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Analysis of Rural Women's Access to Financial Services and Corporate Social Responsibility in Nigeria's Niger Delta Region

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Joseph I. Uduji
(Corresponding Author)
Department of Marketing,
Faculty of Business Administration, Enugu Campus,
University of Nigeria, Nsukka, Nigeria
E-mails: joseph.uduji@unn.edu.ng; joseph.uduji@gmail.com;
joseph.uduji@yahoo.com

Elda N. Okolo-Obasi
Institute for Development Studies, Enugu Campus,
University of Nigeria, Nsukka, Nigeria
E-mail: eldanduka@yahoo.com; ndukaelda@yahoo.com;

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Research Department

Analysis of Rural Women's Access to Financial Services and Corporate Social Responsibility in Nigeria's Niger Delta Region

Joseph I. Uduji & Elda N. Okolo-Obasi

Abstract

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 enhancing rural women's financial inclusion in the areas of access to credit, insurance, propensity of the women to save and widening of economic opportunities in the Niger Delta. A total of 800 rural women were sampled across the Niger Delta region of Nigeria. Results from the use of a combined propensity score matching and logit model indicate that GMoU model made significant impact on closing the gaps in financial services, thereby removing women's constraints on their efforts to enhancing their financial literacy. The result also confirms that, innovative delivery channels and social networks of the GMoUs have reduced some costs in the areas of access to credit, insurance, propensity to save and widening of economic opportunities to rural women in the oil host communities. However, a further look at the rural women's participation in the CSR activities using SCOTDI, shows that even though the involvement of the women is appreciable, yet it is insignificant when compared with their male counterpart.

Keywords: Financial services, rural women, corporate social responsibility, multinational oil companies, Nigeria, sub-Saharan Africa

1. Introduction

Women in sub-Saharan Africa contribute overwhelmingly in agricultural and rural economies. Their responsibilities differ significantly between cum within nations and are changing swiftly in the region, where economic and social forces are controlling the agricultural sector (FAO, 2011). Rural women are used to managing complex families and pursue various occupational strategies. These undertakings typically include working for wages in agricultural or other rural enterprises, collecting fuel and water, producing agricultural crops, tending animals, processing and preparing food, engaging in trade and marketing, caring for family members as well as keeping their homes (ILO, 2010; ILRI, 2008). In Nigeria, women take part in agricultural production, processing and operation. A woman's duty in the agricultural sector is visibly influenced by socio-economic elements such as incomes from both farm and non-farm activities, education and access to production infrastructure as well as services designed for women in value chains (IFAD, 2009). According to African Development Review (2015), female farmers in Nigeria get less than 10% of the credit made available to small-scale farmers; they are dissuaded from applying for formal loans because of the density of the administrative process, on appropriate sizes of loan to be granted to women as well as their credit ratings. Typically, women are not a part of farmer clusters. For instance, using 2020 as a case today, some 21,250 men accessed loans as against 9,670 women who did the same (Okolo-Obasi *et al*, 2021).

As it were, the Nigerian economy is seriously dependent on the oil sector. The Niger Delta region where multinational oil companies (MOCs) are noticeably present has become a stage of endless violent clash. The federal government of Nigeria (FGN) controls and have possession of the land as well as its natural resources in the subsoil, which is a key reason for clash in the Niger Delta; and lands can be obtained by the government for over-riding public commitments by virtue of the Land Use Act 1978. The unwanted effects of the activities of MOCs include environmental pollutions, negative social impact, gas flaring, oil spills, conflicts and violence amongst others (Ekhator, 2014; Idemudia and Osayande, 2016). However, MOCs take part in a plethora of corporate social responsibility (CSR) accomplishments in the Niger Delta and other parts of Nigeria. Each year, MOCs invest in social projects and programmes in communities primarily in the Niger Delta. The initial investments were in agricultural development programmes in the early sixties and have grown over the years to include healthcare, roads and civil infrastructure, water projects, small businesses and education, which could benefit the local communities (Uduji and Okolo-Obasi, 2022). Over the years,

MOCs have improved on how they engage with host communities to deliver these projects. In 2006, MOC introduced a new way of working with communities called Global Memorandum of Understanding (GMoU). The GMoUs represent an important shift in CSR approach, placing emphasis on more transparent and accountable processes, regular communication with the grassroots, sustainability and conflict prevention (SPDC, 2013). Under the terms of the GMoUs, the communities decide the development they want, while MOCs provide secure funding for five years, ensuring that the communities have stable and reliable financing as they undertake the implementation of their community development plans (Chevron, 2014). MOCs also provide access to development experts to oversee project implementation and build capacity of the Cluster Development Boards (CDBs) to grow into functional community development foundation. This system replaces the previous approach whereby MOCs agreed to hundreds of separate development projects with individual communities and manage them separately (Okolo-Obasi *et al,* 2021). GMoUs have engendered better ownership and a stronger sense of pride amongst communities as they are responsible for implementing their projects; the transparency and accountability in the GMoU model provides a good platform for other local and international donor agencies to fund development projects directly through the CDBs (Uduji *et al,* 2023).

However, the rise of the 2006 CSR model has generally been seen as a scheme employed by MOCs to refract public disapproval of their performance, and a way of dodging government regulation (Slack, 2012; Idemudia, 2014; Frynas, 2009). As a model it has been seriously disparaged, and there is now strong debate over its efficacy and practical effects. While exponents view the new CSR model as a means of potentially reviving an old dynamic in MOCs – community dealings, detractors see it as a ground for new roles to be demanded of an old system. This variance in acuities perpetually sets the background for the CSR debate in the region, placing those in support of conserving an already deep-rooted MOCs – Community relationship against those who assert that MOCs – Community relationships must acclimatize to changing community values (Amaeshi *et al*, 2006; Marchant, 2014; Eweje, 2006; Ite, 2007; Lompo and Trani, 2013; Renouard and Lado, 2012; Ite *et al*, 2015).

Ensuing the previous divergent points of view of the CSR initiatives in the Niger Delta, this paper is a plus to gender discourse in access to fiscal services and wide-ranging growth literature from the CSR standpoint, by evaluating empirical evidence in four areas that has been hugely attended to in the literature. The paper seeks to evaluate the level of CSR ventures that MOCs have embarked on in the area of reducing financial services gap, as well as ascertaining

the level of benefits from such dealings that mount up for rural women and its effect on their trade. These four areas of focus likewise represent four main questions notably:

i. Can the genders be said to be well represented in the GMoU intervention of the MOCs in the Niger Delta, Nigeria?
ii. How does the MOCs' CSR investment affect policy dialogue and advocate for women's financial inclusion in the Niger Delta, Nigeria?
iii. Do the involvement of MOCs bring about positive changes on rural women's access to credits, savings, insurance, and extend their economic opportunities in the Niger Delta, Nigeria?
iv. What are the positive implications of closing the gender disparities in fiscal inclusion in the Niger Delta, Nigeria?

1.1 Study hypothesis

Customarily, the people of the Niger Delta by profession are mainly farmers and fishermen. Yet, having had years of oil spillage and gas flaring, in addition to a fast growing population, has meant these usual sources of income are either no longer practicable or have experienced major decline. Women farmers in the region are discouraged from seeking formal loans because of the lawful and accustomed limitations that inhibit women from owning saving accounts, going for loans or purchasing insurance policies for themselves. Thus, we hypothesize as follows:

- CSR of MOCs using GMoUs has failed to positively affect women's financial services in the Niger Delta, region of Nigeria.
- CSR of MOCs using GMoU has made no positive impact in bridging the gender gap in financial inclusion of the Niger Delta region of Nigeria.

Other contents of the paper are arranged as follows. Section 2 briefly looks at background, literature and the theoretical underpinnings. Section 3 focuses on the materials and method. Section 4 deals with the results and resultant discussion. Section 5 brings the paper to conclusion with policy implications, caveat as well as future research directions.

2. Background, literature and theoretical underpinnings

2.1 Background

Nigeria's economy depends heavily on the oil and gas sector, which contributes 95% of export revenues, 80 to 85% of government revenues, and approximately 32% of gross domestic product (African Development Report, 2015). Nigeria is the largest oil producer in Africa and among the top ten globally; its recoverable reserves were estimated at 36.2 billion barrels in January, 2007; despite the country's relative oil wealth, GDP per capita is 2,400 USD, and poverty is widespread- about 50% live on less than $1.25 per day (Africa Competitiveness Report, 2017). Oil and gas reserves are concentrated in the Southern part of the country, known as the Niger Delta. This region is marked by deprivation and underdevelopment; oil extraction is a capital rather than labour-intensive industry and, therefore, provide little employment (African Economic Outlook, 2017). The region is further disadvantaged by: the difficult geographical terrain which makes infrastructure costs higher; and the effect of environmental degradation, caused in part by the consequences of oil extraction-gas flaring, oil spills, etc. on traditional industries such as fishing and agriculture (Francis *et al,* 2011). Women bear the brunt of environmental injustice in the Niger Delta, and the negative consequences of the operations of the MOCs have impacted negatively on the health and livelihoods of women in the region (Ekhator, 2019). Hence, in this context, women are more vulnerable to the effects of environmental injustice than men – primarily as they constitute the majority of the region's poor and are more dependent for their livelihoods on natural resources that are threatened by the consequences of oil extraction – gas flaring, oil spills – those charged with the responsibility to secure water, food and fuel for cooking and heating face the greatest challenges.

2.2 Gender inequalities

Gender discrepancies in earnings, access to health and academic attainment are prevalent across the continent of Africa (African Development Report, 2015). In Nigeria, women who are into farming are eight times less likely to autonomously own their own agricultural land. Women who have a secondary certificate (secondary education) are 37% less likely to be engaged in the formal, non-agricultural sector (NDDC, 2014; Uduji and Okolo-Obasi, 2022). In the Niger Delta region of Nigeria, the rate of sending girls school is low, regardless of their ability; besides, their schooling is more likely to be unsettled by early marriage, customs and traditions. Even when they finally find a way of achieving equal levels of education with their male counterparts, they have less chance of being employed to get paid (salary) and are likely to be paid less if they do get employed (NDDC, 2001; Okolo-Obasi *et al,* 2021). According to Francis *et al* (2011), nearly 36% of the women in the region spoke about being victims of violence, mostly perpetrated on them by their intimate partners (husbands), and true incidence

of violence against women is probably not well reported. Aside from the direct impact on women and children, physical abuse of women has wider social as well as economic costs, including the effect on infants and children nutritional cum health outcomes (UNDP, 2006). Probably, these oil host communities could reduce violence against women via measures that address gender gap in access to land, imbalance in rural labour markets, financial services gap, imbalance in capital through women's groups, and the breach in technology (Renouard and Lado, 2012; Uduji *et al,* 2023).

The approach to this research departs from present-day gender issue in agriculture literature, which has mostly looked at micro-insurance that works for women (Banthia *et al,* 2009); gender exploration with informal productive and financial sectors (Bayraktar and Fofack, 2018); gender improvement and globalization (Beneria, 2016); fighting African capital flight (Asongu *et al,* 2020); financial literacy, fiscal decisions, and the demand for fiscal services (Cole *et al,* 2009); rural women's access to credit (Fletschner, 2009); women performance in entrepreneurship development (Okolo-Obasi and Uduji, 2023); gender inequality and access to microfinance (Mannah-Blankson, 2018); finance for the poor (Matin *et al,* 2002; needs of poor female farmers (Quisumbing, 2009); a theoretical overview and extension of research of sex, gender and (Fischer *et al,* 1993); and women and gender (Unger and Crowford, 1992) access to credit and its impact on welfare in Malawi (Diagne and Zeller, 2001); inclusive human development in sub-Saharan Africa (Asongu *et al,* 2019); empirical measurement of household's access to credit (Diagne and Sharma, 2000); women's access to credit (Fletschner, 2008).

2.2 How GMoU works

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 relevant state government (SPDC, 2013). The governing structures are well defined, with a 10-person Community Trust, a CDB and a Steering Committee cheered by the State Government; the CDB functions as the main supervisory and administrative organ, ensuring implementation of projects and setting out plans and programmes (Chevron, 2014). The CDB is the decision-making committee, and the GMoU enables representatives of State and Local Governments, MOCs, non-profit organization, such as NGOs to come together under the auspices of the CDB as the governing body (Uduji and Okolo-Obasi, 2022). By the end of 2012, MOCs had signed agreements with 33 GMoU clusters, covering 349 communities, which

is about 35% of the local communities around the MOCs business operations in the Niger Delta (SPDC, 2013). In 2013, a total of 723 projects were successfully completed through GMoUs (including specific project – GmoUs); as at 2013, the cumulative total funding for GMoU projects and programmes is over $117 million, with over $30 million in 2012 alone; nine of the thirty-three CDBs have grown to become registered foundations, and receiving third party funding (Chevron, 2014). According to Okolo-Obasi *et al* (2021), GMoUs have become very popular with local communities, and with greater ownership leading to better projects, sustainability and improved trust; and it provides a better organised community interface and grievance/ dispute resolution mechanism in the region.

2.3 Theoretical underpinnings

Decades of oil exploration in the Niger Delta region of Nigeria have no doubt affected the environment and lives of the Niger Delta people, while oil spills and indiscriminate flaring of gas has equally caused ecological devastation in the region. Thus, this study combined the frustration-aggression theory, the relative deprivation theory and the perspective of CSR in the African context. The frustration-aggression theory states that aggression is caused by frustration and when people are prevented from reaching their targets, they become frustrated (Breuer and Elson, 2017). Aggression in this context is usually directed towards the cause of the frustration but where this is not possible, the aggression may be displaced or directed to others hence, the Niger Delta people have for long crave to enjoy the proceeds of the oil deposits in their lands but unfortunately what they get in return is pollution, gas flaring, and environmental disaster caused by the activities of the MOCs (Kalama and Asanebi, 2019). Relative deprivation therefore refer to the discontent people feel when they compare their positions to those of similar situations and find out that they have been less than their peers hence, it is a condition that is measured by comparing one group's situation to the situations of those who are more advantaged (Walker and Pettigrew, 1984). It is used in social sciences for describing feelings or measures of economic, political, or social deprivation that are relative rather than absolute; it is a concept that has important consequences for both behaviours and attitudes, including feelings of stress, political attitudes and participation in collective actions (Walter and Smith, 2001). Probably, the most well-known model of CSR is Carroll (1991) CSR Pyramid. Its four levels indicate the relative importance of licit (legal), economics, ethical and philanthropic responsibilities. However, the exploration of CSR in Africa (Visser, 2006) is used to question the precision and relevance of Carroll's Pyramids in an African context. Visser (2006), argue that if Carroll (1991) basic four-part model is recognised, it is proposed that the

relative priorities of CSR in Africa are likely to vary from the classic, American ordering. However, it is also suggested that Carroll's CSR Pyramid may not be the best model for comprehending CSR in general, and CSR in Africa specifically. Amaeshi *et al* (2006) have argued that the Nigerian notion of CSR is remarkably dissimilar to the Western version. Ekhator (2014) observed that philanthropic initiatives as CSR by multinational companies are widespread in Nigeria. Frynas (2009), noted that in developing countries, the lack of government action in making available amenities for its citizens heightens the part played by multinationals in CSR and philanthropy (which is not regarded as CSR in Western countries). Muthuri (2012), depending on the extant literature in Africa postulated that the CSR issues prevailing in Africa include health and HIV/AIDS, reduction of impoverishment, community development, education and training, economic and enterprise development, environment, human rights, sports, corruptions, governance and accountability, and inequality nexuses. Hence, this study adopts quantitative methodology but assesses the result from the frustration-aggression theory, relative deprivation theory and African CSR conceptualization.

3. Methods and material

Quantitative methodology is adopted in this study, as a contribution, given the rarity of quantitative work in the region (Renouard and Lado, 2012). The survey research technique was embraced for the study with the goals of collecting information from a representative sample of the population. It is basically cross-sectional which defines and interpret what exists at present. Figure 1 shows the component administrative States of the Niger Delta region, Nigeria.

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

3.1 Sample size

We put to work the Fisher formula to compute our sample size, the formula is mathematically stated as follows:

Where *n* stands for the sample size; *z* is the standard normal deviance for a given level of confidence, e.g, 95% confidence =1.96. Then, *d* stands for the margin of error at 0.05 for confidence interval of 95%; *p* stands for proportion of the population to be estimated. In a situation where the value of *p* is unknown, the common assumption is that *p* will be 0.5. With these reasons, we calculated our sample thus:

= 384.

This figure we approximated to 400 so as to cut error in sample selection. We also multiplied it by 2 for further minimization of possible errors in the sample selection. This is the reason the final sample size we utilized was 800 respondents. Cross sectional data was composed from this sample.

3.2 Sampling procedure

The assortment of respondents was done using multi-stage sampling technique. The stages consist of the use of purposeful and simple unsystematic arbitrary (random) samplings. We purposefully carefully chose two local government areas (LGAs) each from the nine states of the Niger Delta region in the first stage. The purposive centred on the fact that the LGA picked is a host to at least one MOC's facility or that the LGA is not far from a host LGA. Putting to use unsystematic sampling in the second stage, we intentionally selected two communities from each of the selected LGAs summing up to four communities per state. Why we chose the communities intentionally was to make sure that both communities that are a part of the cluster development board (CDB) and those that are not were picked on equal measure. The CDB communities were the ones that have enjoyed CSR activities from the MOCs (treatment) while the non-CDB communities have not (control). The community caretakers, leaders in the last stage, assisted us in the random selection of 800 women from the 36 host communities as our respondents allocated in line with the population of the state as follows:

Table 1: Sample size determination table.

States	Population	Population of women	% of Total Population	Sample Per Sate	Treatment	Control
Abia	3,727,347	1,900,947	9%	72	36	36
Imo	5,408,756	2,758,466	13%	104	52	52
AkwaIbom	5,482,177	2,795,910	12%	96	48	48
Cross River	3,866,269	1,971,797	9%	72	36	36
Edo	4,235,595	2,160,153	10%	80	40	40
Delta	5,663,362	2,888,315	13%	104	52	52
Bayelsa	2,277,961	1,161,760	6%	48	24	24
Rivers	7,303,924	3,725,001	17%	136	68	68
Ondo	4,671,695	2,382,564	11%	88	44	44
Total	42,637,086	21,744,914	100%	800	400	400

Source: UNDP, 2006 /Authors' computation

3.3 Data collection

Most of the data we used for this study was primarily collected from the respondents in a cross sectional form. We basically used the secondary data garnered to validate the findings from the primary data. In collecting the primary data used, we employed participatory research technique. It was chosen due to the fact that the feelings of the population under study is of utmost importance (Lompo and Trani, 2013). Survey and key informant interview were used in gathering CSR impact data particularly in relations to the women in the rural host communities of multi-national oil companies in the Niger Delta. The structure questionnaire used for the study was physically and personally administered to the respondents as an appropriate tool to evaluate qualitative issues by quantitative information. In using this questionnaire, we dispersed scores according to the study objectives. We employed local research assistants in administering the questionnaire because of the many different languages used in the area by sub tribes that constitute the over fifty ethnic groups in Niger Delta Region.

3.4 Framework for data analysis

In measuring the efficacy and potentials of multi-national oil companies' corporate social responsibilities in making certain women's financial inclusion (ability to get credits, right to insure, propensity to save and widening women's economic opportunities) in the rural host communities in Niger Delta region, we made use of both descriptive and inferential statistics to realize the objectives of this study. While descriptive statistics were used in attaining objectives one, two and four, objectives three was realised using inferential statistics. The

inferential statistics used combined propensity score matching (PSM) and logit model. These methods were picked because we needed to control the choosiness and endogeneity difficulties as much as we desired the counterfactual in a quasi-experimental design.

For the PSM, we picked the treatment (women from communities that belong to CDB) as well as the control (women from the non-CDB communities. We then made use of propensity score matching approach and assessed the average treatment effect of the MOCs. PSM as opined by Francis *et al,* (2011) projects the prospect of treatment for both the treatment and the control groups with regard to the observed covariates. The pre-treatment characteristics of each subject are brought together into a single index variable by PSM and is then used to match comparable individuals. Therefore, we matched the control group selected from a larger survey to the treatment group also selected from a larger survey on the grounds of a set of observed characteristics that the treatment has no effect on.

In this study, we assumed that the decision to be treated (although not random) hinges on the variables observed. To this, we saw things in the same light with Rosenbaum and Rubin (1983) that matching on variable X is a signal that probability of X can be matched. So, to estimate the influence of CSR on women's financial inclusion; the treatment group is denoted as R_i =1 for respondent $woman_1$, and R_i = 0 for the control group. Matching both group (Treatment and Control) on the grounds of the propensity score (Probability of receiving CSR given observed characteristics) is mathematically expressed as shown below:

$$P(X_1) = Prob(R_2 = 1/X_2)\ (0<P(X_2) < 1) \quad (2)$$

Where X_1 is a vector of control variables before CSR, if R_1's are independent over all 1's as long as given X_1 , the results are independent of $CSR_,$. Again, the results are independent of CSR given $P(X_1)$, just as same will be the case if CSR is received randomly. For us to make a rational conclusion on the impact of CSR on empowering coastal women, we observed the need to dodge the biasness of picking observables by matching the probability of the treatment (covariates *X);* thus, we defined the propensity scores of Vector X as:

$$P(X) = Pr\ (Z = 1/X) \quad (3)$$

And Z is the treatment indicator =1, for treatment, and = 0 for control. Due to the propensity score being a balancing score, the observables *X* will be distinct same for both the control and the treatment while the variances are the quality of treatments.

To guarantee the vigour of our study, we followed Ravallion (2001) by assessing the unbiased impact via adaptation of four steps. In step one, we disclosed that a binary response model predicts the probability of getting CSR with appropriate observable characteristics. So, we combined the two distinct groups (treatments and Controls) and assessed the logit model of receiving or not receiving CSR due to some socio-economic variables features which include individual, household and community variables. Mathematically, the logit model is represented thus:

$$P(x) = Pr(Z= 1/X) = F(\alpha_1 x_1 \ldots\ldots\ldots + \ldots \alpha_n x_n) = F(x\alpha) = e^{x\alpha} \quad (4)$$

The study produced value of the prospect of receiving CSR from the logit regression as we assigned each woman a propensity score. We let go of low propensity scored control group that falls outside the range found for treatment at this point. Then for each woman that is a part of the CDB communities (treatment), a woman from the non-CDB community (control) with the closest PS as measured by absolute variance in score known as "nearest neighbour" was acquired. The mean values of the result of indicators for the nearest neighbours were calculated. We then assessed the variance in the mean and actual value for treatment as the gain due CSR of the MOCs using GMoUs. The study then appraised the average treatment effect (ATT) as the variance between treatment and control groups based on PSM stated thus:

$$ATT_{PSM} = E_{p(x)} \{E(y_1/Z = 1, P(x) – E(y_0/Z = 0, P(X)\} \quad (5)$$

In the equation, EP(X) stands for anticipation with respect to the dispersal of propensity score in the population. The true ATT shows the mean variance in endowing women. The major variable measured in the work include the scores on women's access to credits, (measured by rage of available fund for women in each group either as grant, loan or free support); propensity to save, (measured as total estimated inflow of the women per annum less their total expenditure per annum); access to insurance (measured by how the respondent perceives insurance and availability of insurance facilities) and access to widened economic opportunities (the women's understanding about investing in other non-traditional industries and the level of trainings and skill acquisition available).

We then used three different matching techniques, radius matching (RM); nearest neighbor matching (NNM); and kernel-based matching (KM) to match the treatment and control. Afterwards, we checked the matching estimators' quality by standardized variances in observables' means between treatment and control. After matching with X for the covariate X,

we represented the variance in sample means for treatment as ($\acute{X}_1$) and matched control as ($\acute{X}_0$). Thus, we put the sub-samples as a percentage of the square root of the average sample variance as: ($\int_1^2 and \int_0^2$.).

To this:

$$|SD = 100 * \frac{(\acute{X}1 - \acute{X}0)}{\left(.05 \int_1^2 and \int_0^2 .)1/2\right)} \quad (6)$$

In the next step, we accepted 5% as the bias left below after matching. This is actually when there is no clear threshold of effective or failed matching. The study thereby took as a sign that the balance among the dissimilar observable characteristics between the treatment and control as matched is satisfactory. However, being aware that the problem of hidden bias will always abound, we tried decreasing the hidden bias by the bounding approach. And to do this, we complemented equation 3, to evaluate the propensity score by a vector *U* which is made up of all the variables not looked into but we captured their effects on the probability of treatment by γ and is stated thus: $P(x) = Pr(Z= 1/X) = F(X\alpha + U\gamma) = e^{X\alpha U\gamma}$ (7)

In the last phase, we were careful in analysing the strength of the influence of γ on treatment so as to manage the effect of treatment on potential results. The assumption here is that the unobservable variable is a binary variable with values 1 or 0. Thus, the treatment probability of both treatment and control is functional in line with the bounds on the odds ratio as stated thus:

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

According to Rosenbaum and Rubin (1983), both the treatment and control have the same possibility of receiving CSR, so long as they are identical in X, only if e□□□1

3.5 SCOTDI

According to Idemudia and Osayande (2016), SCOTDI is a composite index for weighing, scoring and ranking the performance of GMoU clusters based on five-key criteria (transparency and accountability, inclusiveness and participation, governance and democracy, business climate and progress towards sustainability), which are consistent with international best practice in development discourse. According to Uduji *et al* (2023), the specific objective of SCOTDI includes: to provide a framework for ranking GMoU clusters; to engendered healthy competition among GMoU clusters; and to align Shell capacity building interventions, business value expectations, and reputation enhancement opportunities. The prevalent adoption of CSR

procedures by MOCs in developing countries have led to calls for an intensive effort to capture the impact of CSR better. To sort out this problem, MOCs in 2013 lodged the Shell Community Transformation and Development Index (SCOTDI). SCOTDI is an initiative of Shell Petroleum Development Company (SPDC) which was introduced when it became a serious challenge for the multinational oil companies (MOCs) to demonstrate and or convince sceptical shareholders and critics that CSR is making a difference (Uduji and Okolo-Obasi, 2022). SCOTDI draws on a contribution analysis approach to impact assessment. According to Idemudia and Osayande (2016), the situation in the Niger Delta as at that time, constrained the MOCS in their usage of CSR initiatives efficiently. This seriously hindered their management of nontechnical risks and or addressing effectively their host communities' social needs. SCOTDI is a framework highly innovative, it assesses the performance of different cluster development board in implementation of the GMoU between a community and the MOCs. SCOTDI incorporates a number of international principles into a composite index in a manner that is responsive to local. However, SCOTDI is still largely corporate driven, and it could rightly be argued that the framework falls within an audit frame even though some aspect of it does not conform to current audit culture. Nevertheless, in this study, this structure is used to access and rank the performance of the diverse GMoUs clusters in the host communities of Niger Delta. For the variables measured with SCOTDI, Inclusiveness, transparency, participation, governance, outcome and continuation on the sale of 1 to 10 with 10 showing a great extent and 1 very low extent. Both the men and women of the board were rated by the respondents.

4. Results and discussion

4.1 Descriptive analysis

We display the description of some of the respondents' economic (income, occupation), social (education), and demographic (marital status, age, household size) features in the analysis (Table 2). This analysis of the features is very indispensable because it assists in understanding the socio-economic and demographic variances in status of the both the CDB women - treatment and the non-CDB women –control. The result reveals that, in the treatment, 28% are in fishing while the control has 42%. 25% are in trading while the control has 17% in same trading; also, 18% of treated group are into farming while 15% is that of control group. Furthermore, in the treatment group, only 8% are into paid employment while the control has 6%. Still more, about 17% of the treatment group are involved in various hand craft, while the

control recorded 11%. This indicates that more of the women in treatment group are moving away from the traditional enterprises. This shift may be accredited to the fiscal inclusion engineered by the receipt of CSR from the MOCs.

The women in the treatment group have an average age of 34 years while that of the control group is 36 years. This reveals that age of the respondents has little or nothing to do with being in the control or treatment group. Likewise, in the area of education, only about 13% of the treatment are without any form of formal education at all while 18% was recorded among the control. This does not matter much as the choice to be in treatment or control is not basically that of the women. Conversely, women in the treatment group make more money than those that are in the control. The result shows that while about 31% of the women in treatment group make as much as NGN1000 to NGN150,000 annually, 66% of the control earn in a similar way. By implication, only about 34% of the control earn more than N150,000 in a year while about 69% attain similar height of earning. Worth noting is the fact that while about 12% of the treatment earn above NGN300,000, only 4% earn such in the control. This may be accredited to the room for accessing credit which may have helped the CDB women invest in more profitable ventures. While there is a huge difference between the two groups, it is largely seen that irrespective of receiving or not receiving the CSRs via the GMoU intervention, the average annual revenue of all (both the treatment and the control groups) is still poor i.e. very low. This shows that there is still a high level of impoverishment in the region. This result contradicts SPDC (2013) baseline survey in 2009 which showed a poverty incidence of 50% particularly among women which was hugely reduced to more than half percent due to the introduction of GMoU.

Table 2. Socio-economic characteristics of the respondents

	Treatment Group			Control Group		
Variables	**Freq**	**%**	**Cum**	**Freq**	**%**	**Cum**
Age of Respondents						
Less than 20 years	15	4	4	24	6	6
21 - 25 years	124	31	35	101	25	31
26 - 30 years	88	22	57	82	21	52
31 - 35 years	59	15	72	70	18	69
35 - 40 years	46	12	83	45	11	81
41 - 45 years	30	8	91	31	8	88
45 - 50 years	22	6	96	28	7	95
Above 50 years	16	4	100	19	5	100
	400	**100**		**400**	**100**	
Level of Education						
None	52	13	13	72	18	18
FSLC	148	37	50	168	42	60
WAEC/WASSCE	117	29	79.25	107	27	87
Degree and above	83	21	100	53	13	100
	400	**100**		**400**	**100**	
Household Size						
1-4 Person	178	45	45	150	38	38
5-9 Person	153	38	83	144	36	74
10-14 Person	57	14	97	76	19	93
15 Person and above	12	3	100	30	8	100
	400	**100**		**400**	**100**	
Marital Status						
Single	67	17	17	75	19	19
Married	203	51	68	285	71	90
Widow	58	15	82	13	3	93
Divorced/Separated	72	18	100	27	7	100
	400	**100**		**400**	**100**	
Primary Occupation						
Fishing	112	28	28	169	42	42
Trading	99	25	53	67	17	59
Farming	72	18	71	58	15	74
Paid Employment	32	8	79	25	6	80
Handicraft	67	17	96	42	11	90
Others	18	5	100	39	10	100
	400	**100**		**400**	**100**	
Annual Income						

NGN1000 - NGN 50,000	18	5	5	86	22	22
NGN 51,000 - NGN 100,000	39	10	14	93	23	45
NGN 101,000 - NGN 150,000	65	16	31	83	21	66
NGN 151,000 - NGN 200,000	61	15	46	64	16	82
NGN 201,000 - NGN 250,000	81	20	66	45	11	93
NGN 251,000 - NGN 300,000	88	22	88	14	4	96
Above NGN[1] 300,000	48	12	100	15	4	100
	400	**100**		**400**	**100**	

Source: Authors' compilation based on field survey.

4.2 Average value of Direct CSR receipts from the MOCs by women

The analysis (Figure 2) reveals the level of CSR that the women have enjoyed among the treatment group. The result indicates that only about 3% of the women have received above NGN 500,000 (USD 1,000). Then, about 40% have received CSR worth between NGN 1000 to NGN100,000 (USD 2 to 200), while 23% have received something lower – between NGN 101,000 to NGN 200,000 (USD 201 to 400).

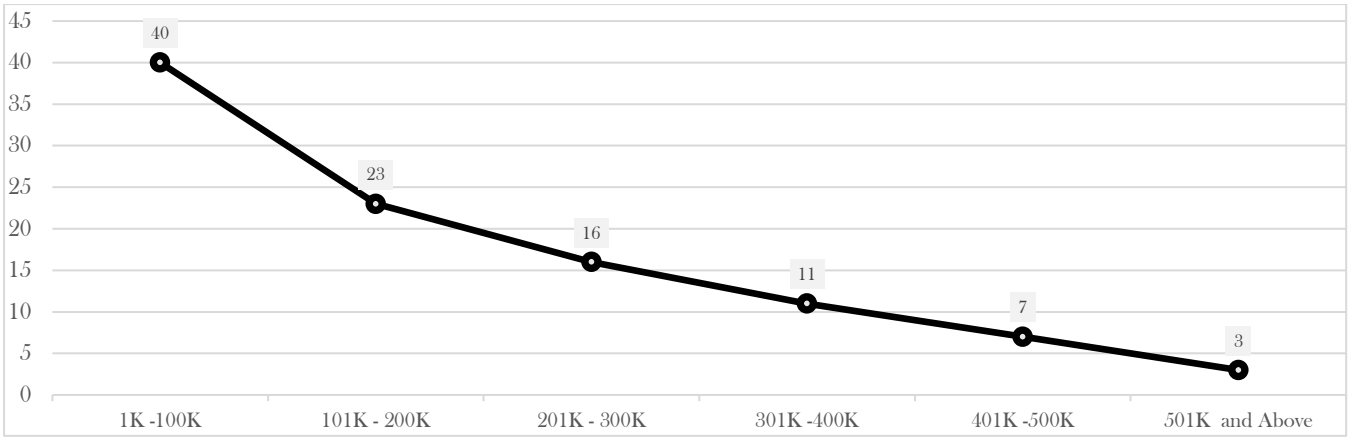

Figure 2. Average value of CSR receipts from the GMoUs by respondents
Source: Authors' compilation based on field survey 2021.

In continuation, while about 16% have received between NGN 201,000 to NGN 300,000 (USD 401 to 600), only about 11% were able to get between NGN 301,000 to NGN 400,00 (USD 601 to 800). Then, 7% received between NGN 401,000 to NGN 500,00 (USD 801 to 1000). This reveals that there may be a substantial effect of CSR intervention on women's ability to access credit, though, the strength is still not much.

[1] NGN stand for Nigeria Naira while USD, stands for United States of America Dollar

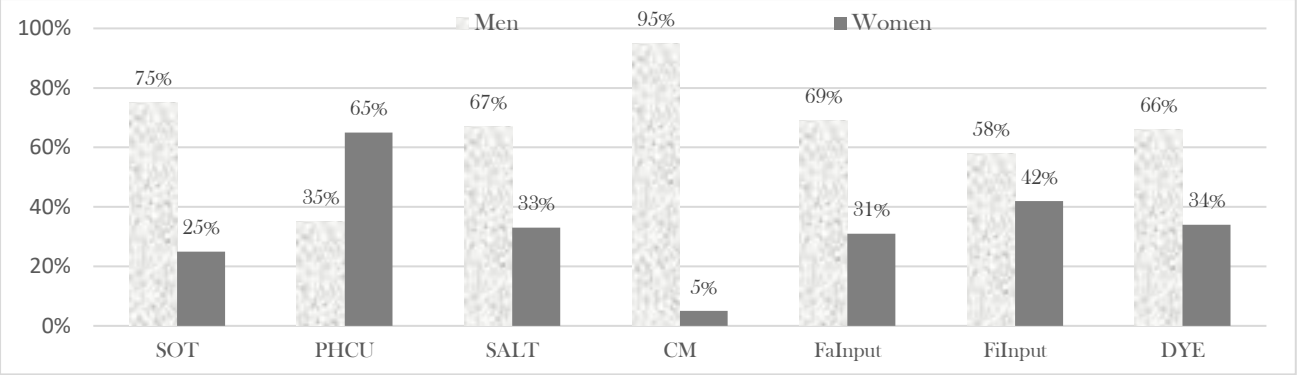

Figure 3. Percentage distribution of CSR intervention of MOCs using GMoUs by major sectors in the Niger Delta[2].

Source: Authors' compilation based on field survey 2021.

In analysis of Figure 3, we examined the main sectors that MOCs make some mark in with their CSR in the region under study. In continuation, we compared what the men gain in these areas with what the women take away (gain). The results reveal that in CSR intervention in education in the areas of scholarship bursary oversea training and such, but such areas as building blocks, provision of library and laboratory equipment not included, men have enjoyed as much as 75% while women received just 25% of the CSR interventions. In terms of primary healthcare facilities made available, women accounted for utilizing up to 65% in comparison to men that accounted for only 35%. Then, for skill acquisition and other local trainings, men took the upper hand (67%) while women enjoyed 33%. Chieftaincy matters (payments made to the chiefs and community leaders) saw men registering 95% with women registering only 5%. For access to farming input, only 31% of women received direct intervention while 69% were channelled to men. In fishing input provision, women were able to increase to 42% while men still dominated with 58%. Looking at direct youth employment, the result reveals that only 34% of the employees are women while men constituted a high 66%. This, in the first place, indicates that the GMOUs of the MOCs are not well channelled, except in the area of primary healthcare where women are more in need because of reproductive health and nursing children. All in all, men dwarf women in all the other sectors that the MOCs are intervening. This result shares the same view with Francis *et al* (2011), in that GMoU intervention on fiscal inclusion

[2] SOT = Scholarship and oversea training; PHCU = Usage of Primary Healthcare Facilities Provided; SALT = Skill Acquisition and Local Training CM = Chieftaincy Matter; FaInput = Provision of Farming Input; FiInput = Provision of Fishing Input; DYE = Direct Youth Employment

should offer financial literacy training to make sure that women can compare products and make their decisions based on a clear understanding of the features and conditions of the product available.

4.3 Level of gender participation in the CSR intervention of the MOCS

To further look into the level of the rural women's involvement in the CSR activities using the GMoU, we evaluated the feeling of the respondent women of the rural host communities using the SCOTDI. According to Ite, Osayande and Onaolakpo (2015), SCOTDI is a structure of innovation, in drawing their personal views. The women's view were sought in various issues such as female involvement in the CDBs, control of the cluster development boards, openness in the management of CDBs, inclusiveness in the making of decision, continuity of the CDBs after MOCs' CSR involvement, and the result of the GMoUs in the Niger Delta region. The opinions of the women of the rural communities were very essential because the views of the companies or even the men about them is not reliable. Because as the men benefit more from the CSR of the companies, they try to help the companies paint the images of the companies better than the real.

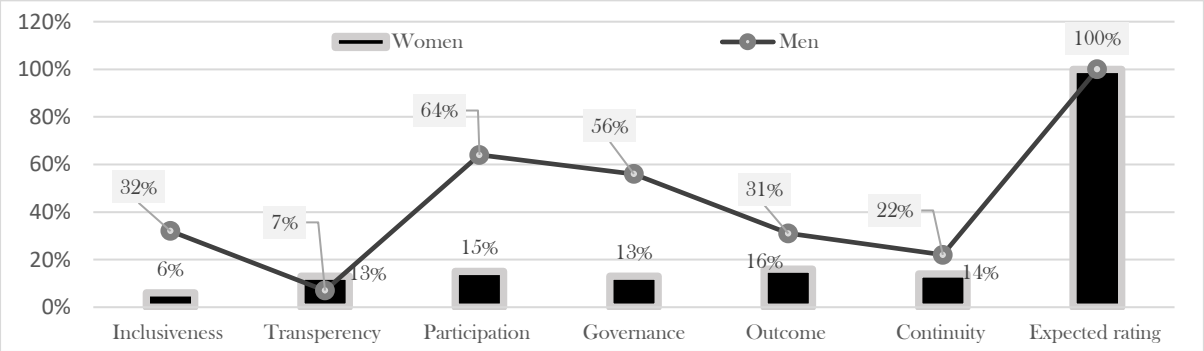

Figure 4. Gender involvement in CSR interventions for financial inclusion in Niger Delta

Source: Authors' compilation based on field survey 2021.

Using the structure, SCOTDI, analysis (Figure 4) indicates that the rural host communities rated the interventions of the CSR for fiscal inclusion of women in Niger Delta region as significant but still very low compared to how the men benefit, which they rated very high. The result of the examination shows that in openness of the CDBs in their activities, the women rated women 13% and men 7%. This shows that though transparency is low, the few women who participated in the CDB are more transparent than the men. In governance, the women rated their contribution as 13% while they rated men a high 56%. This simply means that men control the governance and will always take decision that will favour men over the women.

In inclusiveness, the women believe that, they are not fully represented like their male counterpart. The figure shows that while men took 32% rating in inclusiveness, the women were only rated a poor 6%. On the other hand, while involvement of women in the CSR and the CDBs activities is rated as low as 10%, the men's involvement is rated as high as 64%. This indicates that in decision making, the men make the decisions about most of the GMoU programmes without seeking the opinion of the women. According to the women's rating, men are more empowered by the MOCs via the use of GMoU which is unfortunately managed by male dominated cluster development boards. Yet, further examination reveals that these women are keen on participating in any CSR activities that will better their chances of getting access to credit, being able to insure (gain insurance), being empowered to save, and having wider economic prospects. This result shares the same view with the findings linked to India and Indonesia (Cole *et al*, 2009), in that promoting fiscal literacy via GMoU efforts should involve necessary steps like dissemination of information and promoting of material in places or through channels that women can access. More includes simplifying application procedures and adapting them to women's literacy cum numeracy levels, and simplifying insurance contracts and communicating their conditions with the usage of language and examples that less–literate women will easily grasp.

Table 3. Percentage rating of MOCs' CSR in helping women with financial inclusion the Niger Delta.

Activities	Total E&P	Exxon Mobil	Chevron	Shell	Agip	Others[3]	Average
Provision of short loans targeting only women	7%	4%	5%	7%	6%	11%	6.70%
Provision of seed grant for women entrepreneurs	16%	14%	18%	20%	19%	18%	17.50%
Advocacy visits and policy dialogue with relevant stakeholder	12%	9%	11%	18%	15%	15%	13.50%
Financial management training for women entrepreneurs	20%	18%	20%	16%	17%	20%	18.50%
Provision of health insurance schemes for women	2%	3%	1%	2%	2%	0%	1.70%
Skill acquisition to enlarge business opportunities	25%	37%	27%	24%	25%	20%	26.30%
Inclusive business development targeting women	18%	15%	17%	13%	16%	16%	15.80%

Source: Computed from the field data by authors

[3] Others stands for the smaller oil companies not listed among the five in terms of the operation in Niger Delta

Analysis (Table 3) reveals the percentage rating of CSR investment in assisting rural women with financial inclusion. To achieve objective two, we looked at provision of financial management training, short term loan, seed grant, advocacy visits, policy dialogues, insurance, provision of skill procurement and inclusive business development as factors that define inclusiveness in finance. The result indicates that, on average, among the major MOCs, availability of short-term loan is only 6.7% while seed grand provision is 17.5%. This simply means that provision of loan/grant to the women to improve their access to credit is 24.2%. To a reasonable extent, it is a good effort (though among the CSR interventions financial empowerment it is among the least). Advocacy visits and policy dialogues (sponsoring CSOs to lobby relevant stakeholders for mainstreaming of gender) accounted for 12.5%. With these, it is obvious that advocacy and policy dialogue is low (poor) but significant. The lowest is availability of health insurance scheme for the women. Insurance of life and properties sounded strange to most of the respondents. In giving more accounts, financial management training took 18.5%, skill procurement to widen business opportunities took 26.3% and inclusive business (concerning the women in the MOCs' business as vendors) took 15.8%.

Generally, it can be stated here that the MOCs are making efforts to guarantee that the women are financially endowed and included in the region, however, the effort is still very low (poor) when compared to other areas of CSR intervention of the MOCs. Total financial empowerment and even advocacy is not up to 4.5% of the general CSR intervention of the MOCs, thus, intervention aiming at women is even less than 1% of the total intervention. So, we have confidence that if the MOCs and the CDBs will increase intervention directed at financial empowerment and inclusion of the women in Niger Delta by even 1% its ripple effect will achieve much. This finding concurs with Diagne *et al* (2000), in that GMoU ought to promote a gender-sensitive culture and products designed to fortify women's position and should include loans for purchasing land or houses. Such land or houses should be registered in women's name and the loan be offered by credit or savings to be used to buy assets for their daughters. It would enable them generate revenue, delay their marriage and have assets they can take into their marriage.

4.4 Econometric analysis

Table 4. Comparison of mean score and observable characteristics across Treatment and control for financial inclusion (N = 800)

Score in Percentage of maximum score	Treatment	Control	Difference
Scores on women's access to credits	34.87	21.56	13.31**
Scores on women's propensity to save	38.09	26.26	11.83**
Scores on women's access to insurance	31.35	30.33	0.02
Scores on women's access to widened economic opportunities.	42.44	20.56	21.88**
Socio-Economic Characteristics			
Age	24.45	23.24	1.21
Education	25.24	23.43	1.81**
Marital Status	27.24	27.02	0.22
Primary Occupation	26.21	24.35	1.86
Household Size	19.76	20.21	-2.45
Annual Income	26.56	19.43	7.13*
Income of other household members	52.54	34.32	18.22**
Household Characteristics			
Access to medical care	16.65	12.54	4.11***
Socio-economic activities participation	24.66	21.45	3.21*
Access to Shelter	26.86	22.13	4.73**
Access to portable water	24.57	21.85	2.72*
Access to road and other civic infrastructure	21.78	19.63	2.15**
Access to land	27.43	27.15	0.28**
Observation	**400**	**400**	

Source: Authors' compilation based on household survey

Analysis (Table 4) gives a summation of the average variances in the basic scores and independent observable characteristics between the CDB women and the non-CDB women. The means variance reveals that, scores on women's ability to access credits, their inclination to save, their access to insurance and their access to widened economic openings are reasonably and significantly high for the treatment group when compared to the control. The variances are, 13.31%, 11.83%, 0.02%, and 21.88% respectively. Looking at the chosen observable characteristics, we also noted significant variances in Primary Occupation (1.86) Household Size (-2.45), Age (1.21%) Education (1.81%), Marital Status (0.22), Annual Revenue (7.13) and Earnings of other household members (18.22). On the household features, access to road and other civic infrastructure have positive and significant difference of (2.15), access to shelter (4.74), involvement in socio-economic activities (3.21), and access to portable water (2.72), access to medical care (4.11).

With this predicted outcome, we ended up achieving the third objective of the study and can confidently affirm that the MOCs' CSR using the GMOUs has significant effect on the women of the rural host communities in the area of activating positive changes on rural women's ability to access credits, make savings, and widen their economic opportunities in the Niger Delta, Nigeria. The only place the effect is poor is in insurance as there is nothing of note between the treatment and control.

Table 5. Logit model to predict the probability of receiving CSR conditional on selected observables

Variables[4]	**Coefficient**	**Odd Ratio**	**Marginal Effect**	**Std. Error**
Constant	8.124	2.842	.00231	.652
Pri_Occ	. 251	. 352	.0120*	. 124
Age	.- 103	. 313	.0021	.013
Edu	.278	. 342	.041**	.016
M_Sta	.034	1.321	.0203	. 123
Anu_Inc	.-024	.521	.028	.032
Inc_OHhM	-234	.321	.042	.032
CDB_Mgt	.012	. 328	.110	.034
GMoU Perception	1. 123	6. 831	.123*	.031
Part_Ben	.739	1. 451	.0012***	.021
Observation	800			
Likelihood Ratio - LR test (ρ=0)		□□2 (1) =1437.412*		
Pseudo R^2	0.45			

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

Source: Authors' compilation based on household survey.

Making use of the model in equation 3 above, we engaged the features that capture pertinent observable differences of both the treatment and control groups and projected the likelihood of the rural women receiving the MOC's CSR via the GMoU. Analysis (Table 5) reveals the marginal effect and standard error as well as the expected coefficients cum the odd ratio expressed in terms of odds of Z=1. In the single observation, we observed that primary work (occupation), highest educational level, GMoU view, CDBs management system, and participations gains are factors that positively affect the rural woman's who seek direct CSR in

[4] Age = age of respondent, Sex = sex of respondent (Male =1 female 0), Pri_Occ = primary occupation of respondent, Edu = Highest level of education of respondent, Anu_Inc = Income of the respondent, CDB_Mgt = management system of the CDB leaders, M_Sta = Marital status of respondent, Part_Ben = evidence of benefit of participants and Inc_OHhM = income of other household members

the GMoU programmes. Also, how old the respondent is, annual revenue and earnings of other member of the respondent's household has a negative influence on the seeking of CSR.

Table 6. Estimated impacts of CSR activities of MOCs using GMoU on women financial inclusion via different matching algorithms

	Access and Knowledge Score in Percentage of Maximum Score		**Average Treatment effect on the treated**
	Treatment	Control	
Nearest neighbour matching	Using single nearest or closest neighbour		
Scores on women's access to credits	34.87	21.56	13.31**
Scores on women's propensity to save	38.09	26.26	11.83**
Scores on women's access to insurance	31.35	30.33	0.02
Scores on women's access to widened economic opportunities	42.44	20.56	21.88**
Observations	**400**	**400**	
Radius matching	Using all neighbours within a caliper of 0.01		
Scores on women's access to credits	32.24	11.84	10.4**
Scores on women's propensity to save	31.21	22.25	8.96**
Scores on women's access to insurance	33.41	33.38	0.03**
Scores on women's access to widened economic opportunities	21.84	14.51	8.90**
Observations	**344**	**364**	
Kernel-based matching	Using a bi-weight kernel function and a smoothing parameter of 0.06		
Scores on women's access to credits	20.54	17.43	3.11**
Scores on women's propensity to save	19.26	16.82	2.44**
Scores on women's access to insurance	25.62	25.612	0.008
Scores on women's access to widened economic opportunities	21.32	14.52	6.80**
	400	400	

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

Source: Authors' compilation based on household survey.

In line with the likelihood of getting CSR projected in the model, the effect of CSR of the MOCs making use of the GMoU on financial enablement and inclusion of the rural women of the host communities, we evaluated the average treatment test (ATT). This was done when we have fully confirmed that the findings were ordered at random; there were no large differences in the distribution of propensity scores. The nearest neighbour matching (NNM) was the matching technique that yielded the highest and most substantial treatment effect. These effects were evaluated in line with the following outcome categories: women's ability to access credits, their inclination to save, their access to insurance, and their access to widened economic openings.

Analysis of Table 6 indicates the NNM evaluation of women's ability to access credit as approximately 13%. With this, we progressed to other methods (Radius and Kernel-based matching) believing that the NNM method result was poor probably due to scantiness of information. However, using radius matching algorithm, the estimated effect of women's ability to access credit was seen as approximately 10% while Kernel-based matching algorithm produced an average treatment effect of 3%. To this, we concluded that CSR of MOCs have produced something worthwhile in rural women's fiscal empowerment and inclusion in Niger Delta region of Nigeria.

Table 7. Imbalance test results of observable covariates for three different matching algorithms via standardized difference in percent

Covariates *X*	**Standardized differences in % after**		
	Nearest neighbour matching	**Radius matching**	**Kernel-based matching**
Age	3.6	16.4	11.4
M_Sta	4.7	36.4	8.3
Edu	3.8	18.5	15.7
CDB_Mgt	2.7	46.7	19.8
Anu_Inc	2.1	11.8	14.6
Inc_OHhM	4.1	21.6	16.3
Pri_Occ	5.7	32.8	25.8
GMoU Perception	4.5	39.8	21.9
Part_Ben	3.7	25.4	17.4
Constant	4.8	33.7	21.4
Mean absolute standardized difference	4.2	27.8	16.2

Median absolute standardized difference	4.7	36.4	8.3

Source: Authors' compilation based on household survey

Analysis (Table 7), makes clear the overall balance of all covariates between the treatment and control. This asserts that the NNM is of higher quality and produced a better result when compared to others. The NNM is reasonably below the threshold of 5% while the kernel-based matching as well as radius in both the mean and the median of the absolute standardized variance after matching are far above the threshold of 5%.

Table 8. 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 women's access to credits	0.0002	0.0033	0.0021	0.141	0.0071
Scores on women's propensity to save	0.0001	0.0013	0.0031	0.0512	0.123
Scores on women's access to insurance	0.0001	0.0051	0.0016	0.031	0.023
Scores on women's access to widened economic opportunities	0.0001	0.0041	0.0213	0.311	0.421
Radius matching	Using all neighbors within a caliper of 0.01				
Scores on women's access to credits	0.0001	0.0021	0.0315	0.022	0.0325
Scores on women's propensity to save	0.0001	0.0042	0.0018	0.082	0.053
Scores on women's access to insurance	0.0002	0.0241	0.1462	0.623	0.062
Scores on women's access to widened economic opportunities	0.0001	0.0021	0.0043	0.014	0.0745
Score on enhancing livelihoods means					
Kernel-based matching	Using a bi-weight kernel function and a smoothing parameter of 0.06				
Scores on women's access to credits	0.0002	0.0171	0.0243	0.182	0.0018
Scores on women's propensity to save	0.0001	0.00213	0.0020	0.015	0.0322
Scores on women's access to insurance	0.0001	0.00170	0.0022	0.021	0.0252
Scores on women's access to widened economic opportunities	0.0001	0.00143	0.0017	0.012	0.0123

Score on enhancing livelihoods means

Source: Computed from the field data by authors

Analysis (Table 8) reveals that KM produced more robust treatment effect in comparison to NNM and RM as it concerns estimates to hidden bias in women's ability to access credits, their propensity to save, their ability to enjoy insurance, and their access to broadened economic opportunities. This is the reason there is a possibility that matched pairs may differ by up to 100% in unobservable characteristics, while the effect of CSR of the MOCs using the GMoU as supervised by the CDBs on women's ability to access credits, their inclination to save, access to insurance as well as broadened economic opportunities, would still be significant at a level of 5% (*p*-value = 0.0018, *p*-value = 0.0322, p-value = 0.0252, and *p*-value 0.0123 respectively). Same classifications of knowledge score are robust to hidden bias up to an influence of $e^{y}= 2$ at a significance level of 10% in line with the radius matching approach. This result suggests that the CSR of the MOCs through GMoU activities are contributing positively in the financial enablement and inclusion of the rural women in the host communities of the multinational oil in the Niger Delta region. Along same line, a host of products ought to be designed via GMoU for other women in the host communities to gain indirectly. An example is making loans for businesses that employ women available, or assisting businesses that offer services such as child care that benefit other women. Also, technological novelties such as prepaid cards and mobile phone plants (to make loan payments and transfer cash) will easily help women to gain access to capital by dropping the need to travel long distances. This will help them to side step social restraints that limit their mobility or easily link them to people with whom they can benefit from in other parts of Nigeria.

Generally, the outcomes of this study first, put forward that when people perceive that they are being alienated, oppressed and prevented from achieving a goal, their frustration is likely to turn into aggression like the case of inequality and poverty in the Niger Delta region. Second, in the same vein, relative deprivation as applied in this study is the experience of women and girls in the Niger Delta being deprived and denied of the oil benefits which they believed they are entitled to have. Third, from the CSR perspective in the African context, the relative priority of MOCs' CSR intervention in the Niger Delta should vary from the classic, American ordering, as suggested by Carroll (1991). Placing significance on a cultural context in the determination of suitable CSR priorities and programmes, as suggested by Visser (2006) is essential in the context of the rural Niger Delta. Flexibility is also necessary, as suggested by Amaeshi *et al*, (2006) in dealing with the peculiarity of the socio-economic problems in the

region, which consists of closing the gender gap in fiscal services. Muthuri (2012) also consented that it is vital for CSR intervention in Africa to include reduction of impoverishment as it enhances education and training. But in addition and contribution, if we are to have a say on how CSR interventions can help gender equality in agriculture in the Niger Delta, we would argue that MOCs' CSR can assist in actively advancing gender equality through investments that will reduce the gap in financial services designed for the intricacies of real life in rural communities. MOCs are in a better position for the transfer of liable business practices cum standard as well as technologies cum infrastructure that speed up financial literacy. Such actions would also create products that meet the needs of women, promote women – friendly and empowering culture, and support the use of technology and innovative delivery channels to open up avenues for all genders and place all in a position to equally access economic opportunity in sub-Saharan Africa.

5. Concluding Remarks, Caveats, and Future Research Directions

The people of the Niger Delta are, by tradition, farmers and fishermen. However, decades of oil spillage and gas flaring, as well as the rising population, have made these traditional sources of income to no longer be practicable or experience notable decline. Women who are farmers in the region are dissuaded from applying for formal loans because of the constraints (legal and customary) that inhibit women from operating savings accounts, obtaining loans or purchasing insurance policies in their own rights. As a result, we hypothesize as follows:

- CSR of MOCs using GMoUs has failed to positively affect women's financial services in the Niger Delta, region of Nigeria.
- CSR of MOCs using GMoU has made no positive impact in bridging the gender gap in financial inclusion of the Niger Delta region of Nigeria.

The purpose of the study is to look at the multinational oil companies (MOCs) corporate social responsibility (CSR) initiatives in Nigeria. Its special interest is to investigate the effect of the global memorandum of understanding (GMoU) on improving rural women's monetary inclusion in the areas of ability to save, access credit, enjoy insurance and operate in a widened economic opportunity in the Niger Delta region. This paper adopts a survey technique targeted at collecting information from a representative sample of the population, as it is basically cross-sectional, recounting and interpreting the current condition. A total of 800 rural women were carefully sampled across the Niger Delta region of Nigeria. The outcomes from the use of a

combined propensity score matching and logit model show that GMoU model made substantial impact on reducing the gap in fiscal services that meet some needs and limitations of women as well as boost their financial literacy; even as innovative delivery channels and social networks of the GMoUs have cut some costs for them in the areas of ability to save, access credit, enjoy insurance and operate in a widened economic opportunity in the oil host communities. This suggests that CSR interventions of MOCs is essential in supporting a women-friendly and women-empowering culture in Nigeria's oil producing region. It entails that lending to women aids households diversify and increases incomes as well as makes available other benefits such as increased livelihood variation, greater involvement in labour market, more education and better health for mother/child in sub-Saharan Africa.

This paper lengthens out as well as contributes to the literature on gender debate in agricultural finance from the standpoint of CSR initiatives of multinational enterprises in emerging economies (countries) and validation of demands for social projects by host communities. It concludes that such business has a responsibility to assist in solving problems of public concern. The main caveat of the study is that it only covers oil host communities in Nigeria. Hence, the findings is not applicable to other developing countries with the same policy problems. In the light of this inadequacy, replicating the analysis in other countries is advisable in order to test whether the established nexuses endure empirical scrutiny in dissimilar oil host environments of developing countries.

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References

African Development Report (2015). *Growth, poverty and inequality nexus: overcoming barrier to sustainable development.* African Development Bank.

Africa Competitiveness Report (2017).*Addressing Africa's Demographic Dividend.* World Economic Forum, Geneva.

African Economic Outlook (2017). *Entrepreneurship and Industrialization.* African Development Bank/Organization for Economic Co-operation and Development/ United Nations Development Programme, Abidjan.

Amaeshi, K., Adi, B., Ogbechie, C., and Amao, O. (2006). Corporate social responsibility in Nigeria: Western mimicry or indigenous influences? *Journal of Corporate citizenship,* 24, 83-99.

Asongu, S.A., Uduji, J.I., and Okolo-Obasi, E.N. (2020). Fighting African capital flight: Trajectors, dynamics and tendencies. *Financial Innovation,* 6:14, https://doi:10.1186/s40854-020-00179-0

Asongu, S.A., Uduji, J.I. and Okolo-Obasi, E.N. (2019). Thresholds of external flows for inclusive human development in sub-Saharan Africa. *International Journal of Community Well-Being,* 2(2-4): 213-233, https://doi.org/10.1007/s42413-019-00037-7

Banthia, A., Johnson, S., McCord, M and Matthew, B. (2009). Micro-insurance that works for women: Making gender-sensitive micro-insurance programs. Micro-insurance paper no.3, micro-insurance innovation facility, International Labour Organization, Geneva.

Bayraktar, N. and Fofack, H. (2018). A model for gender analysis with informal productive and financial sectors. *Journal of African Development,* 20(2):1-20.

Beneria, L. (2016). *Gender, Development and Globalization: Economics as if all people mattered,* New York Routledge.

Breuer, J. and Elson, M. (2017). Frustration-aggression theory. In the *Wiley Handbook of Violence and Aggression,* edited by P. Sturmey, 1-12. Chichester: Wiley Blackwell.

Carroll, A.B. (1991). The pyramid of corporate social responsibility: Towards the moral management of organizational stakeholders. *Business Horizons* 34, 39-48.

Chevron**.** (2014). *Corporate responsibility report of Chevron in Nigeria.* Lagos: Policy, Government & Public Affairs (PGPA) Department of Chevron in Nigeria.

Cole, S., Sampson, T. and Zia, B. (2009). Financial literacy, financial decisions, and the demand for financial services: Evidence from India and Indonesia. Working paper 09-117. Harvard Business School, Cambridge, MA.

Diagne, A. and Zeller, M. (2001). Access to credit and its impact on welfare in Malawi. Research report 116. International Agricultural Research, Washington, DC.

Diagne, A., Zeller, M. and Sharma, M. (2000). Empirical measurements of household's access to credit and credit constraints in developing countries. Food consumption and nutrition division discussion paper 90. International Food Policy Research Institute, Washington, DC.

Ekhator, E.O. (2014). Corporate social responsibility and Chinese oil multinationals in the oil and gas industry of Nigeria: an appraisal. *Cadern De Esthudos Africanos,* 28, 119-140.

Ekhator, E.O. (2019). Protecting and promoting women's rights in Nigeria: Constraints and prospects. In Michael Addaney (ed) Women and Minority Rights Law: Approaches and perspectives to inclusive development, pp.17-35 Netherland: Eleven International Publishing

Eweje, G. (2006). Environmental costs and responsibilities resulting from oil exploration in developing countries: the case of the Niger Delta of Nigeria. *Journal of Business Ethics,* 69(1), 27-56.

FAO, (2011). *The State of Food and Agriculture: Women in Agriculture-closing the Gender Gap for Development.* Rome: Food and Agriculture Organization.

Fischer, E.M., Reuber, A.R. and Dyke, L.S. (1993). A theoretical overview and extension of research of sex, gender and entrepreneurship. *Journal of Business Venturing,* 8(2): 151-168.

Fletschner, D. (2008). Women's access to credit: Does it matter for household efficiency? *American Journal of Agricultural Economics,* 90(3): 669-683.

Fletschner, D. (2009). Rural women's access to credit: Market imperfections and intrahousehold dynamics. *World Development,* 37(3):618-631.

Francis, P., Lapin, D. and Rossiasco, P. (2011). *Securing Development and Peace in the Niger Delta: A Social and Conflict Analysis for Change,* Washington DC: Woodraw Wilson International Center for Scholars.

Frynas, J. (2009). *Beyond corporate social responsibility: Oil multinationals and challenges.* Cambridge: Cambridge University Press.

Idemudia, U. (2014). Corporate-community engagement strategies in the Niger Delta: Some Critical reflections. *The Extractive Industries and Society,* 1(2), 154-162.

Idemudia, U., and Osayande, N. (2016). Assessing the effect of corporate social responsibility on community development in the Niger Delta: A corporate perspective. Community Development Journal Advance Access. doi:10.1093/cdj/bsw019

IFAD (2009). *Gender and Livestock: Tools for Design.* Rome: International Fund for Agricultural Development

ILO (2010). *Women in Labour Markets: Measuring Progress and Identifying Challenges.* Geneva: International Labour Organization.

ILRI (2008). *A Global Challenge Dialogue on Women and Livestock.* Nairobi: International Livestock Research Institute.

Ite, U.E. **(**2007). Changing times and strategies: Shell's contribution to sustainable community development in the Niger Delta, Nigeria. *Sustainable Development,* 15(1), 1-14.

Ite, U., Osayande, N., and Onaolakpo, B. (2015). Paper Presented at the SPE Nigeria Annual International Conference and Exhibition, Lagos Nigeria, August 2015. https//doi.org/10.2118/178485-MS

Kalama, J. and Asanebi, D.H. (2019). United Nations Environment Programme (UNEP) assessment report and the question of environmental justice in Nigeria: The Ogoni community experience. *Education & Science Journal of Policy Review and Curriculum Development,* 9(2): 207-221.

Lompo, K. and Trani, J.F. (2013). Does corporate social responsibility contribute to human development in developing countries? Evidence from Nigeria. *Journal of Human Development and Capabilities,* 14(2), 241-265.

Mannah-Blankson, T. (2018). Gender inequality and access to microfinance: Evidence from Ghana. *Journal of African Development,* 20(2):21-33.

Marchant, M. (2014). *Corporate social responsibility and oil in the Niger Delta: Solution or part of the problem?* United Nations Research Institute for Social Development (UNRISED).

Matin, I., Hulme, D. and Rutherford, S. (2002). Finance for the poor: From microcredit to microfinancial services. *Journal of International Development,* 4(2):273-294.

Muthuri, J.N. (2012). *Corporate Social Responsibility in Africa: Definitions, Issues and Processes.* Royal Hallowing University of London, School of Management Research Seminar.

NDDC. (2001). *The Niger Delta: A brief history*. Port-Harcourt: Niger Delta Development Commission.

NDDC. (2004). *Niger Delta regional development master plan: Draft 3.* Port-Harcourt: Niger Delta Development Commission.

Okolo-Obasi, E.N., Uduji, J.I. and Asongu, S.A. (2021). Strengthening women's participation in the traditional enterprises of sub-Saharan Africa: the role of corporate social responsibility initiatives in Niger Delta, Nigeria. *African Development Review,* 32:S78-S90, https://doi.org/10.1111/1467-8268.12484

Okolo-Obasi, E.N. and Uduji, J.I. (2023). Government enterprise and empowerment programme (GEEP) and women's performance in entrepreneurship development in Nigeria. *Development in Practice,* https://doi.org/10.1080/09614524.2023.2178639

Palocios-Lopez, A., Christiaensen, L. and Killic, T. (2017). How much of the labour in African agriculture is provided by women? *Food Policy,* 67:52-63.

Quisumbing, A. P. (2009). Promising approaches to address the needs of poor female farmers: Resources, constraints and interventions. IFRI discussion paper no. 882. International Food Policy Research Institute, Washington, DC.

Ravallion, M. (2001). The Mystery of the Vanishing Benefits: An introduction to Impact Evaluation. *The World Bank Economic Review* 15(1), 115-140.

Renouard, C. and Lado, H. (2012). CSR and inequality in the Niger Delta (Nigeria). *Corporate Governance: The International Journal of Business in Society,* 12 (4), 472-484.

Rosenbaum, P.R. and Rubin, D.B. (1983). The Central Role of Propensity Score in Observational Studies for Causal Effects. *Biometrica* 7(1), 41-55.

Slack, K. (2012). Mission impossible? Adopting a CSR – based business model for extractive industries in developing countries. *Resource Policy,* 37, 179-184.

SPDC**.** (2013). *Shell in Nigeria: Global memorandum of understanding.* Port-Harcourt: Shell Petroleum Development Corporation in Nigeria.

Uduji, J.I. and Okolo-Obasi, E.N. (2022). Gender equity and land: The role of corporate social responsibility in Niger Delta, Nigeria. *Journal of International Development,* https://doi.org/10.1002/jid.3725

Uduji, J.I., Okolo-Obasi, E.N. and Asongu, S.A. (2023). Oil extraction and gender equality for social equity: the role of corporate social responsibility in Nigeria's coastal communities. *Resource Policy,* https://doi.org/10.1016/j.resourpol.2023.103346

UNDP. (2006). *Niger Delta human development report.* Abuja: United Nations Development Programme.

Unger, R. and Crowford, M. (1992). *Women and Gender: A Feminist Psychology*. New York: McGraw-Hill.

Visser, W. (2006). Revisiting Carroll's CSR Pyramid: An African Perspective. In Pederson, E.R., & Huniche, M.(eds), *Corporate Citizenship in Developing Countries,* Copenhagen: Copenhagen Business School Press, 29-56.

Walker, I. and Pettigrew, T.F. (1984). Relative deprivation theory: An overview and conceptual critique. *British Journal of Social Psychology,* 23(4): 301-310.

Walter, L. and Smith, J.S. (2001). *Relative deprivation.* Cambridge: Cambridge University Press.