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CAPACITY DEVELOPMENT FOR SMALL-SCALE WOMEN ENTREPRENEURS AND CORPORATE SOCIAL RESPONSIBILITY IN NIGERIA'S NIGER DELTA REGION

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Abstract

Purpose – The purpose of this paper is to critically examine the multinational oil companies' (MOCs) corporate social responsibility (CSR) initiatives in Nigeria. Its special focus is to investigate the impact of the global memorandum of understanding (GMoU) on capacity development for small-scale women entrepreneurs in the Niger Delta region of Nigeria.

Design/methodology/approach – This paper adopts a survey research technique, aimed at gathering information from a representative sample of the population, as it is essentially cross-sectional, describing and interpreting the current situation. A total of 768 women respondents were sampled across the rural areas of the Niger Delta region in Nigeria.

Findings – The results from the use of a combined propensity score matching and logit model indicate that though, a meagre part of the CSR intervention are targeted specifically for capacity empowerment of women, the CSR of the MOCs using the GMoU model has recorded little but significant success in building capacity of women in the areas of enhancing educational status, reduction in socio-economic barriers, access to credit, starting personal business enterprises, undertaking paid employment, and generally enhancing means of livelihoods.

Practical implications – This suggests that if CSR interventions are not tailored to enhanced opportunities for women, they may contribute towards reducing the participation of women in economic, political and social development and, by extension, damping efforts of reducing poverty and achieving the sustainable development goals (SDGs) in the Niger Delta.

Social implications – This implies that the private sector, generally, can play an important role in addressing some of the logistical and cultural challenges that face rural women, and promote gender diversity and more equal access to economic opportunity through the CSR programmes in host communities.

Originality/value – This research contributes to the inequality debate in small-scale entrepreneurship and inclusive growth literature from the CSR perspective. It concludes that business has an obligation to help in solving problems of public concern.

Keywords Gender equality, small-scale entrepreneurs, corporate social responsibility, multinational oil companies, sub-Saharan Africa

Paper type Research paper

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1. Introduction

At the beginning of the twenty-first century, some trend of widely discussed phenomena of corporate social responsibility (CSR) had already drifted across the gender issues, taking into account several facets of CSR (Vilke and Agota, 2014). Meanwhile, lots of women entrepreneurs in emerging countries face disproportionate hitches in gaining access and being able to compete in local markets, how much more international markets. As projected by Erika (2015), women are relatively deficient in flexibility in relation to men in addition to having lower levels of use of cum access to the technologies that could raise the value of their products. Ali (2018), took it further by stating that women are often get engaged in feminized businesses, such as basic processing of food and its sale or even handicrafts. In this sectors, markets are often highly populated resulting in low returns. Besides, women are more in the offing than men to operate in the backyard or microenterprise (Loza, 2011). In sub-Saharan Africa, women are into fruitful enterprises, yet gendered imbalances persist in creating major gaps in openings for starting and growing a business (Okolo-Obasi *et al,* 2021). In Nigeria, women engage in businesses that tend to be smaller than those operated by men, and are found more in sectors with limited aptitudes for value addition as well as being over represented in the informal economy (Uduji *et al,* 2020). These challenges are exacerbated by women's care duties, which add more to the pressure on women entrepreneurs' time, work load and general welfare. That is aside the harsh institutional environments that can result in unequal access to land and policy-making roles, as well as insufficient coverage of social security (Ajala, 2017). In line with Asongu et al (2020), work-related segregation by gender can force significant costs over the long time on regional economies. The costs in question are rigidities in labour markets, lowering the market's ability to react to change, the poor usage of women's labour, and lesser levels of yield and growth coming from putting in of funds for suboptimal early and lifelong education as well as building of capacity for girls and women (Okolo-Obasi and Uduji, 2023). According to Uduji et al (2022), suitable interventions for the development of capacity can be formulated if insight can be gained into the general openings and limitations that women producers and entrepreneurs typically encountered.

For the meantime, the economy of Nigeria relies heavily on the oil and gas sector, which accounts for 95% of export incomes, 80-85% of incomes of government, and about 32% of gross domestic products (FGN, 2017). No country in Africa produces more oil than Nigeria, and she is one of the top ten worldwide; its recoverable reserves were valued at 36.2 billion barrels in January, 2007 (Francis et al, 2011). With all the country's relative oil wealth, Gross Domestic Product (GDP) per capita is 2,400 United States Dollars (USD), and the level of impoverishment is so bad that it affects about half the entire populace who live on less than $1.25 per day (UNDP, 2022). Oil and gas reserves are located in the Southern part of the country (Niger Delta). The region is, however, an opposite of what it ought to be due to lack and underemployment.

The extraction of oil being a capital rather than labour-intensive industry, makes little opening for employment available (NDDC, 2004). To worsen the situation, the region has challenging geographical terrain which makes infrastructure more expensive. This is in addition to the issue of environmental degradation, caused to some extent by the consequences of oil extraction – flaring of gas, spillage of oil and such – on customary industries like fishing, and food production/rearing of animals (African Economic Outlook, 2023). However, the multinational oil companies (MOCs) put in funds in corporate social responsibility (CSR) in communities mainly in the Niger Delta. They initially invested in agricultural programmes, during the early sixties but have grown over the years to include improvement on entrepreneurship, acquisition of knowledge, small businesses, microfinance loan, culture, arts and crafts, as well as self-employment, which the host communities gain from (Chevron, 2014). As the years passed on, MOCs found how to better their engagement with local communities to deliver these projects. In 2006, they introduced a fresh method of working with communities called the global memorandum of understanding (GMoU). The GMoUs is obviously an important shift in tactic, stressing more transparent and liable processes, steady communication with the grassroots, sustainability and avoidance of conflict (SPDC, 2013). As made applicable by the terms of the GMoUs, the communities choose their projects and programme while MOCs make available secure funding for five years that will ascertain constant and reliable funding for effective execution of the community development plans. This system is a replacement for the previous method whereby MOCs conceded to hundreds of distinct social projects and programmes with specific communities which they execute directly and independently (Chevron, 2014; SPDC, 2013).

Yet, the development of the new CSR model – GMoU in the Niger Delta has mostly been seen as a stratagem engaged by MOCs to bring down public criticism of their performance, and a means for evading government code of practice (Asongu et al, 2019). As a concept, GMoU model has been seriously criticized, and there is now severe debate over its effectiveness and practical implications. While advocates view GMoU model as a means for the potential bolstering of an old dynamic in business - community relationships, detractors see it as a platform for new functions to be required of old institutions. This variance in views unvaryingly sets the contest for the CSR debate, placing those in support against those who hold that business – community relationships must adapt to shifting community values (Egbon et al, 2018; Renouard and Lado, 2012; Tamuno, 2020; Ekhator, 2019; Lompo and Trani, 2013, as well as Mamudu et al, 2021;). Resultant from the previous divergent points of view of the new CSR model – GMoU initiatives in the Niger Delta, this paper is a plus to discussion on gender in small-scale entrepreneurs and comprehensive growth literature from the perspective of CSR by observing empirical facts in four areas that have drawn attention in the literature. The paper intends to ascertain the level of CSR investment that the MOCs have put into the development

of capacity for small-scale entrepreneurs. It also seeks to confirm the level of gains from such undertaking that accrue to the rural women and how it affects their trade. The four areas of focus equally signify four main questions, which includes:

i. What is the strength of MOCs' CSR[1] interventions in improving on small-scale entrepreneurship in the region of host communities in Nigeria?
ii. What is the extent of gender involvement in the MOCs' GMoU interventions for small-scale entrepreneurs in the rural areas of Niger Delta of Nigeria?
iii. Do MOCs' GMoU undertakings prompt positive changes on the development of capacity for small-scale rural women entrepreneurs in the Niger Delta of Nigeria?
iv. Do MOCs' GMoU interventions positively influence capacity development and sustainability among rural women in Nigeria's Niger Delta expanse?

1.1 Study hypothesis

Due to cultural norms, gender difference remains a hitch to efforts put into bringing down impecuniousness in the Niger Delta, Nigeria. Consequently, growing and mature females in the region are far from profiting from the openings and benefits arising from programmes focusing on capacity development for small-scale entrepreneurs when matched with that of their male counterparts (PIND, 2011). In the region, although small-scale women entrepreneurs are exposed to local markets and customer preferences in them, they lack acumen into how to go about designing, producing, and marketing of products that could be eye-catching outside local markets (Uduji et al, 2021). Thus, we postulate as follows:

Null 1: Using GMoU by CSR of MOCs has not significantly influenced the capacity development of small-scale women entrepreneurs in host communities in Niger Delta of Nigeria.

Alternate 1: Using GMoU by CSR of MOCs has significantly influenced the capacity development of small-scale women entrepreneurs in host communities in Niger Delta of Nigeria.

Null 2: Using GMoU by CSR of MOCs has no substantial effect on capacity development among small-scale women entrepreneurs in the rural areas of Nigeria's Niger Delta.

Alternate 2: Using GMoU by CSR of MOCs has substantial effect on capacity development among small-scale women entrepreneurs in the rural areas of Nigeria's Niger Delta.

With the above in mind, the main aim of this research is to ascertain the level of CSR activities of MOCs in capacity development for small-scale women entrepreneurs, and how such impact on the living conditions of rural women in host communities. The paper is an addition

[1] CSR = Corporate Social Responsibility, GMoU = Global Memorandum of Understanding, MOC = Multinational Oil Companies, NDDC = Niger Delta Development Corporation, PIND = Partnership for International Development

to the inequality debate in small-scale entrepreneurship and inclusive growth literature from the CSR standpoint. The study puts into use a quantitative method as well as an applied survey research technique. The direction of the research set off from contemporary gender and entrepreneurship literature, which has focused on, *inter alia:* female entrepreneur's growth intension (Ali, 2018); strengthening women's participation in the traditional enterprises of sub-Saharan Africa (Okolo-Obasi et al, 2021); female entrepreneurship (Erika, 2015), and women performance in entrepreneurship development (Okolo-Obasi and Uduji, 2023).

The succeeding parts of the paper are arranged thus: a review of specific features of women entrepreneurs and their capacity development needs (2); the theoretical perception of the study (3); materials and methods (4); results and corresponding discussion (5), and lastly, a look at implications and future research directions (6).

2. Specific Features of Women Entrepreneurs and Their Capacity Development Needs

According to African Economic Outlook (2023), capacity development programmes ought to be suitable both regionally and locally. Assessment of local needs can be embarked on, and training programmes, tailor made. Women entrepreneurs face diverse openings and limitations according to the region they live in, although some openings and limitations are common across regions, such as those linked to the need to meet their reproductive duties (Uduji et al, 2021). Programmes designed for capacity development need to be specifically improved upon to address macro and local needs. According to Asongu et al (2020), areas in need of capacity development of women entrepreneurs include capacity to address financial and land constraints, basic literacy, technical capacity, risk management, awareness and self-confidence, market information, market management capacity, and bureaucracy management. In Middle East and North Africa, involvement in enterprise undertakings is very low. Most women entrepreneurs in the region are not only married but also have children. Besides, they identified their most difficult challenge to be realizing a suitable work – family balance. Other key problems include gaining skills in fiscal management, getting and keeping good employees, high cost of labour, having access to capital, and the expensive nature of public services (Ali, 2018). There is a lag in Latin America and the Caribbean's rate of economic activity by women when compared to that of other regions. Women who own business are younger than their male counterparts and relatively new to entrepreneurship; moreover, they are likely to be in wholesale or retail trade as they also tend to operate smaller businesses than men. The major problems they face as women entrepreneurs include inadequate access to information, insufficient training, lack of technical assistance, weakness in technology, lack of capital, limitations in markets, poor networks and problem of validation (Erika, 2015). For women entrepreneurs in Southeast Asia, weighty business procedures, uncertainty in the interpretation of legislation, government involvement in economic activities and lower levels of learning among them when compared to men limit their choice of enterprise as well as their attitude towards taking up vocational technical training. They feel held down by family demands and social expectations in addition to their lack of knowledge cum expertise to adapt to as well as master new technologies, or to be creative in bringing about new products and services (Loza, 2011).

In Africa's sub-Saharan expanse, women entrepreneurs identified their major hitches to growth as lack of access to credit, intense competition and the issue of dealing with corruption among regulatory officials (Ajala, 2017). They are mostly into labour intensive businesses and make marginal use of new technology – both information technology, and production cum process technology (Olusegun and Oyelade, 2021). These women's restricted prospect for networking bring down their ability to develop personal and business know-how as well as to access other physical cum monetary assets (Okongwu, 2020). Their enterprises lean towards operating from

unfitting facilities, if the women have a building detached from their home at all. This is principally the case for food preparation and food-processing businesses, undertakings predominated by women and requiring business accommodation to meet specific hygiene standards (Uduji et al, 2023). However, traditional practices in the communities of sub-Saharan African often inhibit or discourage women from possessing or leasing premises in their own right (Okolo-Obasi et al, 2021). Women mostly confide themselves to local markets where access, movement, and networks are easier for them to manage. This choice frequently creates room for excessive competition and cheapening of costs of goods (PIND, 2011). Women's inability to infiltrate markets outside their local area is affected by the types of businesses they practice. The local products they make available are increasingly in competition with a growing range of imported goods available in the market at all levels (African Economic Outlook, 2023). Challenges of worth and delivery are the same for all microenterprises; yet, women cannot travel due to their household and community roles which limit the time they have. In some of the communities in sub-Saharan Africa, the problem is even that women are not allowed to travel outside their towns and villages (UNDP, 2022). Mature and growing females in Nigeria's Niger Delta marginally contribute in helping the region to make progress due to their low number in the labour force. In addition, the selection prejudice towards boys means that relative to girls, boys with less inborn ability are better positioned to gain educated and be employed. This gives rise to sub optional resource circulation between sexes (Uduji et al, 2020). However, whether the women gain academic knowledge or not, or enjoy employment in the formal sector or not, they have played a major role in the welfare of children (Okolo-Obasi and Uduji, 2023). The paucity in resources which they experience, therefore, is a threat to the society as a whole and has negative consequences on the future generation of the region. Due to this, being knowledgeable as it concerns the link between capacity development for small-scale women entrepreneur and bringing down of impoverishment in the Niger Delta entails identification of major limitations to their contribution as well as widening the flow of economic wealth to them, particularly those who reside in the rural areas of the region.

3. Theoretical perspectives

3.1 Entrepreneurship and gender

The progress of enterprises is generally taken to be an important measure of success and a key driver to wealth creation, provision of jobs and improvement in the economy of every country (Asongu et al, 2019). Unger and Crawford (1992), averred that growth is closely linked to the creation of jobs and that when small enterprises grow rapidly, employment opportunities are created in the society, which success of the economy is dependent upon. Women entrepreneurs are useful in national economic growth by their involvement in entrepreneurship particularly in high growth business, which enhance the economic condition of most nations (Baden and Goetz, 1997). Due to the worth of female entrepreneurs and their endeavours, it is noteworthy to understand the features of female entrepreneur as well as what compels them to engage in entrepreneurial activity. For as much as it has been stressed, the feat of any enterprise is determined by the initiatives put into work to make it a valuable business (Ali, 2018). Okolo-Obasi and Uduji (2023) established that women-owned enterprises are more divergent than comparable to those owned by men. Asongu et al (2020) showed that in terms of personality and background, women entrepreneurs are similar to male entrepreneurs, except that most women who get involved in an entrepreneurial venture are usually not young.

In explaining the systematic dissimilarities behind female entrepreneurs' lesser growth intention and the reduced size of their businesses, we employed the liberal feminist theory (Fischer et al, 1993), which stressed that the liberal feminist is as old as the earliest days of feminism where social reform is argued for in order to give women the same status and openings as men. The liberal theory operates on the basis that men as well as women are equal and that rationality, not sex, is the ground for individual right. It stresses the existence of unfair barriers and systematic bias facing women. They include limited access to resources, poor exposure to enlightenment (education), weak business experience, and such which must be eradicated (Baden and Goetz, 1997). Liberal feminism is an extension of political views of parity, individual rights, and entitlement (Erika, 2015). The liberal feminist standpoint has been the door to many legal changes that have helped in bringing about a greater parity for women (Fischer et al, 1993). Supporters of liberal feminism in projecting this theory in the context of women's entrepreneurship opine that if women had equal access to the openings like education, work experience and such, available to men, they would respond in the same way (Unger and Crawford, 1992; Okongwu, 2020; Olusegun and Oyelade, 2021).

3.2 Gender in the facets of corporate social responsibility

Mapping gender in the facets of CSR with appropriate argumentation, based on theories, approaches and models of CSR, is quite challenging because of several reasons. First, there is still quite a few investigations with regard to gender and CSR in general (Uduji et al, 2023).

Second, those already implemented investigations do not address most of the models of CSR (Vilkie and Agota, 2014). Third, only approaches towards CSR presented in ongoing gender-CSR research and related debat might be addressed as a conditional conceptual basis for setting gender issues in appropriate facets of CSR (Uduji and Okolo-Obasi, 2019). Therefore, gender issues in the facets of CSR are further discussed in relation to those most relevant theoretical assumptions of CSR by considering further contributions and limitations with regard to research on gender issues in CSR.

Nevertheless, direct scientific debate on the issue of gender in relation to CSR seems to be initiated in literature by Grosser and Moon (2005a). They had investigated the potential and actual contribution of CSR to gender equality in the framework of gender mainstreaming. Grosser and Moon (2005a) introduced gender mainstreaming as combining technical systems (monitoring, reporting, evaluating) with political processes (women's participation in decision-making) and considers the ways in which this is compatible with CSR agendas. They had examined the inclusion of gender equality criteria within three related CSR tools: human capital management reporting, CSR reporting guidelines, and socially responsible investment criteria on employee and diversity issues. Although additional evidence found by Grosser and Moon (2005b) suggests gender equality information being requested within several CSR related reporting framework, these requirements are mostly limited in scope, or remain optional elements. At the same time they addressed the nature and extent of relevant stakeholder opportunities to explain this unfulfilled potential.

However, gender as it concerns CSR in developing countries with suitable argumentation, centered on theories, methods and models of CSR, is found rather demanding. According to Uduji et al (2023), there are still quite a few investigations in connection with gender and CSR as a matter of sustainability in an African context. Yet, Carroll's (1991) CSR pyramid is likely the most popular model of CSR. Its four levels show the relative significance of economic, legal, ethical and philanthropic duties, respectively. However, how CSR operates in Africa (Visser, 2006) challenges the precision and pertinence of Carroll's pyramid in an African context. To Visser (2006) if Carroll's (1991) basic four-part model is accepted, it suggests that the relative primacies of CSR in Africa are likely to vary from the classic, American ordering. Uduji et al (2021) puts forward that philanthropic initiatives as CSR by companies are rampant in Nigeria because of the inability of government to provide facilities for its citizen. Amaeshi et al (2006) have reasoned that the Nigerian notion of CSR is remarkably dissimilar to the Western version. Hence, this study embraces quantitative methodology but views the findings from a combined perspective of gender-sensitive reactions to female entrepreneur's capacity development and the idea of CSR in Africa.

3. Materials and methods

No real serious research on CSR in Nigeria's Niger Delta has been done (Uduji and Okolo-Obasi, 2019); hence, the urgent need for thorough research on CSR in Niger Delta region at both the sectorial and theoretical levels. This study, therefore, makes it clear that CSR in Nigeria's oil producing communities is a rich as well as intriguing area of examination, gaining relevance in CSR theory and practice. And since it is intensely under-researched, it also represents a huge opening for bettering our knowledge and grasp of CSR. In this study, we embraced a survey research technique, with a view to gathering information from a representative sample of the population, as it is basically cross-sectional, looking at and construing the meaning of current situation. Figure 1 is a display of administrative States of Nigeria's Niger Delta region.

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

3.1 Sample size

Putting to use the Cochran (1977) formula, the sample size for this work was calculated in line with the equation 1 stated mathematically below.

$$n = \frac{z^2 p(1-p)}{e^2} \qquad (1)$$

Where n represents the sample size;

z stands for the standard normal deviation for level of confidence (95% confidence =1.96 for this study);

e represents the margin of error which here is 0.05 for confidence level at 95%;

p stands for proportion to be assessed.

We, as a result, computed the sample size as:

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

Because our major group of respondents are two (the treatment and control), we simply multiplied the sample size by two to reduce sample selection possible errors. Thus, in a cross sectional data collection, the total number sampled was 768 respondents.

3.2 Sampling procedure

We made use of a multi-stage sampling (including purposeful, simple random and quota) sampling techniques in picking the respondents surveyed in this study. The first stage concerns the selection of two local government areas (LGAs) each from all the Niger Delta region states. They include: Delta, Abia, Bayelsa, Akwaibom, Imo, Cross river, Edo, Rivers, and Ondo States. This assortment was deliberately in line with hosting MOC's facility or proximity to a hosting LGA in the region. At the second stage, we intentionally chose two communities each on the same basis of being a host community. Likewise, in this stage, quota consideration was made to make sure that these communities picked reflect an order: one belonging to a cluster development board (CDB) and the other not belonging. The communities that are members of a CBD were marked as "CDB" communities, while the other ones were marked "non-CDB" communities. In the last stage, the team of assistants we worked with helped us in randomly picking 384 respondents from the CDB communities and yet another 384 respondents from the non-CDB communities. All women. With this, we had our target number: 768 respondents worked out in line with the population of each of the states of the region (Table 1).

Table 1: Sample size determination table.

States	Total Population	% of total population	State Sample	CDB[2] Community	Non-CDB Community
Bayelsa	2,277,961	5.3	41	20	21

[2] CDB = Cluster Development Boards, NPC = National Population Commission, LGA = Local Government Areas, MOC = Multinational Oil Companies, CSR = Corporate Social Responsibility, SQ = Structured Questionnaires

Abia	3,727,347	8.7	67	34	33
Cross River	3,866,269	9.1	70	35	35
Edo	4,235,595	9.9	76	38	38
Ondo	4,671,695	11.0	84	42	42
Imo	5,408,756	12.7	97	48	49
Akwaibom	5,482,177	12.9	99	50	49
Delta	5,663,362	13.3	102	51	51
Rivers	7,303,924	17.1	132	66	66
	42,637,086	**100.0**	**768**	**384**	**384**

Source: NPC, 2006/Authors' computation

3.3 Data collection

We put together working data with participatory appraisal technique. A written structured questionnaire (SQ) was made use of to elicit the view of the people under study which is essential in actualizing the intents of the study. We made use of the SQ as a major tool for garnering data from the 768 respondents. This was administered straight to the respondents and concluded by the researchers with the assistance of local research aides hired due to expected challenges. These challenges include understanding of the instrument by the respondents without guides; the problem of communication (the researchers were unable to speak the varied local languages and dialects of the many ethnic groups in the sampled rural communities), as well as the difficulty in traversing the rough and uncertain territory of the expanse by the researcher. This method of administration helps in making sure that the instrument was administered to the respondent in the best language such can grasp and that one hundred percent of the instrument was duly executed and collated.

3.4 Validation and reliability test of the instrument

The validity of an instrument is obviously dependent on its ability to capture in right qualification that which it is set out to measure; however, the reliability of such instrument is dependent on the level of consistency of result acquired in repeated utilization of the instrument (Uduji and Okolo-obasi, 2020). Thus, to find out the validity of the content of the survey instrument used for primary data collection in this study, we went for the services of experts both in the academia and outside to bring in useful input both before and after pilot testing of the instrument. Also, to confirm reliability of the instrument, we conducted a pretest with randomly picked respondents (40) from two local government areas in Niger Delta states of Delta, Imo and Akwaibom. The responses were evaluated using Cronbach's alpha index of reliability with a result showing 87%.

3.5 Ethics Observation

In this study, we recognized that the footing of ethical research is 'informed consent'. By implication, we incorporated the ethics of informed consent. All the participants in the survey were brought to the point of understanding a clear knowledge of the questions and how the data were projected to be utilized. They were also assured that there are no implications thereafter. In executing this task, we entered into a consent agreement with leaders of each community. Here, we made it clear who the researchers and their assistants are, the intent of the study, what data to be gathered from participants, and how the data will be put to use/reported, as well as the possible dangers (if any) of partaking in the study. We had to do this because we were duly informed that participation as desired is only possible with the consent of community gate keepers (i.e. community leaders) who, in turn, helped us in picking final respondents. In no way was force, pressure or coaxing applied on any respondent or participant into participating in the study. We were careful with privacy and discretion of information as guaranteed the volunteer participants (respondents).

3.6 Analytical framework

The study put to use propensity score matching (PSM) and logit regression model in evaluating the effect of corporate social responsibility of the multinational oil companies on the development of capacity for small-scale women entrepreneurs operating in Nigeria's oil rich Niger Delta region. With modification to Lompo and Trani (2013), Okolo-obasi and Uduji (2023) we adjusted the combination of PSM[3] and logit regression model in order to overwhelm the problems of selectivity and endogeneity. PSM is a quasi-experimental design that pairs units with similar values of a propensity score, that is, the probability of being allotted to the treatment group as a result of a set of observed covariates. It is a mimic of randomized control trial and entails the use of logistic regression in computing the propensity score and afterwards match the treatment and control units on the basis of these scores. On the other hand, logit model as a tool of statistics models the odds of log of occurrence of event in line with linear combination at least one independent variable.

In using the PMS, respondents from the CDB communities were seen as "treatment" while an ideal group of comparison (seen as "control") was selected from a larger survey and placed side by side with the treatment based on set of perceived features. Both enabled our evaluating an average treatment outcome of CSR of MOC making use of GMoUs. In line with the ideas of Renouard and Lado, (2012), the propensity score matching needs predicting the result of an activity on treatment based on perceived covariates for both groups -- control and

[3] PSM = Propensity Score Matching, CSR = Corporate Social Responsibility, GMoU = Global Memorandum of Understanding, MOC = Multinational Oil Companies, CDB = Cluster Development Boards, NDDC = Niger Delta Development Corporation

the treatment. Based on this, the resolution to be treated (CSR intervention) in this study, although not random, depends on the variables examined. This basically connotes that, in finding out the effect of the CSR of the MOCs using the global memorandum of understanding on capacity building of women entrepreneurs, the study made R_i=1 (for respondent 1) to stand for the treatment group, and represented the control group with R_i = 0. Afterwards, we completed a matching of the treatment and the control group based on the propensity scores: (probability of receiving CSR of MOCs using GMoU, given observed features).
Hence:

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

Worth noting here is that the pre CSR control variables vector is denoted by X_1 when all the R1s are independent over all 1 and the outcomes are independent of CSR given X_1. Then, the results are also independent of CSR given $P(X_1)$ as they would probably do if CSR comes haphazardly. To ascertain that the study is near exact assumptions on the effect of CSR activities using GMoUs on capacity building of women, the study dropped the bias of picking of observables by matching on the likelihood of the treatment (covariates *X)*. Thus, we reached a definition of the PS of Vector X as:

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

With Z showing the treatment indicator equating to 1 as long as the picked individual has assessed direct enablement targeted at ending header-farmer crisis, and zero if not the case. As a result of propensity score being a balancing score, the observables *X* will be dispersed similarly for both treatment and control with the discrepancies considered to be trait of treatment.
In the study, four steps in agreement with Lompo and Trani (2013) were adjusted from the literature to make sure that there is an unbiased impact evaluation. To begin with, having it in mind that the possibility of getting CSR of the MOCs utilizing GMoUs is projected by a binary response with applicable observable features, we pooled together two individual group, (one Treatment, one Control). After this, we examined the logit model of receiving CSR of MOCs using GMoUs as a role of some socio- economic quality variables as thus:

$$P(x) = Pr(Z=1/X)=F(a_1x_1\ldots\ldots\ldots+\ldots a_nx_n)=F(xa)=e^{xa} \qquad (4)$$

The above made it possible for us to generate value of the likelihood of getting CSR from the logit regression assigning each respondent a propensity score. The respondent in the control

group with very low PS[4] -- short of the array found for treatment -- were dropped at this point. For each respondent receiving CSR, a non-receiving respondent that has the nearest propensity score as assessed by absolute variance in score seen as nearest neighbour was obtained. That reveals why the study used the nearest five neigbours for more arduous valuation. The discrepancy between the mean values of the result (treatment and control groups) of indicators for the nearest five neigbours is estimated as the average treatment effect on the treated (ATT). The accurate ATT, based on PSM is written thus:

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

EP(X) stands in place for the anticipation with respect to the spread of PS in the population. In this, we realized a satisfactory match of participants with their counterfactuals in as long as their observable features are identical. We used three varied matching methods (radius, nearest neighbour, and kernel-based) matchings in achieving this matched pair.

In the third place, the matching appraisers' quality was tested by standardized discrepancies in observables' means between treatment and control. Standing for variance in percent after matching with X for the covariate X, the contrasts in sample means for treatment is taken to be ($\acute{X}_1$), while that of matched for control is taken to be ($\acute{X}_0$). In line with Renouard and Lado, (2012), the sub-samples as a percentage of the square root of the average sample variances is offered as: $(\int_1^2 and \int_0^2.)$.
Thus:

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

We expected that the balance among the varied observable features between the matched groups is suitable after accepting a left over bias below 5% after the matching.

By and large, while considering the quasi-experimental design of the GMoU, there is the likelihood that unobservable factors like respondents' inherent motivation and specific abilities or preferences, had influenced the choice to be in treatment or control. We, thus, avoided the problem of hidden bias by bringing in bounding approach. With that, we made up for the above equation 3 of the logit model to evaluate the propensity score by a vector *U* made up of all unobservable variables and their effects on the prospect of receiving CSR and captured by γ:

[4] PS = Propensity Scores, ATT = Average Treatment effect on the treated, CSR = Corporate Social Responsibility, GMoU = Global Memorandum of Understanding, MOC = Multinational Oil Companies

We worked out the equation thus:

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

After testing the strength of the effect on treatment with sensitivity examination, we could ease the effect of γ on receiving CSR on potential results. In line with that, the treatment probability of both respondent is put to work in line with the bounds on the odds ratio as shown thus:

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

Scholars like Lompo and Trani (2013) and Renouard and Lado (2012), have held unto their view that both individual respondent have the same prospect of treatment, if they are alike in X, only if *e* 1

3.7 SCOTDI[5]

SCOTDI (Shell Community Transformation and Development Index) is an intricate index for assessing, scoring and ranking how the GMoU cluster performed based on five-key criteria (limpidity and accountability, inclusiveness and participation, control (governance) and democracy, business climate and progress towards sustainability), which are stanch with international best practice in development discourse (SPDC, 2013). It is an initiative of Shell Petroleum Development Company (SPDC) which represents an innovative structure (framework) that incorporates and implements these international principles into a compound index in a way that is handy to local context (SPDC, 2013). For comprehensive knowledge concerning the perceptions of the respondents about their involvement in GMoUs activities, we sought the opinions of the respondents using the six essential criteria as developed by Shell (the SCOTDI). We considered the respondents' outlook on issues of inclusiveness, limpidity, governance, participation, continuity, and results of the CSR of MOCs making use of GMoUs in the expanse of Niger Delta.

[5] SCOTDI = Shell Community Transformation and Development Index, SPDC = Shell Petroleum Development Company, CSR = Corporate Social Responsibility, GMoU = Global Memorandum of Understanding, MOC = Multinational Oil Companies,

4. Results and Discussion

4.1 Descriptive analysis

Analysis (Table 2) makes clear the description of some of the respondents' social (academicals), economic (occupation, earnings) and demographic (age, marital status, size of household/family) characteristics.

Table 2. Socio-economic characteristics of the respondents

	Treatment Group			Control Group		
Variables	**Freq**	**%**	**Cum**	**Freq**	**%**	**Cum[6]**
Age of Respondents						
Less than 20 years	14	4	4	22	6	6
21-25 years	41	11	15	64	17	23
26-30 years	85	22	37	61	16	38
31 - 35 years	73	19	55	59	15	54
35 - 40 years	60	16	71	60	16	69
41 - 45 years	50	13	84	39	10	79
45 - 50 years	42	11	95	49	13	92
Above 50 years	19	5	100	30	8	100
	384	**100**		**384**	**100**	
Level of Education						
None	23	7	7	73	19	19
FSLC	169	43	50	188	48	67
WAEC/WASSCE	118	31	81	79	21	88
Degree and above	74	20	100	44	12	100
	384	**100**		**384**	**100**	
Marital Status						
Single	52	14	14	63	17	17
Married	221	56	70	174	45	61
Widow	59	16	86	82	22	83
Divorced/Separated	52	14	100	65	17	100
	384	**100**		**384**	**100**	
Household Size						
1-4 Person	241	61	61	198	51	51
5-9 Person	104	27	88	110	29	79
10-14 Person	31	9	97	62	17	96
15 Person and above	8	3	100	14	5	100
	384	**100**		**384**	**100**	
Primary Occupation						
Fishing	87	23	23	76	20	20

[6] Cum = Cumulative of percentage, Freq = Frequency, USD = United States Dollar, NGN = Nigeria Naira, FSLC = First School Leaving Certificate (Elementary education), WAEC = West African Examination School Certificate (Secondary Education)

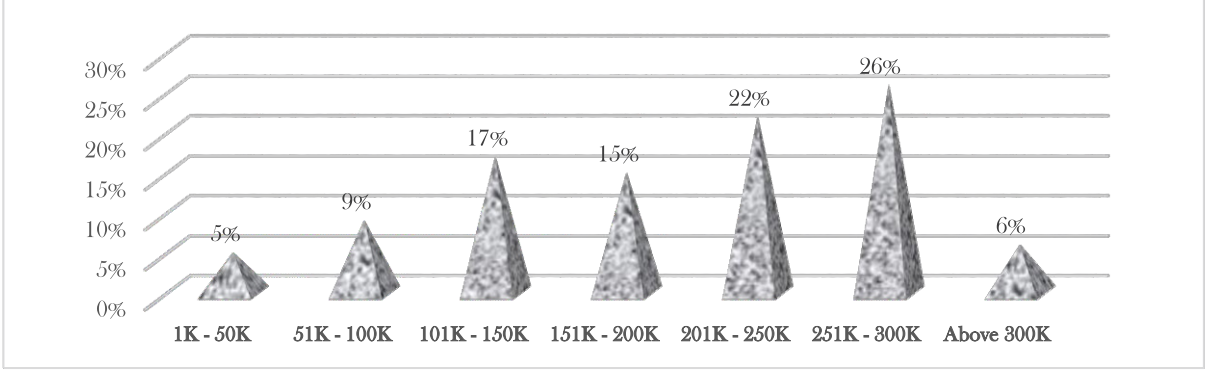
Trading	52	14	36	44	11	31
Farming	158	41	77	178	46	78
Paid Employment	35	9	86	36	9	87
Handicraft	40	10	97	20	5	92
Others	12	3	100	30	8	100
	384	**100**		**384**	**100**	
Annual Income						
1000 - 100,000	9	2	2	30	8	8
101,000 - 200,000	52	14	16	86	22	30
201,000 - 300,000	121	32	47	152	40	70
301,000 - 400,000	96	25	72	24	6	76
401,000 - 500,000	51	13	86	10	3	79
501,000 - 600,000	39	10	96	52	14	92
Above 600,000	16	4	100	30	8	100
	384	**100**		**384**	**100**	

Source: Authors' compilation based on field survey.

Analyzing these features is very crucial as it will assist in understanding the socio-economic variances in status of the both the treatment (those who get direct CSR via the GMoUs) and the control (those who do not). For respondents in the treatment group. The average age is roughly 31 years, while for the control it is 36 years. In the treatment group, while as much as 37% are about or less than 30 years of age, for the control it is about 38%. Likewise, in terms of farming, about 40% of respondents from the treatment thrive in it, just about 4% are others. Looking at the control group, the flow is similar: about 9% are others, while roughly 45% are farmers. This clearly points out that farming got more of the numbers for both the treatment and control groups.

In intellectual emancipation (education), only about 7% of the respondent from the treatment are not educated at all. For the control group, approximately 19% of their respondents are not learned. This shows that the propensity to obtain a non-traditional skill is lower with the control group compared to the treatment. As scholars like Asongu et al (2019) have put forward, being educated in a formal way has a high tendency of enhancing resourcefulness in one's life and ventures. In reverse order, regardless of being in treatment or control, the average yearly incomes of both groups is still very poor. While in the treatment, the average earning is NGN280, 000 (about 186.6 USD) annually, that of the control is NGN260, 000 (roughly 173.3 USD) annually. All in all, there is this idea that the rate of destitution in the study area is still very much in the high.

4.2 CSR Receipt of Respondents in the Treatment Group



K stands for '000

Figure 2. Average value of CSR receipts from the GMoUs by respondents

Source: Authors' computation based on field survey.

Examination of (Figure 2) indicates the level of empowerment that the women have gained among the treatment group. Here we noted that about 5% have witnessed CSR worth between NGN 1000 to NGN50,000 (USD 0.6 to 33), while 9% have got between NGN 51,000 to NGN 100,000 (USD 34 to 66.6) in the expanse. Also while as much as 17% have received between NGN 101,000 to NGN 150,000 (USD 67 to 100), about 15% have been given between NGN 151,000 to NGN 200,000 (USD 100.6 to 133.3). In addition, a good number (22%) have received between NGN 251,000 to NGN 300,00 (USD 167.3 to 200). Just about 6% have received more than NGN 300,000 (USD 200). This is a pointer that CSR activities of the MOCs using the global memorandum of understanding may be having noteworthy but insufficient effect on capacity development of women in the region.

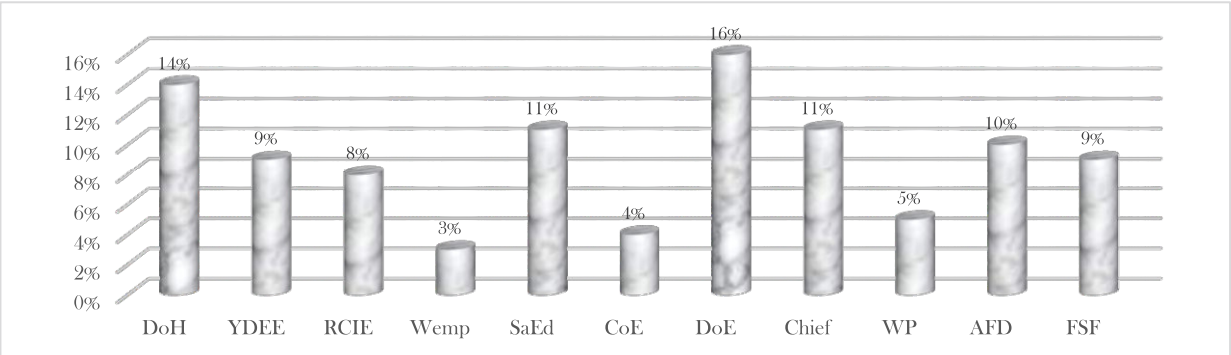


Figure 3. Percentage distribution of CSR intervention of MOCs by sectors in the coastal communities[7].

Source: Author's compilation based on household survey

[7] YDEE = Youth Development and Employment, RCIE = Roads and civil infrastructure and electrification; Wemp = Women Empowerment; SaEd = Skill acquisition and Enterprise Development; CoE = Environmental cleaning; DoE = Educational development; Chief = Chieftaincy matters, WP = Water projects; AFD = Agricultural forestry development; FSF= Fishery and sea foods; DoH = Health Development. Also 1K – 100K = NGN 1,000 – NGN100,000.

From examination of (Figure 3), we noted that in the CSR undertakings of the MOCs using the GMoU in the region of the Niger Delta, improvement of education in the areas of bursaries, exposing teachers to training, and provision of teaching/instructional materials took about 16% of the total interventions while healthcare services took about 14%. Others are: advancement in agricultural and forestry (10%), skill procurement and enterprise development (11%), fishing and sea food (9%), employment of youths (9%), cleaning of environmental (4%), and road/civil infrastructural development (8%). Interestingly, chieftaincy matters got as much as 11%, while women empowerment got a low 3%. This shows that serious efforts have been put into enhancing the capacity of both men and women in the region by the MOCs through their CSR.

4.3 Level of Gender Participation in the CSR Intervention of the MOCS

Responding to the second research question of this study, we looked into the views of the women to establish the gender discrepancy in the CSR interventions of the MOCs using the GMoUs in the region of Niger Delta. Using SCOTDI explained in section 5.7 as a framework of innovation made up of a number of international principles built into a compound index in a way that is accessible to local context, we drew the view of the respondent on such issues as governance of the cluster development boards, female involvement in the CDBs, their inclusiveness in the decision making, the limpidity in the management of CDBs as well as the GMoUs, continuity of the CDBs after MOCs' CSR activity, and result of the GMoUs in the Niger Delta region. The women's views were necessary as the views of others are not the best in analyzing programmes that directly affect the women's means of support and existence.

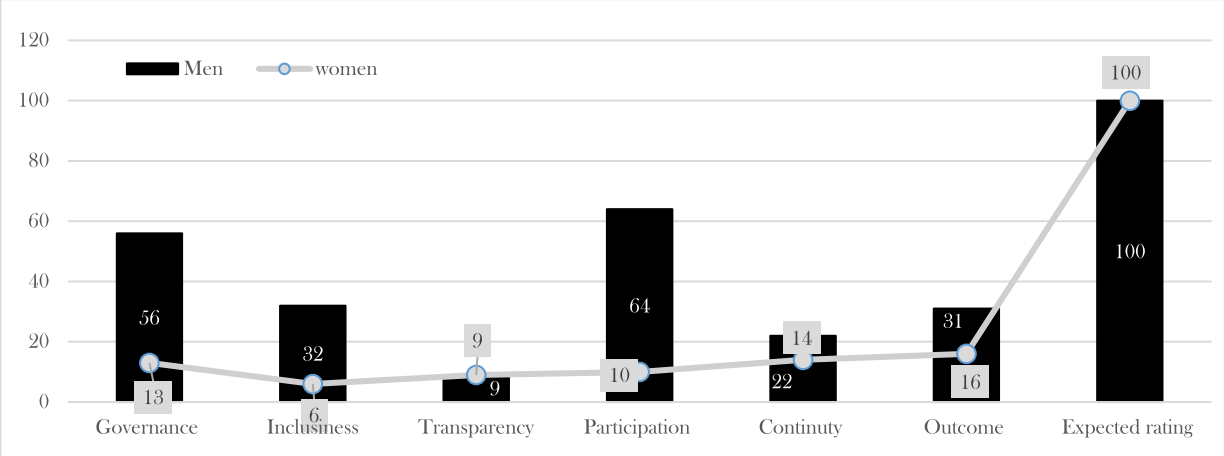


Figure 4 Gender involvement in CSR interventions in the Niger Delta Region

Source: Authors' compilation based on Field Survey.

Analysis (Figure 4) reveals that by using the SCOTDI framework in rating the six criteria, the women in Niger Delta rated women's participation in the undertakings of the GMoUs in capacity building really low while rating men high. The figure makes it obvious that in

governance, the women rated their contribution 13% while rating men 56%. In transparency of the CDBs in their accomplishments, the women agreed that, generally, limpidity is low for both men and women. In inclusiveness, the women believe that their male counterpart have an edge over them. The figure shows that while men were rated 32%, the women rated just 6%. On the other hand, while participation of men in the CSR and the CDBs undertakings is rated as high as 64%, that o0f women is rated as low as 10%. This shows that the men hardly carry the women along in the GMoU programmes. According to these women, men are highly rated to have gained more from the MOCs via the use of GMoU which is, as it were, also managed by male dominated cluster development boards. Yet, a look further shows that these women are willing to partake in any CSR undertakings that will better their prospects of getting access to credit, being engaged in paid employment, and getting their own businesses started.

Table 3. Percentage rating of MOCs' CSR in building the capacity of women in the Niger Delta.

CSR Activities of MOCs	Agip	Chevron	Total E&P	Shell	Exxon Mobil	Others	Average
Start Up grant and Loan for Women	20	18	15	17	18	16	17
Inclusive business dealing with women	7	8	9	9	6	11	8
Skill training on efficient use of available lands and water resources by women	17	19	20	18	21	19	19
Advocacy for changes in anti-women laws and practices	7	8	11	10	9	9	9
Provision of high yielding varieties of animals and crops for women farmers	16	11	14	15	9	8	12
Employment of young rural women	6	8	7	9	8	10	8
Land cleaning and reclamation targeting women	15	14	14	13	18	19	16
Scholarship and Education bursary for women	12	14	10	9	11	8	11
	100	**100**	**100**	**100**	**100**	**100**	**100**

Source: Author's computation based on household survey

Analysis (Table 3) shows that, in all the CSR accomplishments that will build the capacity of women, particularly women from the rural communities, about 17% went into Start Up grant and loans aimed at women who are desirous of venturing into enterprises including traditional ones (Agriculture and Fishing value chain). About 8% went into encouraging inclusive business dealing with women so as to see to their getting befitting market for their product and services. Others are 19% put into skill training on efficient use of existing lands and water resources for women involved in traditional industries to have sufficient resources as well as space. The MOCs' CSR was also focused on promoting changes in anti-women laws and practices. It

accounted for about 9%. Provision of high producing varieties of animals and crops for women farmers accounted for an average of 12%. Direct employment of young women particularly from the rural communities accounted for 8%. Other areas reached by CSR to build the capacity of women were: cleaning and reclamation of lands to be handed over to women (16%) and seeing to education bursary and scholarship getting to women (11%). These show that reasonable attempts have been made via the CSR released to the CDBs to empower women in the region.

4.4 Willingness to Participate in Capacity Building Programmes Under GMoUs.

Among both the treatment and control group, we established the readiness of the respondent to shift out of their traditional farming and fishing to partake in the capacity building of the MOCs. The result is presented in Figure 5 below.

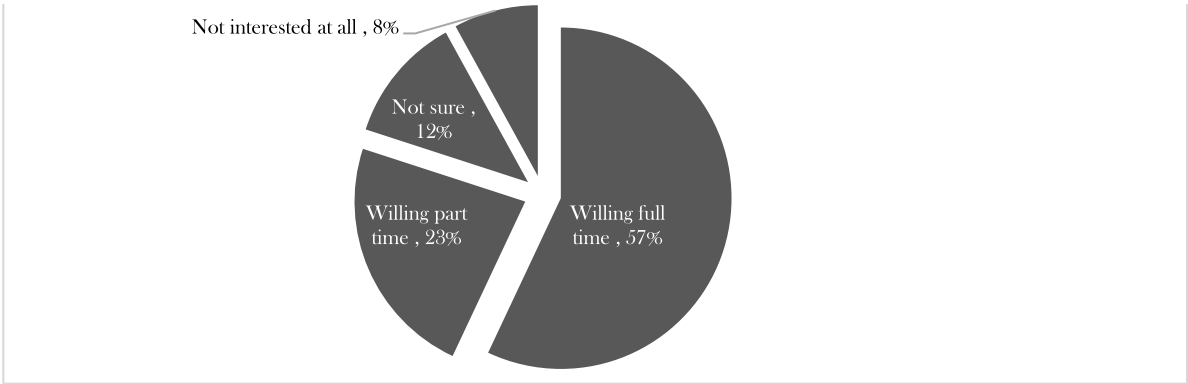


Figure 5. Distribution of women's willingness to participate in Capacity Building Programmes Under GMoUs

Authors' compilation based on Field Survey.

Analysis (Figure 5) reveals that almost all the women are weary of the core traditional industries of farming and fishing. They desire capacity building that will enable them thrive in others areas. The examination shows that about 48% of the women in the control group desire to try their hands in some other areas on full time basis while about 33% will love to do the same on part time. In all, about 81% of the women in the control group will positively go for any capacity building programme that will empower them. On the other hand, the figure is about 80% women. This indicates that, on average, over 80% of the women will welcome a more inclusive CSR intervention aiming at their capacity building in the region.

4.5 Econometric analysis

Table 4. Comparison of mean score and observable characteristics across Treatment and control groups (N = 768)

Score in Percentage of maximum score	Treat[8].	Cont.	Diff.
Score on enhanced livelihoods means	41.34	23.67	14.67**
Score on undertaking paid employment	38.09	26.28	11.81**
Score on access to credit	40.87	21.56	19.31**
Score on reduction in socio-economic barriers	30.44	20.56	9.88**
Score on starting personal business enterprises	41.34	25.43	15.91**
Score on enhanced educational status	21.16	16.43	4.73**
Socio-Economic Characteristics			
Primary Occupation	21.32	17.35	3.97
Age	31.45	30.24	1.21
Household Size	18.76	21.21	-2.45
Education	32.24	25.43	6.81**
Marital Status	47.21	39.89	7.32
Annual Income	26.56	18.43	8.13**
Income of other household members	46.54	31.32	15.22
Household Characteristics			
Access to land	26.43	21.15	5.28**
Access to road and other civic infrastructure	25.18	22.13	3.05**
Access to Shelter	21.86	18.20	3.66**
Access to portable water	20.54	15.85	4.69*
Access to medical care	21.15	17.54	3.61**
Observation	**384**	**384**	

Source: Authors' compilation based on household survey

Analysis (Table 4) indicates the average variances in the basic scores and independent observable features between treatment group and the control group. In all, the means variance shows that the score on enhanced means of support, taking up paid employment, being able to access credit, reducing socio-economic barriers, starting personal business enterprises and improving on educational status are to a sensible extent high for the treatment group (the CDB Communities), but relatively low for the control (non-CDB communities). The differences are, 14.67%, 11.81%, 19.31%, 9.88%, 15.91%, and 4.73% respectively. All these are significant at five percent significant level. When we observed the chosen observable features, the study took note of differences in Education (6.81), Marital Status (7.32), Primary Occupation (3.97), Age (1.21), Household Size (-2.45), Annual Income (8.13), and Income of other household members (15.22). This result paints a better picture of the CSR of MOCs using the

[8] Treat. = Treatment group Cont. = Control group, Diff = Difference in Scores

GMOUs as making substantial impact on the capacity building of women in the Niger Delta region.

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

Variables[9]	Coefficient	Odd Ratio	Marginal Effect	Std. Error
Constant	7.142	2.482	.00321	.526
Pri_Occ	.521	.532	.0210*	.214
Age	.-013	.133	.0011	.031
Edu	.178	.432	.051**	.019
M_Sta	.043	1.231	.0103	.213
Anu_Inc	.-014	.721	.018	.012
Inc_OHhM	-.234	.412	.022	.042
CDB_Mgt	.002	.238	.101	.028
GMoU Perception	1.213	7.318	.112*	.021
Part_Ben	.819	1.541	.0112**	.021
Observation	800			
Likelihood Ratio - LR test (ρ=0)		2 (1) =1573.321*		
Pseudo R^2	0.34			

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

Source: Authors' compilation based on household survey.

To forecast the likelihood of getting CSR via the GMoU by the Niger Delta women, we applied the model in equation 3 using the features that capture pertinent observable variances of both the treatment and control groups. Analysis (Table 5) displays the marginal effect and standard error as well as the estimated coefficients and the odd ratio conveyed in terms of odds of Z=1. In the single observation, we observed that primary occupation, highest academic level, GMoU view, CDBs management system, and involvements benefits are factors that positively impact on a coastal woman interested in getting a direct CSR in the GMoU programmes. Also, age of the respondent, yearly revenue of the respondent and earnings of other member of the respondent's household/family has a negative influence on seeking CSR.

[9] 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

Table 6. Estimated impacts of CSR activities using the MOCs' GMoU on capacity building of women via different matching algorithms

	Access and Knowledge Score in Percentage of Maximum Score		Average Treatment effect on the treated
	Receivers	Non- Receivers	
Nearest neighbour matching	Using single nearest or closest neighbour		
Score on enhanced livelihoods means	41.34	23.67	14.67**
Score on undertaking paid employment	38.09	26.28	11.81**
Score on access to credit	40.87	21.56	19.31**
Score on reduction in socio-economic barriers	30.44	20.56	9.88**
Score on starting personal business enterprises	41.34	25.43	15.91**
Score on enhanced educational status	21.16	16.43	4.73**
Observations	**384**	**384**	
Radius matching	Using all neighbours within a caliper of 0.01		
Score on enhanced livelihoods means	32.24	21.84	10.4**
Score on undertaking paid employment	31.21	22.25	8.96**
Score on access to credit	33.41	24.72	8.69**
Score on reduction in socio-economic barriers	14.51	11.82	2.69**
Score on starting personal business enterprises	38.24	32.46	5.78**
Score on enhanced educational status	21.32	14.52	6.80**
Observations	**345**	**372**	
Kernel-based matching	Using a bi-weight kernel function and a smoothing parameter of 0.06		
Score on enhanced livelihoods means	35.62	28.26	7.36**
Score on undertaking paid employment	32.22	26.56	5.66**
Score on access to credit	26.52	19.43	7.09**
Score on reduction in Socio-economic barriers	20.32	14.52	5.80**
Score on starting personal business enterprises	29.26	21.82	7.44**
Score on enhanced educational status	19.26	16.82	2.44**
	356	352	

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

Source: Authors' compilation based on household survey.

In line with the likelihood of getting CSR predicted in the model, the impact of CSR of the MOCs using the GMoU on capacity building of Niger Delta women was assessed by the average treatment test (ATT). After cautiously confirming the observations as ordered randomly, there was no large discrepancies in the distribution of propensity scores. The nearest neighbour matching (NNM) was the matching method that produced the highest and most substantial treatment effect. These effects were evaluated in line with the following outcome categories: Ability to access to credit, taking up paid employment, starting personal business enterprises, bringing down socio-economic barriers, bettering means of livelihoods and enhanced

academic status. Table 6 shows the NNM[10] estimate of improved means of livelihoods of Niger Delta women recording about 15%. With this, we moved to other techniques, Radius Matching (RM) and Kernel-based Matching (KM) as we thought that the nearest neighbour matching method produces relatively poor matches probably due to scantiness in information. Using radius matching algorithm, the projected effect was about 10% and that of Kernel-based matching algorithm produced an average treatment effect of 7%. To this, we opine that CSR of MOCs have produced substantial gains in the capacity building of women towards enhancing their means of support.

Table 7. Imbalance test results of observable covariates for three different matching algorithms via standardized difference in percent[11]

Covariates *X*	**Standardized differences in % after**		
	Nearest neighbour matching	**Radius matching**	**Kernel-based matching**
Constant	4.8	33.7	21.4
Age	3.6	16.4	11.4
Anu_Inc	2.1	11.8	14.6
Edu	3.8	18.5	15.7
M_Sta	4.7	36.4	8.3
Pri_Occ	5.7	32.8	25.8
GMoU Perception	4.5	39.8	21.9
CDB_Mgt	2.7	46.7	19.8
Inc_OHhM	4.1	21.6	16.3
Part_Ben	3.7	25.4	17.4
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), reveals that overall balance of all covariates between the CDB communities (treatment) and the non-CDB communities (control) ratifies the higher quality of NNM. The nearest neighbor matching is rationally below the threshold of 5% while the kernel-based matching and radius in both the mean and the median of the absolute standardized variance after matching are far above the threshold of 5%.

[10] NNM = Nearest Neighbor Matching, RM = Radius Matching, KM Kernel Based Matching

[11] Pri_Occ = Primary Occupation, Age = Age of Respondents, Edu = Educational Status of respondents, M_Sta = Marital status of respondents = Anu_Inc Annual income of Respondents, Inc_OHhM = Per income of other household members of the respondents, CDB_Mgt = Cluster Development Board Management = GMoU Perception = Respondent perception of GMoU.

Table 8. Sensitivity analysis with Rosenbaum's bounds on probability values

	Upper bounds on the significance level for different values of e^{γ}				
	e^{γ}= 1	e^{γ}= 1.25	e^{γ}= 1.5	e^{γ}= 1.75	e^{γ}= 2
Nearest neighbor matching	Using single nearest or closest neighbor				
Score on enhanced livelihoods means	0.0001	0.0021	0.0014	0.313	0.234
Score on undertaking paid employment	0.0001	0.0041	0.0213	0.311	0. 421
Score on access to credit	0.0001	0.0051	0.0016	0.031	0.023
Score on reduction in socio-economic barriers	0.0001	0.0013	0.0031	0.0512	0.123
Score on starting personal business enterprises	0.0001	0.0022	0.0412	0.411	0.821
Score on enhanced educational status					
Radius matching	Using all neighbors within a caliper of 0.01				
Score on enhanced livelihoods means	0.0001	0.0042	0.0018	0.082	0.053
Score on undertaking paid employment	0.0002	0.0033	0.0021	0.141	0.071
Score on access to credit	0.0002	0.0241	0.1462	0.623	0.062
Score on reduction in socio-economic barriers	0.0001	0.0021	0.0043	0.014	0.0745
Score on starting personal business enterprises	0.0001	0.0021	0.0315	0.022	0.0312
Score on enhanced educational status					
Kernel-based matching	Using a bi-weight kernel function and a smoothing parameter of 0.06				
Score on enhanced livelihoods means	0.0001	0.00143	0.0017	0.012	0.0123
Score on undertaking paid employment	0.0001	0.00213	0.0020	0.015	0.0322
Score on access to credit	0.0001	0.01222	0.1243	0.573	0.032
Score on reduction in socio-economic barriers	0.0002	0.01714	0.0243	0.182	0.018
Score on starting personal business enterprises	0.0001	0.00170	0.0022	0.021	0.0252
Score on enhanced educational status					

Source: Computed from the field data by authors

In the analysis (Table 8), we made it clear that KM generated more robust treatment effect in comparison to NNM and RM as it concerns estimates to hidden bias in improved means of support, taking up paid employment, having access to credit, bringing down socio-economic barriers, starting personal business enterprises, and improved academic status. For this reason, there is a likelihood that matched pairs may differ by up to 100% in unobservable features, while the effect of CSR of the MOCs using the GMoU as monitored by the CDBs on improved means of support, taking up paid employment, having access to credit, bringing down socio-economic barriers, starting personal business enterprises, and improved academic status, would still be significant at a level of 5% (*p*-value = 0.053, *p*-value = 0.071, p-value = 0.062, *p*-value 0.0745, and *p*-value 0.0312 respectively). Same categories of knowledge score are robust to hidden bias up to an influence of e^{γ}= 2 at a significance level of 10% in line with the radius matching approach.

4.6 **Further Discussion of Finding**

This finding reveals that the CSR of the multinational oil companies utilizing the global memorandum of understanding has positive effect on the capacity building of Niger Delta

women by bettering their means of support, making available paid employment and increasing their access to credit. Hence, we rejected the null hypotheses and opined that using GMoU by CSR of MOCs has significantly influenced the capacity development of small-scale women entrepreneurs in host communities in Niger Delta of Nigeria. Also, the CSR interventions have played a vital role in bringing down socio-economic barriers confronting women in terms of laws and practices. For this, women are receiving more access to improvement in their academic status as well as starting personal business enterprises in the region. In contrast, the case study of Shell and the Ogoni by Hummels (1998) revealed that in the past, the oil companies' approach was to help or appease the communities whenever the need arose.

Overall, the results of this study suggest that the relative priorities of MOCs CSR interventions in the Niger Delta should vary from the classic, American ordering, as proposed by Carroll (1991). Placing value 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 a need, as suggested by Amaeshi et al (2006), in addressing the particularities of the socio-economic problems in the region, which takes in closing the gender gap in the development of entrepreneurs. Uduji et al (2023) also assented in that it is imperative for CSR intervention in Niger Delta to include reduction in lack as well as improvement in education and training. Yet, in extension and contribution, about how CSR intervention can better gender equality in entrepreneurship development in the Niger Delta, we would argue that MOCs' CSR is in a good position to help better gender equality when investment in capacity development for small-scale entrepreneurs is designed for the intricacies of real life. We, however, acknowledge that network of problems within families, communities and at the policy level influencing woman's experience is critical to effectively executing CSR programming in the region. It is our contention that the private sector, generally, is well placed to address some of the logistical and cultural problems that women face in having access to capacity development in small-scale entrepreneurship openings in the Niger Delta. MOCs, specifically, are well placed for the transfer of liable business practices and standards, technologies and infrastructure that expedite knowledge creation as well as support gender diversity and more equal access to economic openings cum development of human capital. Hence, taking on gender equality for development of capacity for small-scale entrepreneurs should be of paramount interest in CSR practices in the Niger Delta. Doing so can contribute towards making the environment better for businesses to thrive in the region.

5. Concluding Remarks, Caveats, and Future Research Directions

A great number of women entrepreneurs in Nigeria's Niger Delta region face uneven difficulties in accessing and competing in local markets, how much more international ones, for a number of reasons. These reasons include women's relative lack of flexibility in relation to men as well as their lower levels of use of and access to technologies with the propensity of adding value to their products. Despite the MOCs' CSR activities in entrepreneurship development programmes, women still focus on feminized jobs, such as handicrafts and basic food processing cum sale. Still worse, in these sectors, markets are often saturated and offer low returns; besides, women tend to concentrate on backyard or micro enterprises than men. Hence, we set out to evaluate the effect of the MOCs' CSR intervention in capacity development for small-scale women entrepreneurs in the region. Findings from the use of a combined propensity score matching and logit model show that though, a scanty part of the CSR intervention are particularly directed at capacity empowerment of women, the CSR of the MOCs using the GMoU model has recorded small but noteworthy success in building capacity of women in the areas of betterment of educational status, bringing down of socio-economic barriers, access to credit, undertaking paid employment, starting personal business enterprises, and generally improving on means of livelihood. This suggests that if CSR interventions are not tailored towards the betterment of openings for women, they may contribute towards bringing down the involvement of women in social, economic and political development. By extension, such will end up dampening efforts of bringing down impoverishment and achieving the sustainable development goals (SDGs) in the Niger Delta. This implies that the private sector, generally, can play a significant role in addressing some of the logistical and cultural problems rural women face, while promoting gender diversity. Moreover, it would encourage more equal access to economic opportunity via the CSR programmes in the Niger Delta.

The study is an addition to the literature on gender parity in accessing openings for capacity development for small-scale entrepreneurs in five notable ways. To begin with, we identified the main gender gaps in accessing capacity development openings for small-scale entrepreneurs made available by MOCs in Nigeria's Niger Delta region. Secondly, the research provides insights into how CSR undertakings can advance gender equity in rural areas of the region. Thirdly, taking a different direction from previous studies, this research employs a quantitative methodology to confront the sparse quantitative scholarship on the germaneness of CSR in the region. Fourthly, the investigation seeks exploring the nature of an African CSR model in the development of rural women entrepreneurs' capacity. Fifthly, we made available policy suggestions that would assist MOCs to successfully tackle the problems of women entrepreneurs in the Niger Delta region.

5.1 **Limitation and Suggestion for Further Studies**

It is worth re-emphasizing as a caveat in this study that philanthropic responsibility has two faces – welfare contribution on the one side and welfare dependence on the other. When host communities become overly dependent on multinationals for their economic welfare, there is risk of governments compromising ethical, social, or environmental standards in order to retain their investmment, or suffering huge social disruption if those businesses do decide to disinvest, as occur with Anglo American in Zambia. However, the main limitation of the study is that it is only concerned with the scope of oil host communities in Nigeria. Hence, the outcomes cannot be generalized to other emerging countries with the same hitches in policy. Based on the aforementioned limitation, replicating a similar work in other countries is worthwhile in ascertaining whether the established nexuses withstand empirical scrutiny in diverse oil host communities of evolving countries.

Declaration of conflicting interests

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

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