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Corporate Social Responsibility and Traditional Practices Recognized as Violence Against Women in Nigeria's Oil Region

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Corporate Social Responsibility and Traditional Practices Recognized as Violence Against Women in Nigeria's Oil Region

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Abstract

We examine the impact of multinational oil companies' (MOCs') corporate social responsibility (CSR) on traditional practices recognized as violence against women and girls (VAWG) in Nigeria's oil region. Results from the use of a combined propensity score matching and logit model indicate that MOCs' CSR play a significant role in empowering women and girls with information and education to protect their human rights. This implies that CSR offers an opportunity for MOCs to help address prevalence of child early and forced marriage, female genital mutilation/cutting, sex trafficking, virginity testing, and taboos through a business case for stakeholders' human right protection.

Keywords: Corporate social responsibility, Multinational oil companies, Traditional practices, Nigeria.

1. Introduction

Gender-based violence (GBV) or violence against women and girls (VAWG) is a far-flung and taxonomic infringement of fundamental human rights violations and an enduring form of gender-based discrimination (UNDP, 2018). The United Nations defines VAWG as any act of gender-based violence that result in, physical, sexual, or mental harm or suffering to women, including threats of such act, coercion or arbitrary deprivation of liberty, whether occurring in public or in private life (UN, 1993). VAWG takes many different forms, including domestic violence, sexual assault and harassment, child early and forced marriage, female genital mutilation/cutting

(FGM), sex trafficking and virginity testing (UNESCO, 2019). It is a global pandemic that affects 1 in 3 women in their lifetime but has remains largely unreported due to the impunity, silence, stigma and shame surrounding it (UNDP, 2018). In Africa, VAWG is a reality which cut across cultural, religious, economic and geographical boundaries (UNESCO, 2019). In Nigeria, VAWG begins with gender bias at birth with ceremonies which attach lesser value to girls and continues through feeding practices (Uduji and Okolo-Obasi, 2020). In the Niger Delta region of Nigeria, where oil is mainly extracted and multinational oil companies (MOCs) maintain a significant presence, the most visible forms of VAWG recognized as a traditional practice and violation of human rights are child early and forced marriage, female genital mutilation/cutting, sex trafficking, virginity testing and nutritional taboos (Uduji *et al*, 2019a). For instance, in the rural Niger Delta, early childhood marriage thrives, whereby young girls as young as 8 years old are given away to husbands and become pregnant at early puberty. So, young mothers have not had the time to finish their own physical growth and as a result there is competition in nutrition between the fetus and the young mother, leading to nutritional deficiency for the mother and the baby; and over 50% of the first births in most of the region's rural communities are less than 17 (NDDC, 2004).

However, each year, MOCs invest in social projects and programmes in communities primarily in the Niger Delta. In 2006, MOCs introduced a new way of working with communities called the global memorandum of understanding (GMoU); which represents an important shift in their corporate social responsibility (CSR) approach, placing emphasis on more transparent and accountable processes, regular communication with the grassroots, sustainability and conflict prevention (SPDC, 2013). A GMoU is a written statement between MOCs and a group (or cluster) of several communities; clusters are based on local government or clan/historical affinity lines as advised by the relevant state governments; the cluster development board (CDB) functions as the main supervisory and administrative organ, ensuring implementation of projects and setting out plans and programmes (Chevron, 2014). Under the terms of the GMoUs, the communities decide the development they want, while MOCs provides secure funding for five years, ensuring that the communities have stable and reliable financing as they undertake the implementation of their community development plans (Uduji *et al*, 2019b). This system replaces the previous approach whereby MOCs agreed to hundreds of separate development

projects with individual communities and managed them directly and separately (Chevron, 2014). Nevertheless, the extents to which CSR initiatives of MOCs have contributed to the community development in the region remain contested. For example, scholars such as Idemudia (2014) and others have argued that the CSR process in the region is not far reaching or deeply entrenched. Diametrically, Ite (2007) amongst others support the CSR initiatives of MOCs, arguing that the CSR process is making some progress in the area of local community development. Still, Lompo & Trani (2013) added some distinction in expression to the debate as they contend that the CSR initiatives of MOCs have contributed to access to basic capabilities, but have also undermined human development. Similarly, Renouard & Lado (2012) noted that the CSR activities of MOCs have somewhat contributed to the improvement of the material well-being of some people living close to the oil extraction sites, but inequalities have actually deteriorated in these communities. Against this background and apparent gap in the literature, the positioning of this research has three main objectives which are consistent with the MOCs new CSR model (GMoUs) relative to sustainable development goals (SDGs) associated with ending all discrimination against women and girls:

- i. Analyse the level of multinational oil companies CSR investment in policy dialogue and advocacy to deter violence against women and girls in Niger Delta, Nigeria.
- ii. Examine the impact of multinational oil companies GMoUs on reducing the rate of, child early and forced marriage, female genital mutilation/cutting, sex trafficking, virginity testing, and nutritional taboos in Niger Delta, Nigeria.
- iii. Determine the consequences of ending violence against women and girls in Niger Delta, Nigeria.

2. Materials and Methods

2.1 Research Design

Research into CSR in Nigeria's oil-producing communities is still relatively underdeveloped and tends to be heavily reliant on convenience-based case studies or descriptive accounts (Uduji *et al*, 2020a, 2020b, 2020c, 2020d). Hence, there is an urgent need for further research from a quantitative front. To fill the gap created by paucity of quantitative works in the region as already noted, the study adopts a quantitative methodology.

2.2 Sample Size Determination

We are mindful that a key factor in minimizing the size of sampling error is the sample size relative to the entire population. Hence we determined the sample size of the study on the basis of the estimated prevalence of the variable of interest, the desired level of confidence and the acceptable margin of error. We adopted the formula developed by Cochran (1977) to obtain a sample size of 1615 households from the rural communities that host MOC facilities in the Niger Delta region of Nigeria as shown below.

$$\text{Sample size} = no = \frac{z^2(PQ)}{e^2} \text{Equation 1}$$

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 households women)

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

Having chosen a confidence level of 95%, with 5% margin of error and the estimated population of rural household in the region is 0.65, substituting the values in our equation, we have:

$no = \frac{1.96^2(.7*.4)}{.05^2} = \frac{3.8416*.1875}{.0025} = 322.69$; this was approximated to 323. However, as determined by applying the formula, 323 as a sample is good, but because five major clusters are involved in the study, we chose to multiple the size by 5 to ensure that errors are reduced to the barest minimum. To this, our final sample size used for the study was $323 \times 5 = 1616$ respondent households.

2.3 Sampling procedure

Using multi-stage sampling techniques which included cluster, quota and simple random samplings, we selected the final respondents from the nine states that make up the region of Niger Delta in Nigeria. We looked at the states and clustered them according to historical affinity lines. Hence, the first stage of the sampling clustered the states as follows: The Bendel cluster covering Edo and Delta states; the Calabar cluster covering Cross river and AkwaIbom states; the Port Harcourt cluster, covering Rivers and Bayelsa states; the Owerri cluster covering Imo and Abia states; and finally the Odua cluster covering only Ondo state. Figure 1 identifies the

constituent administrative states of Niger Delta, Nigeria.



Figure 1. The constituent administrative states of Niger Delta, Nigeria

Source: NDDC, 2004.

In the second stage, we purposively selected a state from each cluster. The purpose of this selection was justified by the number of MOC facilities the state is hosting. Hence Delta, AkwaIbom, Rivers, Imo and Ondo states were selected. In stage three we also purposively selected two local government areas (LGAs) from each of the selected states. The purpose is justified by the reported rate of violence against women and girls in the LGAs (Uduji *et al*, 2019a, 2019b). Also using purposive sampling, we selected two rural communities out of the selected LGAs. The purpose of this selection was on the basis that the host community either belongs to a cluster development board CDB or do not belong. Hence one CDB and one non-CDB communities were selected from each LGA. Finally, with the help of the community leaders, we selected 1616 households for the study (Table 1).

Table 1.Sample size determination table

States	Total Population	Household Population	% of Total Population	Minimum Sample Per State (treatment)	Minimum Sample Per State (control)	Total Sample per state
Akwa Ibom	3,902,051	650,342	19	306	153	153
Delta	4,112,445	685,408	20	322	161	161
Imo	3,927,563	654,594	19	308	154	154
Ondo	3,460,877	576,813	17	271	136	136
Rivers	5,198,716	866,453	25	408	204	204
Total	20,601,652	3,433,610	100	1,616	808	808

Source: NPC, 2007 /Authors' computation.

2.4 Data collection

A structured questionnaire was used to draw information from the women in the selected households in a form that represents an appropriate tool to evaluate qualitative issues by quantitative information. This questionnaire was administered directly by the researchers and the local research assistants who were employed because:the study area is multi-lingual, having over 50 ethnic groups that speak different local languages and dialects; the environment could be tensed,as there is a high level of violence in some areas, which would require a local guide; andsome items in the instrument would require further explanation that could be best done in local dialects.

2.5 Analytical framework

The study analyzed the role of the CSR of the multinational oil companies in the struggle against VAWG in the Niger delta region. To achieve the objectives of the study and test the corresponding hypotheses, both descriptive and inferential statistics were used. Objectives (i& iii) were achieved using descriptive statistics whose results are presented in tables, charts and graphs. To achieve objective (ii), we made use of both propensity score matching (PSM) to match treatment and control groups, and logit regression to estimate the impact of corporate social responsibilities of the multinational oil companies on fight against VAWG in Niger Delta, Nigeria. We chose these methods because the study requires control for the problems of selectivity and endogeneity.

To run this PSM, the households were separated into two major categories, notably: the treatment group and the control group. Households that have participated in any of the GMoU clusters are tagged as the “treatment group”, while those that have not participated are called the “control” group. This is in line with Odozi *et al.* (2010), in that PSM entails foretelling the likelihood of treatment on the basis of observed covariates for both the treatment and the control group; it summarizes the pre-treatment characteristics of each subject into a single index variable and is then used to match similar individuals. Ravallion (2001) agrees that, in propensity score matching, an ideal comparison group is picked from a larger survey and then matched to the treatment group based on set of observed characteristics on the predicted probability of treatment given observed characteristics (propensity score). This said observed characteristics are those used in selecting individuals but not affected by the treatment, hence, our choice in adopting this methodology.

In applying this methodology, we assume that the decision to be treated (that is, participating in GMoU cluster), although not random, in the end depends on the variables observed. The ability to match on variable X means that one can match on probability of X as posited by Rosenbaum & Rubin (1983). To this, the two groups identified above, the treatment group is denoted as $R_i = 1$ for rural Household_i, and $R_i = 0$ otherwise (control group). The treatment group was matched to the control group on the basis of the propensity score: (Probability of participating in GMoU cluster given observed characteristics).

Hence:

$$P(X_1) = Prob(R_2 = \frac{1}{X_2}) (0 < P(X_2) < 1) \quad \text{Equation 2}$$

Where X_1 is a vector of pre CSR control variables, if R_i 's are independent over all i 's and the outcomes are independent of CSR given X_1 , then outcomes are also independent of CSR given $P(X_1)$, just as they will do if CSR is received randomly. To draw precise conclusions about the impact of CSR activities on fighting VAWG, we saw the necessity to sidestep the selection bias on observables by matching on the probability of the treatment (covariates X) to this; we defined the PS of Vector X thus:

$$P(x) = P_r \left(Z = \frac{1}{x} \right) \quad \text{Equation 3}$$

The Z represents the treatment indicator equating 1, if the selected rural household has

participated in the GMoU cluster, and zero otherwise. Because the PS is a balancing score, the observables X will be distributed same for both “treatment” and “control” and the differences are seen as the attribute of treatment. To get this unbiased impact estimates, we adapted the four steps in line with Rosenbaum & Rubin (1983), and Liebenehm, Affognon & Waibel(2011). In the first place, we recognized that the probability of Participating in GMoU cluster is predicted by a binary response model, with appropriate observable characteristics. Hence, we estimated the logit model of GMoU cluster participation or not participating as a function of some socio-economic characteristics variables. These variables include both individual, household and community variables represented in this equation as thus:

$$P_x = \ln \frac{P_i}{1-P_1} = \ln 0_i = \beta_0 + \beta_i x_i \dots + \dots \beta_n x_n \quad \text{Equation 4}$$

A value was created for the probability of participating in GMoU cluster from the logit regression assigning each rural household a propensity score. The control groups with very low PS outside the range found for participating were dropped at this point. For each household participating in a GMoU cluster, a household not participating in any that has the closest PS as measured by absolute difference in score referred to as nearest neighbour was obtained. We used the nearest five neighbours to make the estimate more rigorous. The mean values of the outcome of indicators for the nearest five neighbours were calculated and the difference between the mean and actual value for participating in a GMoU cluster (treatment) is the estimate of the gain due CSR activities of the MOCs using the GMoU. This difference between treatment and control groups is estimated by the average treatment effect on the treated (ATT). The true ATT, based on PSM is written thus:

$$ATT_{PSM} = \sum_{P(x)} \{ \sum (\frac{y_i}{Z} = 1, P(x) - \sum (\frac{y_0}{Z} = 0, P(x)) \} \quad \text{Equation 5}$$

EP(X) stands for expectation with respect to the distribution of PS in the population. The true ATT indicates the mean difference in fighting violence against women and children. In this, we achieve an adequate match of a participant with her counterfactual in as much as their observable characteristics are identical. Matching methods that could be used in obtaining the matched pair are of three different types with different ranges of bias and efficiency. Such methods are: (RM) radius matching, (NNM) nearest neighbor matching and (KM)kernel-based matching. We performed the next step which was to check the matching estimators’ quality by standardized

differences in observables' means between participators in the GMoU (treatment group) and the control. Representing difference in percent after matching with X for the covariate X , the difference in sample means for treatment as (\bar{X}_1) and matched control as (\bar{X}_0) . In line with Rosenbaum and Rubin (1985), the sub-samples as a percentage of the square root of the average sample variance is put thus: $(\int_1^2 \text{ and } \int_0^2)$.

Hence:

$$|SD = 100 * \frac{(\bar{X}_1 - \bar{X}_0)}{(.05 \int_1^2 \text{ and } \int_0^2 .1/2)} \quad \text{Equation 6}$$

Accepting a below 5% remaining bias after matching, even when there is no clear threshold of successful or failed matching, we assumed that the balance among the different observable characteristics between the matched groups is sufficient. Generally, while considering the quasi-experimental design of the GMoUs activities, there might be a possibility that unobservable factors had affected the decision to participate in the GMoU or not. This problem of hidden bias was abutted by the vaultingtactic. In equation 4, we complemented the logit model to estimate propensity score by a vector U containing all unobservable variables and their effects on the probability of participating in the GMoU and captured by γ :

$$P(x) = \Pr(Z= 1/X) = F(X\alpha + U\gamma) = e^{X\alpha + U\gamma} \quad \text{Equation 7}$$

With sensitivity analysis, we examined the strength of the influence of γ on treatment in order to attenuate the impact of treatment on potential outcomes. This is to say, we assumed the unobservable variable to be a binary variable taking values 1 or 0. To this, the treatment probability is applied in line with the bounds on the odds ratio as stated thus:

$$\frac{1}{e\gamma} \leq \frac{P(Xm)(1-P(Xn))}{P(Xn)(1-P(Xm))} \leq e\gamma \quad \text{Equation 8}$$

According to Rosenbaum (2002), individual households have the same probability of participating in GMoU, provided that they are identical in X , only if $e\gamma = 1$

3. Results and Discussion

3.1 Descriptive analysis

We begin the analysis of the household in the study with a description of some of their social (education), demographic (age, marital status, household size) and economic (occupation, household income) characteristics (Table 2). These characteristics are important in understanding the differences in the socio-economic status of the households who are receiving direct CSR through the GMoUsas compared with their non-receiving counterparts in the Niger Delta region. The analysis shows that about 51% of the treatment group is male, while 49% are females. Also about 58% of the control group is male, while 42% are females. This finding agrees with Uduji *et al* (2020c) in that female-headed household is more likely to participate in the GMoU cluster. However, the overall result shows that, there are more male-headed households and the implication is that more male-headed households are more likely to be empowered through the CSR by the MOCs. For the treatment group, 21% of the respondents are involved in handicraft, while only 15% are involved in farming. About 17% are involved in paid employment, while 17% are said to be involved in others. On the other hand, only 12% of the control group is involved in handicraft, while 30% are into farming. This reveals that most households that participate in this GMoU cluster are migrating out of the traditional means of livelihood. It suggests that most of the CDBs may not be grass-root oriented and may have been used to benefit targeted traditional and community leaders. This finding conform with Uduji & Okolo-Obasi (2020) in that GMoUs have become very popular with communities, with greater ownership leading to better projects, sustainability and improved trust, as it provides a better organized community interface and grievance/dispute resolution mechanism. Also, Ite (2017) arrived at the same opinion in that GMoU ensures high levels of transparency, inclusiveness and accountability in managing development fund.

Table 2.Socio-economic characteristics of the respondents

Variables	Treatment Group			Control Group		
	Freq	%	Cum	Freq	%	Cum
Sex of Household Head						
Male	413	51	51	469	58	64
Females	395	49	100	339	42	100
	808	100		808	100	
Primary Occupation						
Fishing	120	15	15	155	19	19
Trading	130	16	31	143	18	37
Farming	118	15	46	243	30	67
Paid Employment	134	17	62	89	11	78
Handicraft	169	21	83	100	12	90
Others	137	17	100	78	10	100
	808	100		808	100	
Age of Respondents						
Less than 20 years	66	8	8	11	1	1
21-25 years	97	12	20	76	9	11
26-30 years	158	20	40	101	13	23
31 - 35 years	180	22	73	132	16	40
35 - 40 years	90	11	51	185	23	63
41 - 45 years	77	10	83	156	19	82
45 - 50 years	75	9	92	101	13	94
Above 50 years	65	8	100	46	6	100
	808	100		808	100	
Level of Education						
None	23	3	3	182	21	21
FSLC	317	39	42	258	37	58
WAEC/WASSCE	282	35	77	274	40	98
Degree and above	186	23	100	94	2	100
	808	100		808	100	
Marital Status						
Single	179	22	22	126	16	16
Married	282	35	57	412	51	67
Widowed	177	22	79	128	16	82
Divorced/Separated	170	21	100	142	18	100
	808	100		808	100	
Household Size						
1-4 Person	262	32	32	337	42	42

5-9 Person	239	30	62	239	30	71
10-14 Person	156	19	81	127	16	87
15 Person and above	151	19	100	105	13	100
	808	100		808	100	
Annual Income						
1000 - 50,000	26	3	3	100	12	12
51,000 - 100,000	43	5	9	125	15	28
101,000 - 150,000	147	18	27	246	30	58
151,000 - 200,000	169	21	48	126	16	74
201,000 - 250,000	158	20	67	92	11	85
251,000 - 300,000	148	18	86	85	11	96
Above 300,000	117	14	100	34	4	100
	808	100		808	100	

Source: Authors' compilation based on household survey.

Furthermore, table 2 analysis shows that the average age of the respondent in the treatment group is 32 years, while that of the control is 41 years; implying that participating in the GMoU cluster is more with the young adults of the region. This also may not be unconnected with the fact that the respondents in the treatment group are more educated than those in the control group. Only 3% of the treatment group is not educated, while 21% of the control group cannot read or write. In the treatment group, only 8% earn less than or equal to N100,000 (326 USD) annually, while 28% of the control group falls into the same category. About 14% earn above N300,000 (979 USD) annually in the treatment group, while only 4% earn such an amount in the control group.

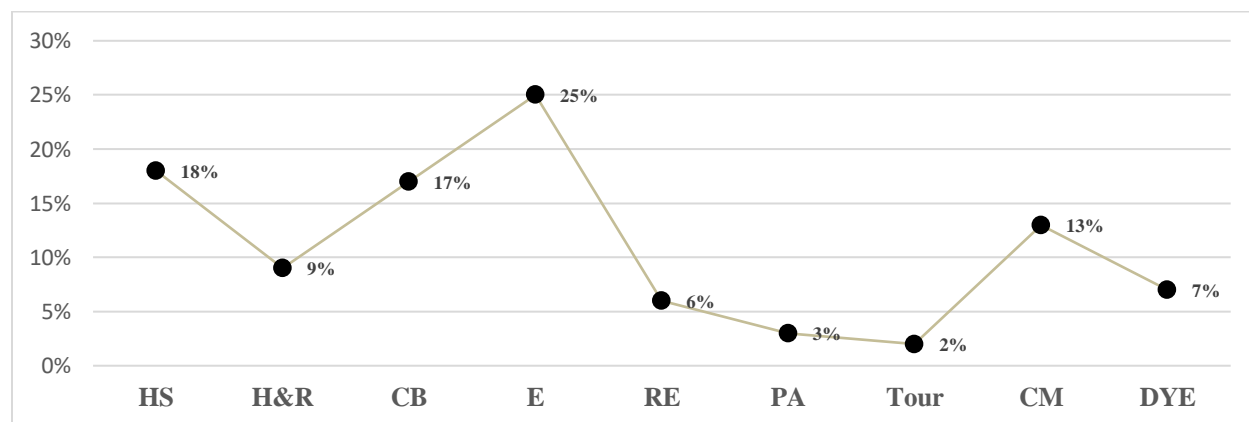


Figure 2.Percentage sectors distribution of CSR intervention of MOCs using GMoU in the Niger Delta¹.

¹HS = Health Services, H&R = Housing and Road construction, CB = Capacity Building, E = Education, RE = Rural Electrification, PA =

Source: Authors' compilation based on household survey.

Analysis (Figure 2) indicates that health services accounted for 18% of the CSRs of the MOCs; while education, which include - provision of infrastructure, library and laboratory equipment, scholarship and teachers training, accounts for 25%. On the other hand, capacity building accounts for 17%; chieftaincy matter accounts for 13%; while policy advocacy is 3%. This shows that the MOCs are making some impact in empowering the communities; but about 13% of the investment that goes to the chieftaincy matters could be indirectly moving towards policy dialogue and advocacy that preaches against traditional practices recognized as VAWG that besiege oil workers, and their families, contractors, business partners and MOCs business environment in the region. Hence, the positioning of this paper is that business has an obligation to help in solving of problems of the public concern.

Analysis (Figure 3) shows that the natures of empowerment received by the treatment household are mostly in the area of children's scholarship which accounted for 21%. Others are 18% that goes for direct employment of the youths, 25% for skill acquisition, 12% for soft loan and grant for entrepreneurship, 19% for input subsidy in farming and fishing and finally 5% for the provision of shelter; and there is no direct intervention in the area of policy dialogue and advocacy towards the most visible forms of violence in the host communities, recognized as violation of human rights such as FGM, virginity testing, early marriage and nutritional taboos.

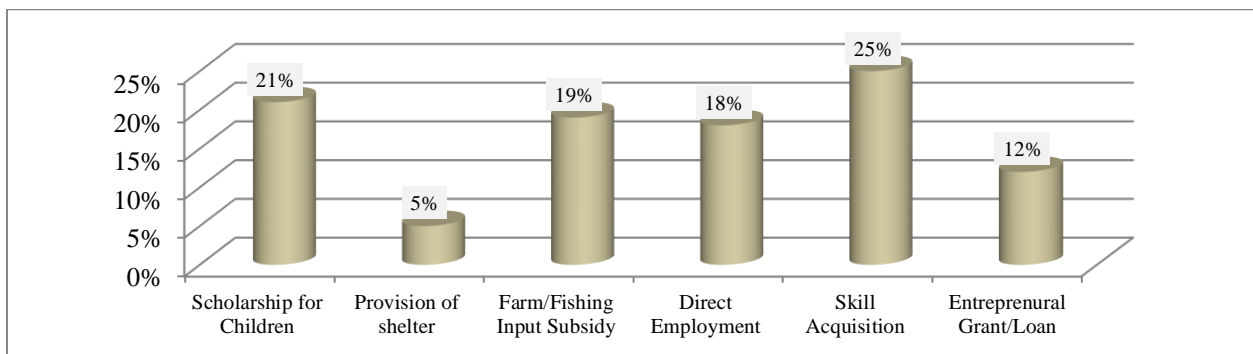


Figure 3.Percentage distribution of CSR intervention of MOCs Using GMoU by nature of empowerment received by Households in the Niger Delta.

Source: Author's compilation based on household survey.

Analysis (Figure 4) shows that in the area of child early and forced marriage (CEFM), 8% of the treatment group agrees that such traditions still uphold in their community, whereas 41% of the control group admits to the prevalence. On average, CEFM is rated at 24.5%, which implies that because of access to CSR of the MOCs in the CDB communities, CEFM has been reduced by 33%. UNDP (2018) shared similar finding in that some families in rural communities feel that giving a daughter away for marriage reduces the family expenses. Also shown in the analysis is that, while 13% of the treatment group still witness female genital mutilation/cutting; about 54% of the control group is still involved in the same act; implying that CSR using GMoU has reduced FGM in the CDB communities by 41%. UNESCO (2019) noted that the long and short term consequences of this FGM operation have been identified as serious risks to the health and well-being of young girls and mothers. The analysis (Figure 4) equally shows that about 38% of the respondent in the non-CDB communities still complain of sex trafficking, while only 6% is only recorded in the CDB communities. The implication is that on average 22% of the households are still involved in sex trafficking, but that CSR has reduced it by 32%. UN (1993) agreed that in rural areas, young divorced mothers have no other livelihood except to migrate to the urban centers for prostitution or to be employed as domestic servants; as the parents consider divorced as an added economic burden, so most are reduced to destitution or prostitution. On virginity testing, 32% of the control is still involved, while only 6% is recorded in the treatment, which gives an average of 19% and a reduction in the treatment by 26%. UNDP(2018) consented that in order to ensure that girls are virgin for the first husband, parents in such communities prefer to marry their daughters at an early age, as virginity brings higher dowry for the parent and pride to both families. The analysis (Figure 4) also shows that while 52% of the control still practices nutritional taboo, only 12% of the treatment is still involved. UNESCO (2019) agreed that preferential feeding practices and gender bias in nutrition exist in these rural communities. Uduji and Okolo-Obasi (2019) agreed that in families where food is scarce, the most nutritious food is preserved for boys; as food taboos exist in remote villages to prevent women from eating essential food items such as meat, fish and eggs, particularly during pregnancy and lactation. Generally, the use of GMoUs by the MOCs have significantly impacted on the resource availability of the control group by boosting their access to education, which in turn has impacted on the traditionally instituted violence against women and girls in the Niger Delta; even

as Uduji *et al* (2020a) consented that GMoUs have played an important role in advancing gender equality when investment in scholarship and education is designed for the complexities of real life; and acknowledging the web of challenges within families, communities and at the policy level that shapes a woman’s experience is critical to implementing effective CSR programming in the Niger Delta region.

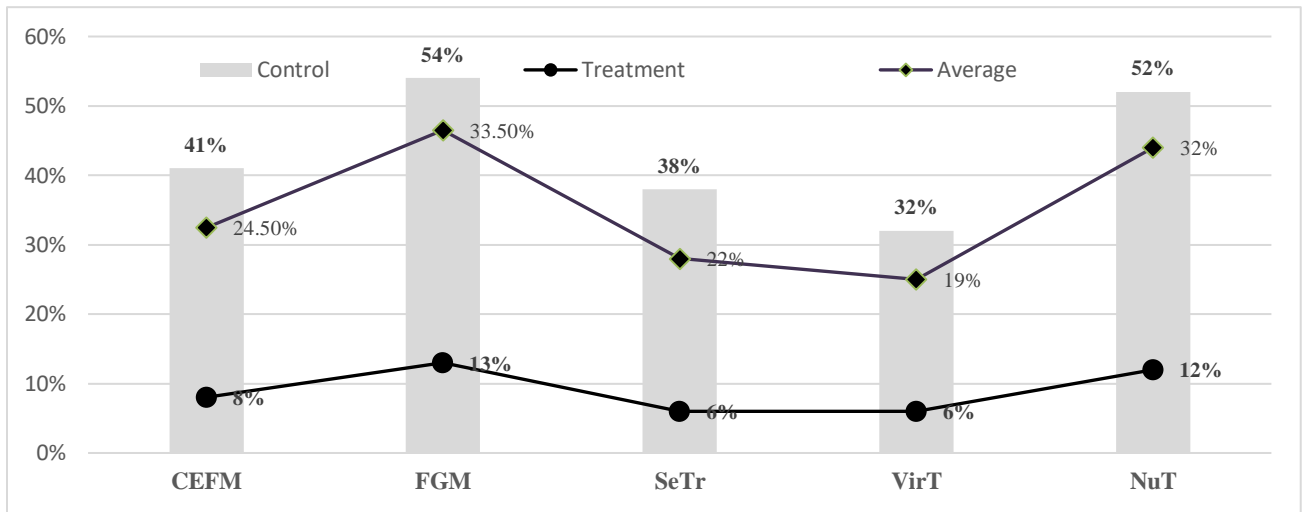


Figure 4.Level of domestic violence in the Niger Delta Region²

Source:Authors’ compilation based on household survey.

3.2 Econometric analysis

Analysis (Table 3) summarized the average differences in the basic scores and independent observable characteristics between the CDB communities and the non-CDB communities. The difference in means shows that the scores on rate of child early and forced marriage, scores on rate of female genital mutilation/cutting, scores on rate of sex trafficking, scores on rate of virginity testing, and scores on rate of nutritional taboos are reasonably low for the CDB communities (treatment group), but relatively high for the control group. The differences are, -32.88, -40.83, -32.14, -26.09 and, -38.1 respectively. When the selected observable characteristics were examined, it showed that there are significant positive differences in age (3.02), sex (2.53), education (13.95), marital status (1.41), primary occupation (8.6), annual income (22.21), access to shelter (6.47), access to portable water (1.8), access to medical care

²CEFM = Child early and forced marriage, FGM = Female genital mutilation/cutting, SeTr = Sex trafficking, VirT = Virginity testing, NuT = Nutritional taboos

(9.5), freedom of participation in socio-economic activities (2.37) and access to land (0.15). The analysis (Table 3) also showed that household size(-8.55) and income of other household members (-3.23) recorded negative significant means. The implication of this finding is that as the treatment group has shown reduction in all the indices measured, there is every possibility that CSR investment directly channeled to empower the rural host communities can serve as a catalyst to reducing rate of violence against women and girls in oil-producing communities of the Niger Delta. UNDP (2018) agreed that similar intervention in the future should build in systematic investment in strengthening capacity and service provision alongside work to change social norms, raise awareness and monitor trends and adequately reduce this work for a more comprehensive response.

Table 3. Comparison of mean score and observable characteristics across participants and non-participants (N = 1616)

Score in Percentage of maximum score	Participants	Non Participants	Difference
Scores on rate of child early and forced marriage	8.28	41.16	-32.88**
Scores on rate of female genital mutilation/cutting	13.41	54.24	-40.83**
Scores on rate of sex trafficking	6.32	38.46	-32.14**
Scores on rate of virginity testing	6.19	32.28	-26.09**
Scores on rate of nutritional taboos	12.24	52.13	-38.11**
Socio-Economic Characteristics			
Age	23.15	20.13	3.02
Sex	29.18	26.65	2.53
Education	52.11	38.16	13.95
Marital Status	41.24	39.83	1.41**
Household Size	11.31	19.86	-8.55
Primary Occupation	28.52	19.92	8.6*
Annual Income	63.82	41.61	22.21
Income of Other Household Members	15.28	18.51	-3.23
Household Characteristics			
Access to Shelter	22.28	15.81	6.47**
Access to portable water	29.32	27.52	1.8**
Access to medical care	26.11	16.61	9.5*
Freedom of participation in socio-economic activities	32.23	29.86	2.37**
Access to land	19.43	19.28	0.15
Observation	808	808	

Source: Authors' compilation based on household survey.

Following the selected characteristics which capture relevant observable differences of both the treatment and control, we predicted the probability of participating in GMoU cluster. Analysis (Table 4) showed the Logit model as built in equation 4. This finding shows that the estimated coefficients, the odd ratio are expressed in terms of odds of Z=1, the marginal effect and standard error are also shown in the table.

Table 4.Logit model to predict the probability of participating in the GMoU cluster conditional on selected observables

Variables	Coefficient	Odd Ratio	Marginal Effect
Age	-.053	.371	.023
Sex	.042	.541	.065*
PriOcc	.541	.761	.210*
Edu	.172	.931	.072**
AY	-.014	.724	.0812**
MS	.032	1.131	.0513**
HHcom	-.521	.431	.0028
Perception of GMoU	1.412	8.418	.302***
Constant	15.316	5.231	.00346
Observation	700		
Likelihood Ratio - LR test ($\rho=0$)		$\chi^2 (1)=1438.342^*$	
Pseudo R ²	0.29		

*= significant at 10% level; ** = significant at 5% level; and * * * = significant at 1% level

Source: Authors' compilation based on household survey.

When we examined single observables, the evidence is that sex of the household head, primary occupation, highest educational level, perception of the GMoU, positively influences the household head participating in the GMoU programmes. On the other side, the age of the household head, annual income of the household head and income of other household members affects it negatively. The marginal effect shows that at 10% significant level, the sex of the household head and primary occupation are positively significant, at 5% significant level, highest level of education and marital status are positively significant while at the same level annual income is negatively significant. Only the perception of GMoU is positively significant at 1% level. In line with the probability of participating in GMoU clusters predicted in the model, we estimated the impact of the CSR on reducing rate of violence against women and girls in the Niger Delta region with the ATT, as outlined in equation 5. The observations are ordered randomly as we carefully certified and there are no large disparities in the distribution of

propensity scores. Hence we noted that the nearest neighbour matching (NNM) yields the highest and most significant treatment effect estimate in all the five outcome categories - the rate of child early and forced marriage, rate of female genital mutilation/cutting, rate of sex trafficking, rate of virginity testing, and rate of nutritional taboos.

Table 5. Estimated impacts of CSR activities using the MOCs' GMoU on Household via different matching algorithms

	Access and Knowledge Score in Percentage of Maximum Score		Average Treatment effect on the treated
	Participants	Non-Participants	
Nearest neighbour matching			
	Using single nearest or closest neighbour		
Scores on rate of child early and forced marriage	8.28	41.16	-32.88**
Scores on rate of female genital mutilation/cutting	13.41	54.24	-40.83**
Scores on rate of sex trafficking	6.32	38.46	-32.14**
Scores on rate of virginity testing	6.19	32.28	-26.09**
Scores on rate of nutritional taboos	12.24	52.13	-38.11**
Observations	808	808	
Radius matching			
	Using all neighbours within a caliper of 0.01		
Scores on rate of child early and forced marriage	10.45	33.41	-22.96**
Scores on rate of female genital mutilation/cutting	24.65	56.42	-31.77**
Scores on rate of sex trafficking	18.23	36.54	-18.31**
Scores on rate of virginity testing	14.42	32.34	-17.92**
Scores on rate of nutritional taboos	13.65	38.84	-25.19
Observations	808	808	
Kernel-based matching			
	Using a bi-weight kernel function and a smoothing parameter of 0.06		
Scores on rate of child early and forced marriage	10.65	29.29	-15.64**
Scores on rate of female genital mutilation/cutting	25.87	43.78	-17.91**
Scores on rate of sex trafficking	21.43	34.18	-12.75**
Scores on rate of virginity testing	18.54	32.16	-11.62**
Scores on rate of nutritional taboos	21.34	41.12	-19.78**
Observations	808	808	

*= significant at 1% level; ** = significant at 5% level; and *** = significant at 10% level

Source: Authors' compilation based on household survey.

In the analysis, (Table 5) the nearest neighbour estimate of rate of child early and forced marriage decline due to participating in the GMoU cluster is approximately -32.88%; however, thinking that the NNM method yields relatively poor matches as a result of the limitation of

information, we moved on to the other two matching methods (Radius and Kernel-based matching). The estimated impact using radius matching algorithm is about -22.96%; while Kernel-based matching algorithm produces average treatment effect on the treated of -18.64%. Consequently, it can be confirmed that CSR generates significant gains in fighting violence against women and children, and if encouraged and improved upon will lift many out of the poverty line which is believed to be at the root of VAWG. UN (1993) agreed that without the awareness raising, sensitization and community outreach, the culture of silence on VAWG could not be broken and change would not be possible in this region.

Table 6. Imbalance test results of observable covariates for three different matching algorithms via standardized difference in percent

Covariates <i>X</i>	Standardized differences in % after		
	Nearest neighbour matching	Radius matching	Kernel-based matching
Age	5.2	16.4	14.8
Sex	2.4	17.8	19.8
PriOcc	6.5	22.5	20.1
Edu	4.2	17.6	13.5
AY	3.8	13.8	12.3
MS	4.1	29.4	9.45
HHcom	1.8	26.6	14.4
Perception of GMoU	4.3	48.5	12.6
Constant	5.2	31.9	22.7
Mean absolute standardized difference	4.2	24.9	15.5
Median absolute standardized difference	3.8	12.9	14.8

Source: Authors' compilation based on household survey.

We checked the imbalance of single observable characteristics and it shows that the quality of the simple method of choosing the only closest neighbour with respect to the propensity score NNM is much higher than that the KM and RM in matching. The summary statistics (Table 6) for the overall balance of all covariates between treatment group and control confirms the higher quality of NNM. For the kernel-based matching and radius; both the mean and the median of the absolute standardized difference after matching are far above the threshold of 5%, while the NNM is reasonably below and 4.2%. KM and RM are 15.5 and 24.9, respectively.

Table 7.Sensitivity analysis with Rosenbaum’s bounds on probability values

	Upper bounds on the significance level for different values of e^y				
	$e^y= 1$	$e^y= 1.25$	$e^y= 1.5$	$e^y= 1.75$	$e^y= 2$
Nearest neighbor matching	Using single nearest or closest neighbor				
Scores on rate of child early and forced marriage	0.0001	0.0032	0.0541	0.252	0.611
Scores on rate of female genital mutilation/cutting	0.0001	0.002	0.0201	0.213	0.332
Scores on rate of sex trafficking	0.0001	0.001	0.0014	0.311	0.214
Scores on rate of virginity testing	0.0001	0.0023	0.0032	0.050	0.241
Scores on rate of nutritional taboos	0.0001	0.0021	0.0011	0.0035	0.021
Radius matching	Using all neighbors within a caliper of 0.01				
Scores on rate of child early and forced marriage	0.0002	0.0241	0.3426	0.712	0.161
Scores on rate of female genital mutilation/cutting	0.0001	0.0013	0.0121	0.134	0.156
Scores on rate of sex trafficking	0.0003	0.0022	0.0203	0.021	0.0621
Scores on rate of virginity testing	0.0001	0.00012	0.0009	0.0081	0.0414
Scores on rate of nutritional taboos	0.0001	0.0012	0.0021	0.0052	0.012
Kernel-based matching	Using a bi-weight kernel function and a smoothing parameter of 0.06				
Scores on rate of child early and forced marriage	0.0001	0.0248	0.214	0.458	0.412
Scores on rate of female genital mutilation/cutting	0.0001	0.00641	0.123	0.213	0.026
Scores on rate of sex trafficking	0.0001	0.00211	0.0011	0.005	0.0312
Scores on rate of virginity testing	0.0001	0.0015	0.0021	0.032	0.0314
Scores on rate of nutritional taboos	0.0001	0.0021	0.0011	0.0051	0.0026

Source: Computed from the field data by authors.

Analysis (Table 7) showed that there is a more generated robust treatment effect in KM than in NNM and RM as regards to estimates to hidden bias in the five score areas. Hence, there is a probability that matched pairs may differ by up to 100% in unobservable characteristics, while the impact of treatment on the rate of child early and forced marriage, rate of female genital mutilation/cutting, rate of sex trafficking, rate of virginity testing, and rate of nutritional taboos would still be significant at a level of 5% (p -value = 0.412 and p -value = 0.026, and p -value = 0.0312, and p -value = 0.0314 and p -value = 0.0026 respectively). The same categories of knowledge scores are robust to hidden bias up to an influence of $e^y= 2$ at a significance level of 10% following the radius matching approach.

On the whole, the findings of this study suggest that despite the widespread violence against women and girls, particularly in relation to culture and tradition, women themselves have to be empowered through information and education to protect their human rights in the Niger Delta. To achieve this, the relative priorities of MOCs' CSR interventions in the region should depart from the classic American ordering, as proposed by Carrol (1991). Placing importance on cultural context in the determination of appropriate CSR priorities and programmes, as suggested by Visser (2006), is necessary in the context of the rural Niger Delta. 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 information and education. Hence, it is our contention that business has an obligation to help in solving problem of public concern, and MOCs are well suited via the GMoU CDBs on VAWG, to lead a multi-prolonged approach through the social media, radio and television network campaign, advocacy visits, community engagement and field facilitators – backed by peace clubs, community peace partnership and dialogue committee, critical gatekeepers and opinion-shapers, such as traditional leaders to break the traditional practices recognized as violence against women and girls in the Niger Delta, Nigeria.

4. Conclusions and Policy

We investigated the impact of MOCs CSR on the traditional practices recognized as VAWG in Nigeria's oil producing communities. A total of 1616 respondent households were sampled across the rural communities of the Niger Delta region. Results from the use of a combined PSM and logit model showed that despite the widespread VAWG, particularly in relation to culture and tradition, women and girls themselves have to be empowered through information and education to protect their human rights. The results also showed that MOCs can play an important role in the fight against VAWG when GMoUs are designed to lead a multi-prolonged approach through social media, radio and television network campaign, advocacy visits, community engagement and field facilitators-backed by peace clubs, community peace partnership and dialogue committee, critical gatekeepers, such as traditional leaders to break the traditional practices recognized as violence against women and girls in the Niger Delta, Nigeria.

The investigation adds to the literature on violence against women and girls from the CSR perspective in six notably ways. First, we identified the key traditional practices recognized as violence against women and girls in the Niger Delta, Nigeria. Second, the research provided insights into the usefulness of GMoUs in ending all discrimination against women and girls. Third, unlike former studies, the study makes use of a quantitative methodology keeping in mind that quantitative works on the impact of CSR in the region are lacking. Fourth, the investigation seeks to explore the nature of Africa's conceptualization of CSR models within the context of violence against women and girls. Fifth, we demonstrated that business has an obligation to help in solving problems of public concern, which in turn will provide the enabling environment for more widespread responsible business. Sixth, we put forward policy suggestions that would aid MOCs to successfully tackle the challenges of CSR implementation in Africa.

Declaration of Conflicting Interests

The authors declared no potential conflicts of interest with respect to the research, authorship/ or publication of this article.

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Appendix

Variables	Definitions
Age	Age of the respondent rural young woman measure in number of years with a range.
PriOcc	Primary occupation of the respondent rural young woman.
Edu	Highest level of education obtained by the respondent rural young woman measured in number of years spent in school
AY	Annual income of the respondent rural young woman.
MS	Dummy for Marital status of the respondent rural young woman. (married =1 not married =0)
HHcom	Income of other members of the household of the respondent rural young woman.
Perception of GMoU	This is a dummy for how the people see the GMOU and the CSR of the MOCs. (those who perceive it as ours or for us = 1 and those who perceive it as theirs and for them =0)
CSR	Corporate social responsibility interventions of the multinational oil companies using the global memorandum of understanding as received or participated in by the rural women.
