countries. Also, further work in accessing the patterns and underscoring determinants of female commitment to wide variety of cash crop markets is needed in order to identify the most suitable CSR interventions. This will entail steering some of the suggested GMoU interventions and appraising their impacts on enhancing access to inputs, bringing down transaction costs and reaching scale in production as well as marketing.

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