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NIGERIA FOR WOMEN PROJECT (NFWP) AND SOCIAL COHESION IN RURAL LIVELIHOODS

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Abstract

Purpose – The purpose of this paper is critically examine the Nigeria for Women Project (NFWP) initiatives in Nigeria. Its special focus is to investigate the impact of NFWP on social cohesion in entrepreneurship development in Nigeria.

Design/methodology/approach – This paper adopts a quasi-experimental research design in order to address the scarcity of quantitative studies on women's groups in Nigeria. A total of 2400 respondents were sampled across the rural areas of the six geographical regions of the country.

Findings - Results from the use of a combined propensity score matching and logit model indicate that though scrimpy, the NFWP intervention targeted specifically for the empowerment of women, using the WAG model has recorded significant set up in improving women's formation of social capital through advocacy, awareness creation, provision of credit, training of women on skill acquisition, among other activities.

Practical implications – This suggests that an increase in Nigeria for Women Project budget that seeks to expand participation of women in women's groups, targeted at increasing women's social cohesion, especially in the rural communities will help lift women and girls out of poverty in the country.

Social implications - It implies that women's groups that serve as production cooperatives, saving associations, and marketing groups can enhance women's performance in entrepreneurship development and boost rural economy production in Nigeria.

Originality/value – This research contributes to the growing field of female entrepreneurial collaboration by proposing the moderation of social cohesion as a means to sustain agriculture and rural development in developing countries. It concludes that targeting women's groups should form the foundation of public policy for social cohesion in women's entrepreneurship development for rural economy.

Keywords Nigeria for Women Project (NFWP), women's groups, social cohesion, women's entrepreneurship development, sub-Saharan Africa.

Paper type Research paper

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1. Introduction

Viewed as the glue that binds societies, social cohesion is considered an essential ingredient to address common societal challenges; and definitions and associated conceptual frameworks usually summarize social cohesion as collective attributes and behaviours characterized by positive social relations, a sense of identification or belonging, and an orientation towards a common good (Moustakas, 2023; Fonseca, 2019; Kapoor et al, 2018). It is the web of networks among people who live and work in a particular society, aiding that society to function well (Adkins, 2005; Fried, 2004). It refers to a positive product of a human connection that might be observable or undetectable and might include useful information, inventive ideas, and future openings (Quisumbing and Kumar, 2011; ELAC, 2007). Social cohesion leads to the effective running of social groups via a mutual sense of identity, understanding, corporation, trust, shared values, norms, interpersonal connections, and mutual benefit (Pretty, 2003; Dobbermack, 2014). It vests a group of people with power to creditably work together towards realizing a common purpose or goal. Stated simply, social cohesion is advantageous to the society at large via social relationships. Governments, international organizations, and non-governmental organizations (NGOs) have eagerly integrated social cohesion as a substitute to government-based or market-based methods for development, with the World Bank taking it to be the missing link in the journey of progress (Woolcock and Sweetser, 2007; De vries et al, 2013). Operating via groups or networks cuts the cost of making services accessible to a large number of persons and allows program implementation to be more cost-effective. For example, the outlook that social cohesion is much easier for the deprived to gain than other assets like land is a key driver of concern among development experts. Even though it is not explicitly accepted, the deprived may encounter impediments in joining groups because participating in groups is not so cheap. Networking takes time, mostly when formal group meetings are essential. Besides, a number of groups charge membership fees. These apparently could be hindrances to obtaining social cohesion along with social inequality and ethnic dissimilarities (Westermann et al, 2005; Cheong et al, 2007). Nevertheless, even with the growing significance of groups, their gender structures cum effect of membership on gender relations have been inadequately explored in the social cohesion literature or the collective action literature about the undertakings (performance) of groups cum associations (Pandolfelli et al, 2008; Cradock et al, 2009). Women groups with economic aims, such as self-help groups, saving groups and occupational groups, have arisen as vital means of bringing up gender equality as well as women's welfare and empowerment cum access to openings, even in sub-Saharan Africa (Desai et al, 2020; Carron et al, 2002; Bruhn, 2009). Across sub-Saharan Africa, informal women groups have a long history and assemble for diverse reasons (African Economic Outlook, 2017).

However, women in impoverished families face harsh time restraints, owing to their numerous life commitments and childcare responsibilities. Indigent women who want to join are discouraged by membership fees because they have limited access to financial resources (Katungi *et al*, 2008). In Nigeria, cultural practices that impede women from speaking up in public or connecting with men may be more harmful to them than to men, even though all who are not educated feel uncomfortable about participating in groups and are concerned about being seen as unaware or having nothing to actually offer. As a result, women are reluctant about taking part in group meetings since they will not be heard (Ajala, 2017; Peterson and Joseph, 2004). Therefore, it will be right to state that women do not have as much social cohesion as men, or do they really invest in different forms of social capital? In 2018, the World Bank, in partnership with the Nigerian Ministry of Women's Affairs and Social Development (MOWASD) and the Bill & Melinda Gates Foundation (BMGF), started backing the Nigeria for Women Project (NFWP). This project is targeted at enhancing women's occupational prospects and aiding their access to economic markets using women's affinity groups (WAGs) as a model. By making opportunities available in four components – the improvement of social capital, the building of livelihoods, the creation of partnerships, and messaging about gender and other social norms – the programme seeks to get over institutional and social barriers that at present hold back economic outcomes for women, in addition to encouraging the improvement of social capital, backing the building of livelihoods, and influencing attitudes and behaviours connected to gender equality and prejudiced social norms (de Hoop *et al*, 2021). The NFWP is a federal government programme (sustained by a \$100 million loan from the World Bank) that is executed gradually, commencing with 6 states and 18 local government areas (LGAs) in Nigeria. In the first phase of the programme, the NFWP seeks to grow involvement of women in women's groups by getting to 324,000 women via about 21, 600 WAGs in Abia, Niger, Ogun, Taraba, Kebbi, and Edo states (Desai *et al*, 2018). Yet, the extent to which NFWP programme have had influence on the occupational cum economic, social, and psychological empowerment of women and families (households) in order to inform future project investment in Nigeria remains debatable. Scholars such as Ekhatior (2020) and others opine that NFWP programme is not wide-ranging or deeply engrained. Due to that, some reasoned that several of these NFWP initiatives are not reasonably and always executed (Olusegun and Oyelade, 2021). Unquestionably, despite the taking on of NFWP in Nigeria, women and girls still experience societal and structural gender equality problems in areas that relate to access to financial markets, education, employment, and health that limit their chances and welfare (Okongwu, 2020). In contrast, de Hoop *et al* (2021), Desai *et al* (2018) and others claim that the NFWP initiative have in reality helped in making savings and livelihoods for women better in targeted areas of Nigeria; upheld social inclusion via the founding of institutional platforms that enhance women's access to critical life, business, monetary and technical skills in Nigeria. Following the above varying standpoints

on NFWP initiatives in Nigeria, this paper is a plus to the gender debate in social capital for agricultural improvement and inclusive growth literature from agriculture and rural advancement standpoint by assessing empirical facts in four areas that have drawn much attention in the literature. The objective of this paper is to ascertain the level of NFWP investment made by the federal government of Nigeria (FGN) in the line of possible mechanisms that group-based programs can help in surging women's participation, as well as finding out the level of achievement from this investment that accumulates for the rural women and how it affects their trade. These four areas of emphasis, deliberated together, stand for four main research questions as stated below considering the rural areas in Nigeria:

- What is the degree of rural women's involvement in NFWP initiative?
- What is the effect of NFWP investment in women's groups' targeted at improving women entrepreneurs in Nigeria?
- Has the NFWP undertakings positively influenced women's groups operating in Nigeria?
- Do NFWP activities bring down the structural inhibitions that obstruct rural women from joining groups that address women's challenges in Nigeria?

If rural women bring their resources together, they may be able to get over some of the obstacles faced by individuals. Women raising their social cohesion can be a preemptive method in encouraging information exchange, sharing of resource, pooling risks, and making sure that women's voices are heard in deciding on the plan of action at all levels. Nonetheless, as a result of the cultural reserves, gender gaps continue to discourage efforts to reduce lack in Nigeria. In view of that, placing them side by side with their male counterparts in mixed-sex groups who have grown into registered foundations that acquire third-party support (financial assistance), shows that women are not close to benefitting from the prospects and assistance coming from self-help groups. However, the NFWP came with a lot of prospects and promises, yet few years down the line, it appears the desired results are not manifesting as the outcomes of the project implementation have not been rigorously evaluated. Thus, in this study we put forward the following hypotheses:

- The NFWP has not made any significant impact on establishment and enlargement of women's groups for building social cohesion.
- The NFWP has not made any significant impact on removal of structural hitches deterring women's involvement in socio-economic activities.
- The NFWP has not made any significant impact on reducing social cohesion gaps to improve rural women's means of livelihood.

In line with the above, the central concern of this research is to ascertain the level of NFWP investment in reducing the social cohesion gap via women's groups and how it affects the means of livelihood for rural women in Nigeria. This research contributes to the growing field of female entrepreneurial collaboration by proposing the moderation of social cohesion as a means to sustain agriculture and rural development in developing countries. The positioning of this paper departs from contemporary social cohesion literature, which has centered on, *inter alia*: the concept of social cohesion (Bruhn, 2009); team cohesion and team success in sport (Carron et al, 2002); immigration, social cohesion and social capital (Cheong et al, 2007); neighbourhood social cohesion (Cradock et al, 2009); stress, social cohesion and physical activity (De Vries et al, 2013); the politics of social cohesion (Dobbernack, 2014); social cohesion and a sense of belonging (ELAC, 2007); a new definition of social cohesion (Fonseca et al, 2019); social cohesion in annual review of sociology (Friedkin, 2004); social innovation for social cohesion (Kapoor et al, 2018); stigmatization and social cohesion in WoS (Mac Fadden et al, 2021); creating social cohesion in an independent world (Mizukami, 2016); a bibliometric analysis on social cohesion (Moustakas, 2022); causes and consequences of social cohesion (Moustakas, 2023); social cohesion and social support (Mulvaney-Day et al, 2007); social cohesion and intrapersonal empowerment (Peterson and Joseph, 2004); social cohesion and social protections (Razavi et al, 2020); multiculturalism and social cohesion (Reitz et al, 2009); the essentials of social cohesion (Schifer and van der Noll, 2017); the impact of farmer field schools on knowledge and productivity (Erin et al, 2004); social cohesion and environmental sustainability (Uzzell et al, 2002) and social cohesion, task cohesion and team performance (Van Vianen and Carsten, 2001).

The sections of the paper flows thus: (2) background, literature, and theoretical underpinnings; (3) description of methods and materials; (4) presentation and discussions of the results, and (5) conclusion with policy implications, limitations as well as future research directions.

2. Background, literature, and theoretical underpinnings

2.1 The NFWP programme description

Nigeria for Women Project (NFWP) is a national programme that runs for five years with the aim to support women's improved occupational prospects in targeted communities. The NFWP is a five-year national programme with an objective to support women's improved livelihood opportunities in targeted communities. The project is a long-term engagement between World Bank and the government of Nigeria. According to Desai *et al* (2018), the current project represents the first phase of this engagement for a five-year period (2018 – 2022). However, according to Okolo-Obasi and Uduji (2023), the programme was scaled up by the World Bank in 2023, after approving about USD500, 000,000 for the Nigeria for Women programme Scale Up (NFWP-SU). NFWP project is informed by other projects such as the Rural Livelihoods Projects in India that makes use of the model of women groups (Hoffmann *et al*, 2020). NFWP presents WAGs in a very discrete way starting with six states (Ogun, Abia, Kebbi, Akwa-Ibom, Edo, Niger) in Nigeria to attest that this platform can be the base for layering occupational support (Ekhatior, 2020; Uduji and Okolo-Obasi, 2020, 2021, 2022, 2023). NFWP project is the first of its kind to be executed in Nigeria, via government and at scale assisting women's groups. NFWP is carried out by a Federal Project Co-ordination Units (FPCU), State Project Co-ordination Units (SPCUs), Local Government Area Project Implementation Units (LPIUs), and Ward Facilitators (WFs) at community level. As projected by de Hoop *et al* (2021), the purpose of NFWP is to reduce the hindrances to gender parity and promote economic as well as social inclusion of women. The definite objectives include: developing a better understanding of what works and leveraging partnerships particularly with the private sector; informing and influencing attitudes and behaviours related to gender parity to change discriminatory social norms; supporting enhanced savings and livelihoods for women in targeted areas of Nigeria; promoting social inclusion via the establishment of institutional platforms that better women's access to critical life, business, monetary and technical skills.

The NFWP operates with new and surviving women's groups comprising women over the age of 18, and aims at women who are seen as part of the "missing middle". This group of women are made up of women who are economically active, but live close to the paucity line, and are thus susceptible to shocks. Negative effects may bring these women below the penury line in the absence of savings or other women's groups (Desai *et al*, 2018). Recent studies on women's groups and COVID-19 reveals that involvement in savings and other women's groups could limit the negative outcomes of shocks, such as COVID-19, for example because partaking in such groups could empower women to make use of past savings and access to credit to manage negative shocks (Ekhatior, 2020). It is more problematic for women who are not economically active to partake in saving groups because involvement in such groups entails regular savings; programmes such as cash transfers may bring larger gains for

economically inactive women (Karlan *et al*, 2017). However, economically active women could gain from partaking in savings and women's groups because such commitment limits their susceptibility to negative shocks. By focusing on bringing in women in current women's groups, the projects seek to assist women profit from existing structures, knowledge and increased variety in these groups (Brody *et al*, 2015). Once women join the group, they could have the room to acquire knowledge and utilize resources accessible within the group, such as individual grants, and trainings, which can aid women in commencing or further enlarging their economic activities (de Hoop *et al*, 2021).

The first year of NFWP execution centres on the formation and reinforcement of WAGs via a five-year phase process. All through these five phases, groups will be trained on financial literacy, savings and credit, gender and life skills, as well as on business skills (Desai *et al*, 2018). In addition, the programme will choose WAG members to acquire individual grants to create or expand their revenue generating activities, after the improvement of business plans. In addition, the programme targets at creating and expanding livelihoods collectives to form livelihoods partnerships when the formation process comes to an end (de Hoop *et al*, 2021). The livelihood collectives will also be appropriate to obtain grants from the project; at the same time the programme will execute a series of behaviour change, and activities related to awareness raising targeted at caretakers as well as all women and men in the community to stimulate social norms and gender beliefs as well as behaviours at the community-level (Desai *et al*, 2020; Asongu *et al*, 2018, 2019, 2020).

2.2 Theoretical underpinnings

2.2.1 Definitions and frameworks of social cohesion

According to Van Vianen and Carsten (2001), as a result of the expanding perspectives of scholars on social cohesion, there have been numerous attempts to summarise existing work on the subject and, to propose a common definition of social cohesion. These attempts have led academics to advocate for broader or narrower definitions of social cohesions (Uzzell *et al*, 2002; Woolcock and Sweetser, 2007). Fonseca *et al* (2019) adopt a broader perspective, arguing that much current work fails to consider the role of institutions and governance in social cohesion. The authors put forward a definition of social cohesion that encompasses elements of well-being, belonging, social participation, tolerance, and equal opportunities. In distinction from others, they defined social cohesion as the ongoing process of developing well-being, sense of belonging, and voluntary social participation of the members of society while developing communities that tolerate and promote a multiplicity of values and cultures, and while granting at the same time equal rights and opportunities in society (Fonseca *et al*, 2019). According to Kapoor *et al* (2018), several salient policy documents takes similar stances,

integrating many dimensions into their definitions, including inequality, well-being and social mobility.

In contrast, advocates of narrower definitions challenge such broader conceptualizations, contending that this perspectives confuse core components of social cohesion with its causes or consequences (Friedkin, 2004). Mac Fadden et al (2021) have also noted that debates around social cohesion often present it as both cause and consequence of numerous other aspects of social life. Schiefer and van der Noll (2017), a contrasting body of work proposes a narrower definitions and frameworks for social cohesions. Razavi et al (2020), argue that with this narrower perspective, social cohesion revovles mainly around three core aspects: a sense of belonging, social relations, and an orientation towards the common goods. According to Moustakas (2023), a cohesive society is characterised by resilient social relations, a positive emotional connectedness between its members and the community, and a pronounced focus on the common goods. Thus, the framework of this study contains three core dimensions, each broken into three related sub-dimensions. The first is *social relations*, which includes social networks, trust in people and acceptance of diversity. The second is *connectedness*, which includes notions of identifications, trust in institutions and perception of fairness. The third is a *focus on the common good*, which comprises ideas of solidarity, helpfulness, respect for social rules and civic participation. In line with the criticism associated with the broader definitions, the framework of this study excludes numerous potentials antecedents or outcomes of social cohesions, such as material wealth, social inequality or well-being (Dragolov, G., Ignacz, Z.S., Lorenz, J., Delhey, J. and Boehnke, K. 2013). In this sense, we consent that the narrower model has been adopted for the measurements of social cohesion in this study.

2.2.2 Feminist theory and female entrepreneurs

According to Ali (2018), women run successful enterprises, yet persistent gendered inequalities continue to create major disparities in opportunities to start and grow a business. In general, women businesses tend to be smaller than those run by men, and are concentrated in sectors with limited potential for value addition and are over-represented in the informal economy (Brody et al, 2015). This challenges are compounded by women's care responsibilities, which create additional pressure on women entrepreneurs' time, workload and wellbeing, as well as by unfavourable institutional environments that can result in uneven access to land and decision-making roles, and inadequate social protection coverage (Loza, 2011). Women and men entrepreneurs can encounter similar challenges in the economic activities; however, women are faced with an additional set of gender-based barriers that limit their access to resources and opportunities (Erika, 2015). In the light of this challenges, this study seeks to redress existing gender imbalances in enterprise development through social cohesion

approaches aimed specifically at women, while simultaneously working with constituents to ensure that enterprise initiatives consider gender dynamics and inequality in their formulation and roll out.

However, this study embraces a quantitative methodology and also views the result from the gender and development outlooks (Baden and Goetz, 1997), while looking at the role of formal group membership and informal social networks in entrepreneurship development. Erika (2015) avowed that entrepreneurship is a key source of employment and that women who partake in informal businesses are usually self-employed in small-scale retail. The gender gap in entrepreneurship enhancement is the outcome of unequal access to resources (Loza, 2011). Persistent gap, particularly in access to funds, continues to inhibit women's involvement in obtainability of family (household) food baskets (Ali, 2018). This paper puts to use the liberal feminist theory in describing why female entrepreneurs should be rejuvenated to join in entrepreneurship development. This theory stresses that social reform is needful if women are to be given comparable status and opportunities as men (Fischer *et al*, 1993). The liberal feminist theory's basic philosophy is that men and women are the same (equal) and that, not sex, should be the basis for individual rights. It accentuates the presence of bigoted blockades and systematic unfairness that women must be liberated from, which includes: being hindered from acquiring education, resources, and even business experience (Baden & Goetz, 1997). As projected by Unger and Crawford (1992), the liberal feminist theory avers that women would behave in a similar manner if they enjoy equal access to the prospects before men. These prospects include learning (education), working knowledge, and other useful resources. This theory lies in the background of women's entrepreneurship. Given the important role of female entrepreneurs and their different structural variations, it follows that women may make a decision related to the growth of their businesses using different processes by weighing the risk and reward differently from men. In view of these works of literature, the liberal theory provides reasons for expecting gender differences and why female entrepreneurs and female business owners behave differently in the adaptation of low growth intentions.

3. Method and materials

We adopted quasi-experimental research design in this study to carry out a quantitative research to address the scarcity of quantitative studies on women's groups, and specifically on the Nigeria for Women Project (Desai *et al*, 2018; Uduji *et al*, 2020, 2021, 2023). Both primary and secondary data were used in answering the research questions and testing the hypotheses. From the secondary data generated, we built our baseline and using a participatory field research method, we got our endline data from a sample of the populace. The cross-sectional data collected for the endline defines and interprets what is available at present in the country. Data were generated from respondents from states where treatment (intervention of the NFWP) has taken place and also from states where it has not. Respondents from the former were used as the treatment group while from the later we selected the control group.

3.1 Sample size

We engaged Taro Yamane (1964) formula to calculate the sample size to be looked at. The Taro Yamane formula is mathematically stated as follows:

$$n = \frac{N}{1 + N(e)^2}$$

Where n = the sample size

N = total or finite population of the study area

e = level of significance (Limit of tolerable error)

1 = unity (constant)

The projected population of adult women in the states where the NFWP was implemented and the states selected for control is about 19,489,794 (FGN, 2017). Hence, our sample size was calculated thus:

$$n = \frac{19,489,794}{1 + 19,489,795(0.05)^2} = n = \frac{19,489,794}{48,724} \quad n = 400$$

While the determined sample size is 400, to reduce the possible errors in the sample selection we increased it by six (400 x 6) to cover for the six geopolitical regions of the country. Hence, the sample size finally was 2400 respondents (Table 1).

Table 1. Sample size determination table

State	Total Population	Total Female Population	Population of Adult women	Sample Per State	
				Treatment	Control
Abia	3,727,347	1,900,947	1,235,616	200	
Anambra	5,527,809	2,819,183	1,832,469		200
Akwaiabom	5,482,177	2,795,910	1,817,342	200	

Edo	4,235,595	2,160,153	1,404,100		200
Ogun	5,217,716	2,661,035	1,729,673	200	
Ondo	4,671,695	2,382,564	1,548,667		200
Kebbi State	4,440,050	2,264,426	1,471,877	200	
Katsina State	7,831,319	3,993,973	2,596,082		200
Taraba State	3,066,834	1,564,085	1,016,655	200	
Yobe State	3,294,137	1,680,010	1,092,006		200
Niger State	5,741,815	2,928,326	1,903,412	200	
Benue State	<u>5,556,247</u>	<u>2,833,686</u>	<u>1,841,896</u>		<u>200</u>
	58,792,741	29,984,298	19,489,794	1,200	1,200

Source: FGN, 2017/Authors' computation

3.2 Sampling procedure

The study made use of a multi-staged sampling method with which we arrived at the final 2400 respondents. In the stages, we had in mind the need to select samples from states where the NFWP have been executed as well as states where it has not. For this, in stage one, we listed the six states (treatment states) and chose another six states (control states) with almost geopolitical, socio-economic and demographic features. We purposely selected these control state after putting into consideration the likelihood of spillover effect. Hence, each control states selected is a little farther from the corresponding treatment state but their socio-economic, demographic and geopolitical characteristics are almost the same in the baseline data. While Anambra state was selected as control for Abia state (treatment), Edo state was chosen as control for Akwaibom(treatment); Ondo state (control) was for Ogun state (treatment); Katsina state (control) for Kebbi state (treatment); Yobe state (control) for Taraba state(Treatment), and finally Benue state (control) for Niger (treatment).

In the second stage, we made a list of the local government areas (LGAs) in each of the treatment states and those in the control states that has almost the same size, socio-economic and political features similar to those of the corresponding treatment states. These LGAs we called treatment LGAs and Control LGAs. In the third stage, we randomly picked two communities from each of the chosen LGAs for our treatment and control communities. That is to say, six communities were picked from each state. Finally, in the last stage, we employed the services of the community gatekeeper to casually select about eleven respondent women from each of the picked communities to make up for 1200 respondent for the treatment and another 1200 respondent for the control.

3.3 Data collection

While the secondary data used were sourced from publications of relevant data authorities in the various states as well as that of National Bureau of Statistics (NBS), primary data for the

study were gathered using participatory appraisal (PA) method of written structured questionnaire (SQ). We used this method because the outlooks of the people being studied is overriding if we must actualize the aims of the study. The SQ, was the major tool used for the survey to garner data from the 2,400 respondents and it was administered directly to the respondents with the assistance of local research aides. The local research aides were brought in because of issues the respondents may face in understanding the instrument. Also, we used local research aides because of our inability to speak the different local languages and dialects of the several ethnic groups in Nigeria. The local research aides as well assisted in navigating the region's terrain.

3.4 Analytical framework

We embraced both propensity score matching (PSM) and logit regression model to evaluate the effect of NFWP on improvement of social capital, building of livelihoods, creation of partnerships, getting over institutional and social barriers that at present hold back economic outcomes for women as well as influencing attitudes and behaviours connected to gender equality and prejudiced social norms. Our choice to use this method was informed by our interested in controlling the problem of selectivity and endogeneity. In applying the propensity score matching: first, we put into consideration the states where intervention has been applied as the treatment group so as to have the capacity to evaluate the average treatment effect of NFWP. Secondly, an ideal comparison group was selected from a larger survey of states where NFWP has not been implemented and then matched to the treatment based on set of observed features. Propensity score matching requires forecasting the effect of on intervention on treatment based on observed covariates (covariates used in choosing individuals but not affected by the treatment) for both the control group and the treatment group (Desai *et al*, 2020; Okolo-Obasi *et al*, 2021). As a result, the decision to be treated (implementation of NFWP using the WAGs model) in this study, although not arbitrary, rests on the variables observed. For this reason, to evaluate the effect of NFWP on women's social capital formation, the treatment group is symbolized as $R_1=1$ for woman_i and $R_1= 0$ otherwise (control group). Then, matching the treatment to the control group on the basis of the propensity score: (Possibility of NFWP given observed characteristics) is stated thus:

$$P(X_1) = \text{Prob}(R_2= 1/X_2) \quad (0 < P(X_3) < 1) \quad \text{Equation 1}$$

X_1 here stands for a vector of before NFWP control variables, if every R_1 is independent over all 1 and the results are independent of NFWP given X_1 , then results are also independent of NFWP

given $P(X_1)$ just as they would do if NFWP are executed arbitrarily. Therefore, to draw clear-cut conclusions on the effect of NFWP undertakings on social capital formation, selection bias was side-stepped on observables and we matched on the possibility of the treatment (covariates X). This, in that way, defined the propensity score of vector X as:

$$P(X) = \Pr (Z = 1/X), \quad \text{Equation 2}$$

With Z representing the treatment indicator which is equivalent to 1 if the picked woman belongs to WAG and has been empowered by NFWP targeted social capital formation, and 0 otherwise. All the same, because the propensity score is a balancing score, the observables X will be spread same for both treatment and control while the variances are seen as quality of treatment. We therefore, worked upon and put to use the four steps from the literature in order to get this unbiased effect estimates following de Hoop *et al* (2021). In the first place, because the likelihood of participating in the NFWP is projected by a binary response with suitable observable features; we pooled two individual group, (one treatment one Control). Then, we evaluated the logit model of participating in the NFWP as a function of some socio-economic features variables that includes both individual, family (household) and community variables as thus:

$$P(x)=\Pr(Z=1/X)=F(a_1x_1+.....+....a_nx_n)=F(xa)=e^{xa} \quad \text{Equation 3}$$

The value above showing the likelihood of participating in the NFWP was created from the logit regression assigning each woman a propensity score. At this point, we had to do away with women in the control group with an extremely poor propensity score outside the range found for women in the treatment. For each woman involved in the NFWP, a woman not participating in the NFWP with closest propensity score as measured by absolute variance in score, seen as nearest neighbor, was acquired. For this reason, we used the nearest five neighbours to make the evaluation more rigorous as we calculated the mean values of the result of indicators for the nearest five neighbours. The variance between treatment and control groups is assessed by the average treatment effect on the treated (ATT). The true ATT, based on propensity score matching is written thus:

$$ATT_{PSM} = E_{P(X)} \{E(y_1/Z = 1, P(x)) - E(y_0/Z = 0, P(X))\}, \quad \text{Equation 4}$$

Where $EP(X)$ represents anticipation with respect to the dispersal of propensity score in the population of study. The true ATT reveals the mean variance in capability of the women. In

accessing the ATE of the treatment, we eventually used three different matching algorithms of, kernel-based matching (KM), radius matching (RM); and nearest neighbor matching (NNM); to match the treatment and control. Afterwards, we squared the matching estimators' eminence by standardized differences in observables' means amongst treatment and control. After matching with X for the covariate X , the difference in sample means for treatment was represented as (\bar{X}_1) and matched control as (\bar{X}_0) . Hence, we put the sub-samples by way of a percentage of the square root of the average sample variance as: $(\int_1^2 \text{ and } \int_0^2)$.

To this:

$$|SD| = 100 * \frac{(\bar{X}_1 - \bar{X}_0)}{(.05 \int_1^2 \text{ and } \int_0^2)^{1/2}} \quad \text{Equation 5}$$

Taking another step, we acknowledged the bias left below after matching as 5% even as there is no obvious threshold of effective or failed matching. The study thereby took as a sign that the balance among the different observable characteristics between the treatment and control as matched is adequate. However, with the knowledge that that the problem of hidden bias will always abound, we attempted the bounding approach to reduce the hidden bias. So, we round out equation 3 to estimate the propensity score by a vector U which is made up of all the variables not observed but we captured their effects on the probability of treatment by γ :

$$P(x) = \Pr(Z=1/X) = F(X\alpha + U\gamma) = e^{X\alpha U\gamma} \quad \text{Equation 6}$$

Taking the sensitivity analysis in the last stage, we looked at the strength of the influence of γ on treatment in order to manage the impact of treatment on potential outcomes. The guess here is that the unobservable variable is a binary variable taking values between 0 and 1. Thus, the treatment probability of both treatment and control is applied in line with the bounds on the odds ratio as stated thus:

$$\frac{1}{e\gamma} \leq \frac{P(Xm)(1-P(Xn))}{P(Xn)(1-P(Xm))} \leq e\gamma \quad \text{Equation 7}$$

As opined by Okolo-Obasi and Uduji (2021, 2023), both the treatment and control have the same probability of participating in the NFWP, so long as they are identical in X , only if $e = 1$

3.4 The Variables of measurement

In addition to the background information given on social cohesion as collective attributes and behaviours characterized by positive social relations toward pursuing common goals, the

changes in orientation towards a common good by the women was measured by weighting their responses (weighted in five points likert scale form where 5 represent highly committed to participating in achieving common good, 4 represent committed, 3, indifference, 2, not committed, and 1, highly not committed).

In line with the narrow view argument, the social cohesion features of responses from both the treatment and control groups were weighted along three major areas. These areas which includes connectedness of the respondents, social relationship, and focus on the common goods were further subdivided into nine impact area as shown in Table 2:

Table 2. Social Cohesion Features

Feature	Sub-Feature	Description of the identified features.
Connectedness	Identification	This is a measurement of how strong individuals feel connected with their geographic area and identify with it.
	Trust in Institutions	Measuring the level of confidence individuals have in political institutions and how it interacts with formation of social groups like cooperatives.
	Perception of fairness	Measuring the level of believe that Individuals have of being treated fairly in society.
Social relations	Social networks	The extent to which individuals feel that social networks are strong and resilient
	Trust in people	Measures the level of trust respondents repose in other individuals
	Acceptance of Diversity	Measure the level of acceptance of individuals with different backgrounds and lifestyles as equal members of society.
Focus on the common good	Solidarity and Helpfulness	This measures the level to which individuals feel a responsibility for and willingness to help others.
	Respect for social rules	This is a measurement of how individuals respect the fundamental rules of society.
	Civic participation	This measures how freely individuals participate in society and civic and political life.

Source: Dragolov, G., Ignacz, Z.S., Lorenz, J., Delhey, J. and Boehnke, K. (2013) / Authors' modification

Other variable considered in the study especially as it concerns evaluating the logit model of participating in the NFWP as a function of some socio- economic features includes

Age = Age of the woman, this age has a major role to play as only the middle aged and younger women may be able to access the NFWP interventions. On this note, we created a dummy for age in line with the logit, hence, less than 50 years of age was =1 otherwise =0

Pri_Occ = Primary occupation of the respondent is very important as it determines how the respondent is either focused or distracted from proper participation or management of the received support from NFWP. *Pro_Occ* was coded 1 = Fishing, 2 = Trading, 3 = Farming, 4 = Paid Employment, 5 = Handicraft and 6 = Others.

Edu = Highest level of education of the respondent is expected to be highly collated with the level of literacy. The higher the respondent is educated the better for voicing and reaching out to be empowered. Hence, we coded a dummy variable (Literate =1, otherwise = 0)

M_Sta = Marital status of the respondent has a major role to play in access to other resources that is culturally gender sensitive or insensitive. Also, often time marriages restrict women from freely participating in development programmes because they are bound to work or participated under their husbands' directives (married =1 otherwise = 0)

NFWP Perception. The variable represented as NFWP Perception is the actual intervention executed by the NFWP and perceived or received by the women valued in Nigeria naira (NGN). The actual variable considered here is investment in women empowerment through any of the programmes of NFWP as acknowledged by the women (rural or urban).

Anu_Inc = Annual income of respondents is very important covariant as it plays a major role in determining how and where to intervene in the lives of the respondents and if the respondent can continue in business in the absence of external help or even abandoning the business in the presence of surplus. It is measured by the total amount generated from all activities engaged in by the respondent woman {coded 0 = None, 1 = (1000 - 50,000), 2 = (51,000 - 100,000), 3 = (101,000 - 150,000), 4 = (151,000 - 200,000), 5 = (201,000 - 250,000), 6 = (251,000 - 300,000) and 7 = (Above 300,000)}

Inc_OHhM = Income of other household members is measured by the total amount earned (if any) by members other than the household head. Coded as 0 = None, 1 = (1000 - 50,000), 2= (51,000 - 100,000) 3 = (101,000 - 150,000) = 4= (151,000 - 200,000) and 5= (Above 200,000).

ProG_Mgt = Management programmes is mostly considered in the spread of the programmes across location to include both rural and urban. To measure the inclusiveness, we coded 1= urban based, 0= rural based.

4. Results and discussion

4.1 Descriptive analysis of socio-economic and demographic characteristics of respondents

We show the description of some of the respondents' economic (occupation, income) social (education), and demographic (age, marital status, household size) characteristics in the analysis (Table 3).

Table 3: Socio-economic and demographic characteristics of respondents

Variables	Treatment Group			Control Group		
	Freq	%	Cum	Freq	%	Cum
Age of Respondents						
Less than 20 years	45	3.8	3.8	72	6.0	6.0
21 - 25 years	372	31.0	34.8	303	25.3	31.25
26 - 30 years	264	22.0	56.8	246	20.5	51.75
31 - 35 years	177	14.8	71.5	210	17.5	69.25
35 - 40 years	138	11.5	83.0	135	11.3	80.50
41 - 45 years	90	7.5	90.5	93	7.8	88.25
45 - 50 years	66	5.5	96.0	84	7.0	95.25
Above 50 years	48	4.0	100.0	57	4.8	100.00
	1200	100		1200	100	
Level of Education						
None	156	13.0	13.0	216	18.0	18.00
FSLC	444	37.0	50.0	504	42.0	60.00
WAEC/WASSCE	351	29.3	79.3	321	26.8	86.75
Degree and above	249	20.8	100.0	159	13.3	100.00
	1200	100		1200	100	
Household Size						
1-4 Person	534	44.5	44.5	450	37.5	37.50
5-9 Person	459	38.3	82.8	432	36.0	73.50
10-14 Person	171	14.3	97.0	228	19.0	92.50
15 Person and above	36	3.0	100.0	90	7.5	100.00
	1200	100		1200	100	
Marital Status						
Single	201	16.8	16.8	225	18.8	18.75
Married	609	50.8	67.5	855	71.3	90.00
Widow	174	14.5	82.0	39	3.3	93.25
Divorced/Separated	216	18.0	100.0	81	6.8	100.00
	1200	100		1200	100	
Primary Occupation						
Fishing	216	18.0	18.0	174	14.5	14.50
Trading	297	24.8	42.8	201	16.8	31.25
Farming	336	28.0	70.8	507	42.3	73.50
Paid Employment	96	8.0	78.8	75	6.3	79.75

Handicraft	201	16.8	95.5	126	10.5	90.25
Others	54	4.5	100.0	117	9.8	100.00
	1200	100		1200	100	
Annual Income						
1000 - 50,000	54	4.5	4.5	258	21.5	21.50
51,000 - 100,000	117	9.8	14.3	279	23.3	44.75
101,000 - 150,000	195	16.3	30.5	249	20.8	65.50
151,000 - 200,000	183	15.3	45.8	192	16.0	81.50
201,000 - 250,000	243	20.3	66.0	135	11.3	92.75
251,000 - 300,000	264	22.0	88.0	42	3.5	96.25
Above 300,000	144	12.0	100.0	45	3.8	100.00
	1200	100	349	1200	100	

Source: Authors' computation from field work.

This analysis is very essential as it will assist the readers in understanding the demographic and socio-economic differences in status of the both the women from the treatment group the women in the control group. The outcome of the analysis shows that, about 34 years is the mean age of respondents in the treatment group while the control group recorded about 36 years. The implication here is that age of the respondents has little or nothing to do with being in the control or treatment group. Also in the treatment, while 18% of the women are in fishing, about 28% are into farming showing that about 46% are involved in traditional enterprises that most inherited and practice with meagre resources. On the other hand, while the control has 42.3% in farming, about 14.5 % are into fishing, meaning that 56.8% are involved in the traditional enterprises. While about 8% of women in the treatment have paid employment, only about 6.3% are in the control. Both trading and handicraft accounts for 41.6% of women in the treatment while the control has 27.3%; this implies that more of the women in treatment group are shifting away from the traditional enterprises. This shift maybe attributed to the financial inclusion engineered by the formation of social cohesion orchestrated by the NFWP.

Similarly, about 13% of the women in treatment group are not formally educated while about 18% was recorded among the control. This does not make much difference as the choice of treatment or control is not essentially made by the respondents. However, of much interest is that is the earning of women in both group. While about 31% of the women in treatment group earn between NGN1000 to NGN150,000 (1 USD to 150USD) annually, about 66% of the women in the control group earn within similar range. This implies that while only about 34% of women in the control group earn more than NGN150,000 (150USD) in a year about 69% of the women in treatment earn same. Nevertheless, while about 12% of the treatment earn above NGN300,000 (300USD) per annum, only 4% of women in the control earn such. This is to say that, though there may seem to be a big difference between the two groups, but, regardless

of group a woman belongs to, the average annual income of women in Nigeria is still far low, showing there is still a high level of poverty in the land.

4.2 Distribution of the Women under Major Challenges Hindering Social Cohesion¹

Analysis (Figure 1) reveals that while about 6% of the respondents are not taking part in social because they are not married, about 14% are in similar situation due to lack of access to farming inputs to generate enough fund to enhance their status to join cooperatives or form one. Others include about 8% facing the challenge due to not having male children, and about 19% who are in the situation for their refusal to consent to customary norms. Most noticeable is poor access to capital which accounts for about 32%, and lack of consciousness of the right of women in the communities.

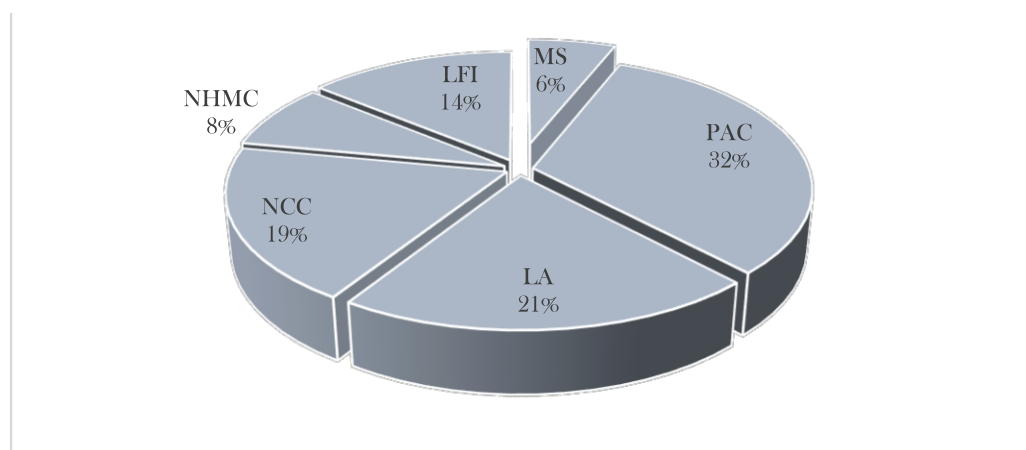


Figure 1: Percentage distribution of the women under key problems impeding social cohesion

Source: Computed from the field data by authors

4.2 Distribution of NFWP intervention by nature of women empowerment in Nigeria

Analysis (Figure 2) shows the nature of empowerment obtained by community women in treatment group. Analysis reveals that, the programme was really well spread to touch many issues that will stimulate women enablement and social *capital* formation. According to the reaction of the women in the treatment group, the execution of NFWP using the WAG model is spread and rated thus: provision of subsidized farming/fishing inputs for women got (10%) of the intervention; skill acquisition and business training (18%); advocacy visits to relevant stakeholder (13%); policy dialogues to consolidate the right and voice of women (14%); provision of short loans aimed at women only (11%); provision of seed grant for women entrepreneurs (9%), and the rest (25%) accounted for sponsoring of women corporative groups.

¹ MS = Marital Status, PAC = Poor Access to Capital, NCC = Not Consenting Custom, LA = Lack of Awareness NHMC = Not Having a Male Children, LFI = Lack of Farming input

This is evidence that notable efforts are being made by the executors of the NFWP to enhance the predicament of Nigerian women in the areas identified above. This shows that, though NFWP involvement in women empowerment may still be small, the NFWP using the WAG model is making cautious and significant efforts in seeing that the intervention is uniformly spread across the essential areas. Hence, any further increase in investment in the areas will go a long way in improving women's active participation in socio-economic undertakings in the country.

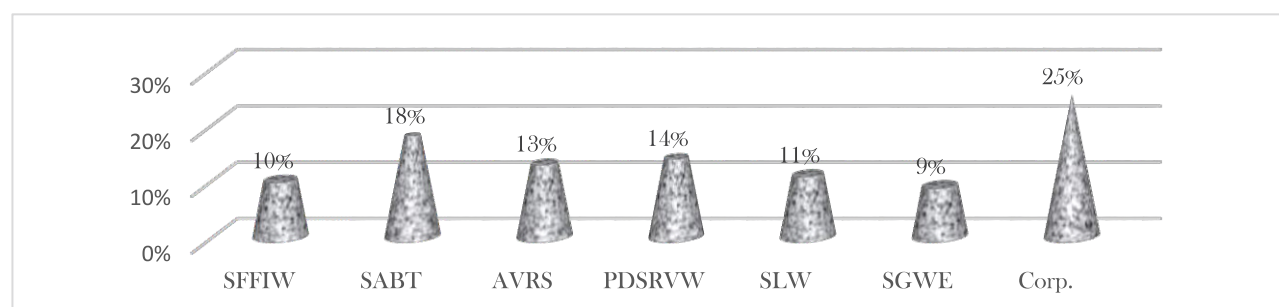


Figure 2 ². Percentage distribution of NFWP intervention by nature of women empowerment in Nigeria

Source: Computed from the field data by authors

If the NFWP will raise interventions intended to empower women (mostly the rural) towards social cohesion and removal of structured obstacles by 1%, the effect will be felt in so many areas. This finding agrees with de Hoop *et al* (2021), in that working as production cooperatives, marketing groups and savings associates, women groups of the NFWP can stimulate production and aid women in sustaining control over their additional incomes.

4.4 Econometric analysis

We assessed the average variances in the basic propensity scores between the treatment and the control along the features of social cohesion highlighted in the theory. In all, the variance in means shows that the scores on the side of the treatment and scores on the side of the control considerably vary at 5% significant level. We viewed the mean score as the treatment effect of the treatment (implementation of NFWP) on each of the variables measured. The variance in scores are as follows: for social networks improvement, the difference in mean score was about 21%. This shows that in the states where NFWP has been implemented, social network formation of the women increased by about 21% compared to the states where it has

² SFFIW = Provision of Subsidized Farming/Fishing Inputs for Women, SABB Skill Acquisition and Business Training, AVRS = Advocacy Visits to Relevant Stakeholder, PDSRVW = Policy Dialogues to Strengthening the Right and Voice of Women, SLW = Provision of Short Loans Targeting only Women, SGWE = Provision of Seed Grant for Women Entrepreneurs, Corp. = Sponsoring of Women Corporative Groups

not. About 22% difference was also noted in the issue of diversity in acceptance of women, showing an increase of about 22% in the level of acceptance of individuals with different backgrounds and lifestyles as equal members of society among the treatment group (states where NFWP has been implemented) compared to the counterfactual.

Table 4. Comparison of mean score and observable characteristics between treatment and control (N = 2400)

Score in Percentage of maximum score	Recipients	Non Recipients	Difference
Scores on social networks improvement	34.62	13.87	20.75**
Scores on diversity acceptance	38.54	16.23	22.31**
Scores on trust in people and creation of partnerships	42.88	15.76	27.12**
Scores on identification and sense of belonging	41.37	16.18	25.19**
Scores on trust in institutions and formation of cooperatives	31.31	20.43	20.88**
Scores on perception of fairness equal access to inputs	45.31	17.45	27.86**
Score on solidarity and helpfulness in building of livelihoods	46.72	23.31	23.41**
Scores on respect for social rules and norms concerning gender	39.65	23.82	15.83 **
Scores on civic participation deterring gender structural barrier	42.25	21.48	20.77**
Score on total economic capability of respondents	54.13	24.82	29.31**
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	1200	1200	

Source: Computed from the field data by authors

Also, around 27% difference was seen in trust in people and creation of partnerships 27% the implementation of the NFWP has increased the level of interpersonal trust among the treatment to a significant level. Others are: about 25% increase in identification and sense of

belonging, showing that the programme has significantly enhanced how the women of the recipient states feel connected with their geographic area and also want to identify with it. About 21% increase was recorded as the variance among the women's trust in institutions and formation of cooperatives. This indicates that the level of confidence women in the treatment group have in political institutions have significantly improved and such trust has also helped with formation of social groups like cooperatives. In the perception of fairness equal access to inputs and other factors of production, the variance recorded was about 28% signifying that level of believe of the women in the treatment group that individuals are being treated fairly in their communities have significantly improved. This can also be seen in solidarity and helpfulness in building of livelihoods where the recorded variance is about 23%, meaning that the level to which women in the treatment groups feel a responsibility for and willingness to help others have increased significantly. Respect for social rules and norms concerning gender increased by about 22%, implying that how individual respondent women respect the fundamental rules of society and how their own rights are being respected have improved as a result of the programme. Also civic participation of women in the treatment group increased by about 20%, meaning that deterring gender structural barriers in entrepreneurship and corporative formation have significantly improved. Finally, all this summed together have significantly affected the total economic capability of a respondent woman increasing it by about 29%.

Looking at the chosen observable characteristics, we also noted significant differences in Age (1.21%), Education (1.81%), Marital Status (0.22) Primary Occupation (1.86) Household Size (-2.45), Annual Income (7.13) and Income of other household members (18.22). On the household characteristics, access to road and other civic infrastructure has positive and significant difference of (2.15), access to shelter (4.74), access to portable water (2.72), access to medical care (4.11), socio-economic activities participation (3.21).

The implication of this is that, because of the implementation of NFWP in the treatment states, the economic capacity of women in the state increased by about 29% compared to women in other non-recipient states. This increase is possible because the three major feature of social cohesion (Focus on the common good, Connectedness and Social relations) according the narrow argument were positively affected. This outcome tallies with Desai *et al* (2018), in that the execution of NFWP has really had a substantial effect in social capital formation of the communities where intervention has been executed. The result also corresponds with de Hoop *et al* (2021), in that implementation of the NFWP have made impact on the education, job/occupation, and income/revenue of women and even on their family/household

members. With this predicted result, we can substantiate the third objectives of the study and can positively assert that the NFWP is making significant effects on the women's social cohesion in the communities of Nigeria in the area of removal of structural hitches deterring women's involvement in socio-economic activities and reducing social cohesion gaps to improve rural women's means of livelihood.

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

Variables³	Coefficient	Odd Ratio	Marginal Effect	Std. Error
Constant	8.124	2.842	.00231	.652
Pri_Occ	0.251	.352	.0120*	.124
Age	-0.103	.313	.0021	.013
Edu	0.278	.342	.041**	.016
M_Sta	0.034	1.321	.0203	.123
Anu_Inc	-0.024	.521	.028	.032
Inc_OHhM	-0.234	.321	.042	.032
ProG_Mgt	0.012	.328	.110	.034
NFWP Perception	1.123	6.831	.123*	.031
Part_Ben	0.739	1.451	.0012***	.021
Observation	2400			
Likelihood Ratio - LR test (p=0)		$X^2(1) = 1421.407^*$		
Pseudo R ²	0.65			

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

Source: Authors' compilation based on household survey.

Applying the model in equation 3 above, we used the characteristics that capture pertinent observable differences of both the treatment and control groups and forecasted the probability of the women receiving treatment. Analysis (Table 5) shows the marginal effect and standard error as well as the estimated coefficients and the odd ratio expressed in terms of odds of $Z=1$. In the single observation, we noted that, primary occupation, highest educational level, NFWP perception, programme management system, and participations benefits are factors that positively impact on the woman's seeking participation in Nigeria for women programme. Also, age of the respondent, annual income and income of other member of the respondent's household has a negative influence on participation.

³ Age = age of respondent, Pri_Occ = primary occupation of respondent, Edu = Highest level of education of respondent, Anu_Inc = Income of the respondent, ProG_Mgt = management system of programmes, M_Sta = Marital status of respondent, Part_Ben = evidence of benefit of participants and Inc_OHhM = income of other household members

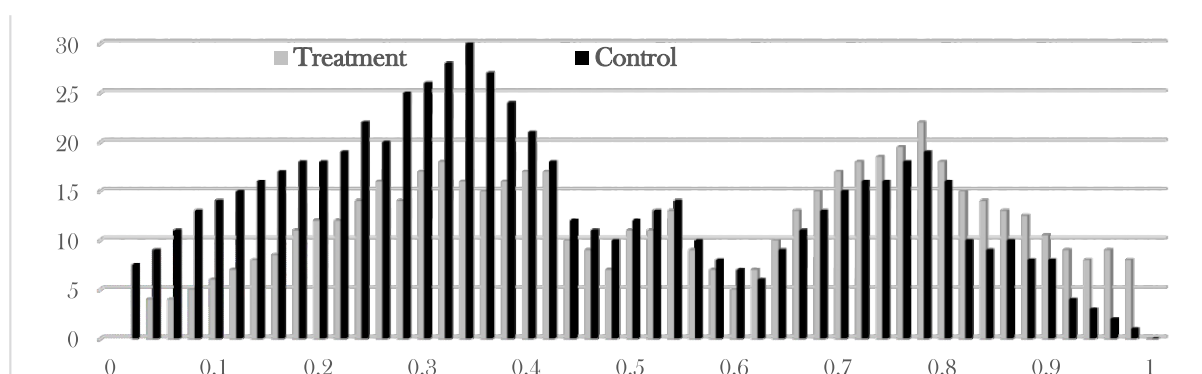


Figure 3: Propensity score distribution of both treatment and control

Source: Authors' compilation based on household survey

Table 6. Estimated impacts of NFWP on women's formation of social cohesion using 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 social networks improvement	34.62	13.87	20.75**
Scores on diversity acceptance	38.54	16.23	22.31**
Scores on trust in people and creation of partnerships	42.88	15.76	27.12**
Scores on identification and sense of belonging	41.37	16.18	25.19**
Scores on trust in institutions and formation of cooperatives	31.31	20.43	20.88**
Scores on perception of fairness equal access to inputs	45.31	17.45	27.86**
Score on solidarity and helpfulness in building of livelihoods	46.72	23.31	23.41**
Scores on respect for social rules and norms concerning gender	39.65	23.82	15.83**
Scores on civic participation deterring gender structural barrier	42.25	21.48	20.77**
Score on total economic capability of respondents	54.13	24.82	29.31**
Observations	1,200	1,200	
Radius matching			
	Using all neighbor within caliper of 0.8		
Scores on improvement of social cohesion	33.31	22.32	10.99**
Scores on social networks improvement	23.84	17.35	6.49**
Scores on diversity acceptance	28.82	21.89	6.93**
Scores on trust in people and creation of partnerships	26.41	18.47	7.94**
Scores on identification and sense of belonging	31.49	27.63	3.86**
Scores on trust in institutions and formation of cooperatives	29.21	20.78	8.43**
Scores on perception of fairness equal access to inputs	27.24	21.82	5.42**
Score on solidarity and helpfulness in building of livelihoods	33.41	23.58	9.83**
Scores on respect for social rules and norms concerning gender	27.49	19.43	8.06**

Scores on civic participation deterring gender structural barrier	31.21	22.25	8.96**
Score on total economic capability of respondents	21.84	14.51	7.33**
Observations	570	1150	
Kernel-based matching	Using a bi-weight kernel function and a smoothing parameter of 0.06		
Scores on social networks improvement	26.32	17.56	8.76**
Scores on diversity acceptance	29.26	15.33	13.93**
Scores on trust in people and creation of partnerships	25.64	17.32	8.32**
Scores on identification and sense of belonging	25.62	13.31	12.31**
Scores on trust in institutions and formation of cooperatives	21.32	14.21	7.11**
Scores on perception of fairness equal access to inputs	19.26	16.82	2.44**
Score on solidarity and helpfulness in building of livelihoods	21.33	14.52	6.81**
Scores on respect for social rules and norms concerning gender	20.54	17.43	3.11**
Scores on civic participation deterring gender structural barrier	20.54	14.35	6.19**
Score on total economic capability of respondents	25.62	25.612	0.008**
	575	900	

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

Source: Authors' compilation based on household survey.

In line with the probability of treatment as predicted in the model, the impact of NFWP on social cohesion of the women, we estimated the average treatment test (ATT). This was done when we have fully certified that the observations were ordered arbitrarily and that there were no large disparities in the allocation of propensity scores as shown above (Figure 3). The nearest neighbour matching (NNM) yielded the highest and most significant treatment effect. These effects were estimated in line with the following outcome categories: social networks improvement trust in people and creation of partnerships, identification and sense of belonging, trust in institutions and formation of cooperatives, perception of fairness equal access to inputs, solidarity and helpfulness in building of livelihoods, respect for social rules and norms concerning gender, civic participation deterring gender structural barrier and total economic capability of respondents.

Analysis (Table 6) shows the NNM estimate of scores on improvement of social networking to be approximately 21%. However, because we thought that NNM method may have yielded poor result due to inadequacy of information, we moved to other algorithm methods (Radius and Kernel-based matching). Nevertheless, using radius matching algorithm, the estimate of scores on improvement of social networking of women was approximately 11% while Kernel-based matching algorithm yielded an average treatment effect approximately 9%. To this, we say that the NFWP have yielded significant gains in women's formation of social cohesion in 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
Prog_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
NFWP 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) shows the overall balance of all covariates between the treatment and control. This confirms that the NNM is of higher quality and yielded a better result when compared to others. The NNM is reasonably below the threshold of 5% while the kernel-based matching and radius in both the mean and the median of the absolute standardized difference 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 social networks improvement	0.0001	0.0023	0.0020	0.0150	0.0012
Scores on diversity acceptance	0.0001	0.0101	0.0311	0.1002	0.0018
Scores on trust in people and creation of partnerships	0.0001	0.0001	0.0013	0.0104	0.0045
Scores on identification and sense of belonging	0.0001	0.0021	0.0010	0.0105	0.0002
Scores on trust in institutions and formation of cooperatives	0.0001	0.0001	0.0016	0.0031	0.0023
Scores on perception of fairness equal access to inputs	0.0001	0.0042	0.0018	0.012	0.0104

Score on solidarity and helpfulness in building of livelihoods	0.0001	0.0013	0.0031	0.0512	0.0123
Scores on respect for social rules and norms concerning gender	0.0001	0.0211	0.0012	0.0123	0.0062
Scores on civic participation deterring gender structural barrier	0.0001	0.0012	0.0021	0.0141	0.0071
Score on total economic capability of respondents	0.0001	0.0171	0.0013	0.1202	0.0018
Radius matching	Using all neighbors within a caliper of 0.01				
Scores on social networks improvement	0.0001	0.0021	0.0031	0.0104	0.0345
Scores on diversity acceptance	0.0002	0.0201	0.0022	0.0023	0.0162
Scores on trust in people and creation of partnerships	0.0001	0.0021	0.0004	0.0114	0.0005
Scores on identification and sense of belonging	0.0002	0.0171	0.0043	0.1201	0.0015
Scores on trust in institutions and formation of cooperatives	0.0001	0.0051	0.0016	0.0311	0.0003
Scores on perception of fairness equal access to inputs	0.0001	0.0041	0.0113	0.0011	0.0401
Score on solidarity and helpfulness in building of livelihoods	0.0001	0.0042	0.0018	0.002	0.0130
Scores on respect for social rules and norms concerning gender	0.0001	0.0021	0.0315	0.021	0.0025
Scores on civic participation deterring gender structural barrier	0.0001	0.0021	0.0043	0.0104	0.0415
Score on total economic capability of respondents	0.0002	0.0241	0.0102	0.0003	0.0102
Kernel-based matching	Using a bi-weight kernel function and a smoothing parameter of 0.06				
Scores on social networks improvement	0.0001	0.0013	0.0017	0.0012	0.0103
Scores on diversity acceptance	0.0001	0.0003	0.0020	0.0015	0.0022
Scores on trust in people and creation of partnerships	0.0001	0.0001	0.0003	0.0104	0.0045
Scores on identification and sense of belonging	0.0001	0.0003	0.0020	0.0004	0.0022
Scores on trust in institutions and formation of cooperatives	0.0002	0.0171	0.0243	0.1820	0.0118
Scores on perception of fairness equal access to inputs	0.0001	0.0031	0.0016	0.0301	0.0213
Score on solidarity and helpfulness in building of livelihoods	0.0001	0.00213	0.0020	0.0150	0.0322
Scores on respect for social rules and norms concerning gender	0.0001	0.00213	0.0020	0.0015	0.0012
Scores on civic participation deterring gender structural barrier	0.0001	0.00143	0.0017	0.0102	0.0123
Score on total economic capability of respondents	0.0001	0.00170	0.0022	0.0021	0.0252

Source: Computed from the field data by authors

Analysis (Table 8) shows that the kernel based matching method generated more robust treatment effect compared to NNM and RM with regard to estimates to hidden bias in the ten variables assessed which includes the scores on social networks improvement trust in people and creation of partnerships, identification and sense of belonging, trust in institutions and formation of cooperatives, perception of fairness equal access to inputs, solidarity and helpfulness in building of livelihoods, respect for social rules and norms concerning gender, civic participation deterring gender structural barrier and total economic capability of respondents. This is why there is a probability that matched pairs may vary by up to 100% in unobservable characteristics, while the effect NFWP on the above mention variables would still be significant at a level of 5% (p -value = 0.0012, 0.0018, 0.0045, 0.0002, 0.0023, 0.0104, 0.0123, 0.0062, 0.0071, 0.0018) respectively. Same categories of knowledge score are robust to hidden bias up to an influence of $e^{\gamma} = 2$ at a significance level of 10% following the radius matching approach. This finding suggest that, the NFWP interventions are making some efforts in removal of structural hitches deterring women's involvement in socio-economic activities and reducing social cohesion gaps to improve rural women's means of livelihood.

Overall, our findings consent with Dragolov, G., Ignacz, Z.S., Lorenz, J., Delhey, J. and Boehnke, K. (2013) in that by improving women's social relations, connectedness and focus on the common good, formation of strong women groups and removing structural hitches deterring women's involvement in socio-economic activities will be easily achieved. This is because there is a need to fill the gaps in social cohesion between men and women so as to improve rural women's means of livelihood. Formation of strong women group is active means that is expected to work toward bringing down transaction costs, pooling risks, raising confidence, and bettering skills of women. Achieving social cohesion among women leads to collective actions of women groups that can raise capital and proffer solution to gender gaps in other areas. The results of this study also validate that women's groups can be a stepping stone for closing the gender gap in involvement in other civil society organizations and government bodies in Nigeria. The outcomes are consistent with the liberal feminist theorists (Fisher *et al*, 1993; Unger and Crawford, 1992), in that, women would behave just like men if they had equal access to openings available to men which includes education, social cohesion, and other resources. The finding of this study also agrees with Rogers (2014) theory of change, in that working through women's organizations may be the greatest way to fortify women's social capital and build confidence for women to partake actively in groups.

But in extension and contribution, if we are to contribute on how social cohesion can advance female entrepreneurship development in Nigeria, we would argue that NFWP can be an active player in progressing gender equality when venture in building women's social cohesion is arranged via women's groups, which can be an active way to heighten information

exchange and resource circulation, pool risk, and see to the endorsement of women's voices being heard in working out plan of action at all levels in Nigeria. This is essential so that NFWP interventions can better gender equality by reducing the social cohesion gap in Nigeria. We make the claim that NFWP using WAGs model is in the right position to address some of the logistical and cultural hitches faced by women groups in Nigeria.

5. Concluding remarks, caveats, and future research directions

This study aims to examine the effect of Nigeria for Women Project (NFWP) on social cohesion in Nigeria. Both descriptive and inferential statistics were employed to answer the research questions and test the hypotheses of the study. Both primary and secondary data were used to form the baseline and end line data. The primary data were derived from a sample of 2400 women selected across the six geopolitical zones using multiple sampling techniques. Findings from the use of a combined propensity score matching and logit model show that though scrumpy, the NFWP intervention aimed explicitly for the empowerment of women, using the WAG model has recorded substantial set up in enhancing women's social cohesion via advocacy, creation of awareness, provision of credit, exposing women to skill acquisition, among other undertakings. The result suggests that bringing up NFWP budget that seeks to increase involvement of women in women's groups, aimed at surging women's social cohesion, particularly in the rural communities will assist women and girls in overcoming impoverishment in the country. This suggests that women's groups and other forms of collective action can be useful in building social cohesion and addressing gender problems (gaps) in other areas as well, via lowering transaction cost, pooling risks, bringing up confidence, and skills development. In terms of consequence in practice, it is obvious from the results that building women's social cohesion is offered as an active strategy to better information exchange and resource circulation, as well as seeing to women's voice being heard in making decisions for community development projects.

This investigation adds to the literature on gender debate in social cohesion and agriculture for rural development in five notable ways. Firstly, we identify the degree of rural women's involvement in Nigeria for Women Project (NFWP) Initiative. Secondly, the research provides insight into the usefulness of NFWP investment in women's group for developing female entrepreneurs in rural areas. Thirdly, unlike the former studies, this study makes use of a quantitative methodology, keeping in mind that quantitative works on social cohesion in the region are lacking. Fourthly, the investigation seeks to explore the implications of social cohesion in female entrepreneurial collaboration. Fiftly, we put forward policy suggestions by proposing the moderation of social cohesion as a means to sustain female entrepreneurs innovations in a rural African farmer context. The main caveat of the study is its limitation to the scope of Nigeria. Thus, the results cannot be widespread in relation to other developing regions with the same policy problems. In the light of this inadequacy, reproducing the analysis in other evolving countries will be useful in determining whether the established nexuses endure empirical scrutiny in diverse contexts of emerging regions.

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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Appendix A

DRAFT QUESTIONNAIRE

Nigeria for Women Project (NFWP) Empowerment Programme

State _____ LGA _____

City/Town _____

Name of Respondent: _____

Name of Enumerator: _____ Enumerator's ID _____

1. Age Bracket:

- a) Between 20 – 30 [] b) Between 31 – 40 [] c) Between 41 – 50 []
d) Between 51 – 60 [] e) Above 60 []

2. Marital Status:

- a) Married [] b) Single [] c) Separated [] d) Widowed [] e) Divorced []

3. Number living in household at present (Household Size):

4. Highest Educational Qualification of Respondent:

- a) None [] b) Primary [] c) Secondary [] d) Tertiary []

5. Religion of the Respondent

- a) Christianity [] b) Islam [] c) Traditional d) others []

6. Employment status of Respondent

- a) Government/Private non-farm Paid Employment [] b) Self-employed (non-farm) []
c) Full Time Farming [] d) Full time Student [] e) Unemployed [] g) Others []
]

7. If self-employed, what is the major occupation of Respondent?

- a) Trading [] b) Handicraft e.g mechanic, welding, bicycle repairs, etc [] c) Palm wine
Tapping [] d) Others (Pls Specify _____)

8. If in other employment, are you involved in part time farming

- a) Yes [] b) No []

9. What is the employment status of your husband (if married)

- a) Government Paid Employment [] b) Private Paid Employment [] c) Farming [] d)
Trading [] d) Handicraft (eg brick-laying, carpentry, motor mechanics, bicycle repairing
etc. [] e) Unemployed [] g) Others [] Pls Specify

10. If engaged in handicraft, what are the major handicrafts you are involved? (tick as many as applied)

Handicraft	Fully involved	Partly involved	Not involved
Leather Work			
Textile Making			
Grass and Cane weaving			
Ceramics work			
Painting/Makeup art			
Fibre Making			
Bead and Jewelry Making			
Local Pottery			
Hair braiding, plaiting and weaving			
Sculpture/wood work			
Ivory Carving			
Calabash Decorations			
Cloth Weaving			
Brass work			
Bronze Work			
Tie and Dye Textile			

11. How long have you been engaged in this your current employment:

a) 0- 10 Years [] b) 11- 20 Years [] c) 21 - 30Years [] d) 31 - 40 Years [] e) Above 40 Years []

12. What is your range of monthly income from your current employment?

a) (0- 50,000) [] b) (51,000 – 100,000)[] c) (101,000 – 150,000) [] d) (151,000- 200,000) []

e) (201,000 – 250,000) [] f) (251,000 – 300,000) [] g) (301,000 - 350,000) [] h) 351,000- 400,000 [] i) Above 400,000) []

13. If you are involve in farming, what is the size of your farm:

a) 0 - 1 hectare [] b) 2- 3 hectares [] c) 4 - 5 hectares [] d) 6- 7 hectares [] e) Above 7 hectares []

14. 0 - 1 hectare

15. Do you or any other person(s) in your household earn off farm income

a) Yes [] b) No []

16. If yes, what is the range of the monthly income from other household members put together

- a) (0- 50,000) [] b) (51,000 – 100,000) [] c) (101,000 – 150,000) [] d) (151,000- 200,000) []
- e) (201,000 – 250,000) [] f) (251,000 – 300,000) [] g) (301,000- 350,000) [] h) 351,000- 400,000 [] i) Above 400,000) []

Section B Knowledge and Participation in NFWP

17. Are you aware of the NFWP and their programmes?

- a) Yes [] b) No []

18. If Yes to question 17 above, have you accessed any of their programmes?

- a) Yes [] b) No []

19. If Yes to question 18, from 1- 10 (10 the most important) rate the activities of the NFWP in the following area

Activities	Rate 1 - 10
Provision of housing and shelter for women	
Provision of healthcare services	
Provision of education and training for women	
Formation and maintenance of women functional cooperatives	
Provision of fishing inputs for women	
Environmental and socio-cultural justices for women	
Provision of agricultural and rural farming for women	
Skill acquisition and training for women	
Provision of policy advocacy and dialogue for women's liberation	
Encouraging women in Eco-Cultural tourism	
Creating partnership for women affinity groups	
Provision of credit to enhance women's access to funds	

20. In your own opinion, are there anything the NFWP supposed to do to the beneficiaries?

- Yes [] No [] c) No idea []

21. If Yes, to question 20 above, can you tell us more about that? -----

22. If NO to question 18 above, why have you not access their programme?

- a) It is not implemented in my state [] b) It requires rigourous documentation [] c) You must know someone []
- d) I am not a member of the ruling party [] e) I cannot cope with the membership fees []
- f) Others [] Please specify _____

23. Kindly score you community women in the following areas

	High	Moderate	Low
Availability and access to credit			

Availability and access to farming and fishing inputs			
Freedom to operate in socio-economic and political activities.			
Economic capability of women household heads			

24. If your community has been participating in NFWP, has there been any change in the following areas?

	Yes	No
Availability and access to credit		
Availability and access to farming and fishing inputs		
Freedom to operate in socio-economic and political activities.		
Economic capability of women household heads		

25. If Yes to question 24, how can you rate the change?

	High	Moderate	Low
Availability and access to credit			
Availability and access to farming and fishing inputs			
Freedom to operate in socio-economic and political activities.			
Economic capability of women household heads			

26. To what extent can you attribute the Change in the community's participation in the CDBS?

	None	1-20%	21-40%	41-60%	61-80%	81-100%
Availability and access to credit						
Availability and access to farming and fishing inputs						
Freedom to operate in socio-economic and political activities.						
Economic capability of women household heads						

27. In your community, when a woman is sick, how is she treated?

- a) By a qualified doctor in a hospital [] b) We buy drugs in a drugstore (chemist) []
c) We see a traditional medical expert [] d) We treat him/her ourselves [] e) We just pray []
f) We do nothing [] g) We take other actions (pls specify)_____

28. How and where do your community people get drinking water?

- a) Tap [] b) Stream [] c) River [] c) Borehole [] d) Hand dug Well [] e) Rain Water []
Other (pls specify)_____

29. Educational qualifications of members of the household?

Level of schooling	No in Household
No schooling	
Primary education	
Junior secondary education	
Senior secondary education	
College of Education/Polytechnic	
First Degree (University)	
Postgraduate Qualifications (PGD, MSc, PhD, etc)	
Other (Special, Islamic, etc) Education	

30. Do you have any project(s) in education (School Building, Library, Scholarship etc?) in your community sponsored under any NFWP?

a) Yes [] b) No []

31. If Yes to 30 above, how has it affected the development of women education in your community?

a) It has provided more opportunities to the less privileged []

b) It has widened the inequality gap []

c) It has increased the level of literacy in the community []

d) It has not made any impact []

32. Do you have any health project(s) (hospitals, maternities, HIV test Centre etc) sponsored under NFWP in your community? a) Yes [] b) No [] c) No Idea

33. If yes to 32, how has it affected the development of women in your community?

a) It has provided more access to health care facilities []

b) It has reduced the incidence of infant mortality []

c) It has reduced the incidence of maternal mortality []

d) Has made no impact []

34. Do you have any water project(s) (Boreholes, Taps etc) sponsored under NFWP in your community?

a) Yes [] b) No [] c) No Idea

35. If yes, how has it affected the development women in your community?

a) It has provided more access to clean water []

b) it has reduced the incidence of water born diseases []

c) it has increased labour man-hour by reducing the amount time spent going to stream []

d) it enhances the breeding of mosquitoes []

e) it has not made any impact []

36. Name any other project sponsored under NFWP in your community

42 At what state is each of the projects?

Project	Completed and in use	Completed but not yet in use	Nearly Completion	Just Started	Just Proposed
Housing and shelter					
Health services provision					
Education provision					
Fishing input provision					
Agric. & farm input provision					
Skill Acquisition					

43 In your opinion, what is the impact of such project on development of your community?

44 In your view, what do you think the impact of NFWP overall is with respect to women? empowerment

a) Positive [] b) Negative

45 If Positive, in what ways do you think it helps?

We thank you most sincerely for your time and support in completing this questionnaire.

Name of Enumerator: _____

Signature: _____ Date: _____