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Graduate entrepreneurial fund scheme, and its income potentials among youth farmers. An impact analyses of south west Nigeria youth farmers

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ABSTRACT: Assessment of the youthful contributions to the Nigerian GDP has suffered considerable neglect hence, this study sets out to analyse how the Graduate Entrepreneurial Fund (GEF) scheme impacted income level among agricultural participants, using a multi-staged sampling procedure to randomly select 138 respondents, and analysed with; Descriptive statistics, and Propensity score matching. Analytical findings revealed that the graduate farmers who participated in the GEF programme were around the prime-productive age of about 30 years, while the majority of the participants were unmarried, in households constituting of at least 6 persons, but the majority are not Agricultural study backgrounds, and graduated at least four years ago from tertiary institutions, while primarily engaged in agriculture, unlike their non-beneficiary counterparts. The results further showed a significant impact of the GEF programme on income among participants, with the monthly income from GEF programme Agricultural participants exceeding that of the nonparticipants by about 43.2%, showing that the GEF scheme favourably positioned the income earning capacity among the scheme participants. In comparison, it will require about 76.1% monthly income shift on average for a nonparticipant to bridge the existing income gaps. Hence, more youth-oriented agricultural empowerment should be prioritised towards boosting the earning potentials of unemployed youths in the country. This, aside from income earning promotion among them, will consequently boost local food market supply towards tackling food shortages linked- multidimensional poverty, while enhancing favourable foreign trade balance via increased exportation in the various Agro sub-sectors, given her resource abundance yet untapped.

Keywords: Agricultural participants, econometric analyses, Graduate Entrepreneurial Fund, impact assessment, participants income, South West Nigeria.

INTRODUCTION

In Nigeria, the Agricultural sector contributed an average of 24% to the nation's GDP over seven years (2013-2019), particularly, it contributed 20% in 2020, while the sector also provided employment to 36% of the country's labour force in 2020 (NBS, 2020) but, the discovery of crude oil in commercial quantity led a decline in the resource allocation to agriculture which reduced its contribution to the National GDP (Tonuchi and Onyebuchi, 2019).

The aforementioned also influenced the employment in, and income level earned from Agriculture, hereby raising the need to intensify the Agricultural potentials of the Nation, to support the increasing needs of the teaming population, while the National population was reported to have reached about 167 million people in 2012 (NISER,

2013) with almost half of the population constituting youths (NPC, 2013), and about 11.1 million youths were reported unemployed in 2012 (NISER, 2013).

Besides, the threat of food insecurity as a result of the subsistence approach of the dominant ageing farming population and massive youth unemployment has prompted the establishment of diverse government initiatives which are private-sector driven, but government-enabled (Ajani *et al.,* 2015). some of them include; the Growth Enhancement Support (GES) Scheme, FADAMA III, Livelihood Improvement Family Enterprise for the Niger Delta (LIFE-ND), International Institute of Tropical Agriculture (IITA) Youth Agripreneurs (IYA), Youth Entrepreneurship Development Programme (YEDP), FADAMA GUYS and Graduate Entrepreneurship Fund (GEF) programme.

Also, while the YEDP and IYA are currently suspended, FADAMA III was concluded, Nigeria Incentive-Based Risk Sharing System for Agricultural Lending- NIRSAL, Staple Crops Processing Zones- SCPZ, Ovaioza Skills Acquisition Center- OSAC and Agric, Small and Medium Enterprise Scheme- AGSMEIS programmes are not focused on the youth population exclusively, but the GEF programme is a recently initiated programme focused on the youths to cushion employment related inadequacies and enhance economic development via creating 5,000 direct jobs and 25,000 indirect employments annually.

The NYSC certificates of beneficiaries secure their collateral until the loan is fully amortised, while the beneficiaries are trained intensively across the Nation. They are thereafter empowered with a loan of up to ₦2,000,000. at no interest within 3-5 years. The funding structure also covers machinery and equipment provision for the beneficiaries and working capital is provided including the purchase of raw materials, leases or rentals of premises, operating costs, renovation, insurance of assets, utility bills, etc.

According to Bairwa *et al.* (2014), agripreneurship holds numerous potentials which can contribute to a range of economic and social development including employment and income generation, poverty alleviation, nutrition, health, as well as food security. It is also believed that the engagement of the young in agribusiness will not only help reduce youth unemployment but also has great implications for poverty eradication, food security and economic development (Yami *et al*., 2019). Hence should demand considerable assessment.

There is scanty empirical work on whether or not, and how well the GEF scheme is meeting its targets since its inception and some of the few existing literature includes; Anekwe *et al*. (2018), who studied the effect of entrepreneurship development on poverty alleviation in Nigeria, identified entrepreneurship development as a key tool to combat poverty; and stimulate employment of youths in developing countries.

Auta (2010) assessed rural youth participation in agriculture, their access to production resources and services alongside the effects of youths' access to inputs on farm productivity and youths' welfare, via a multi-staged sampling technique among 108 rural youths. The study used descriptive statistics and obtained that the majority of the rural youths were involved in agricultural activities for subsistence and sales while earning between ₦10,000 - ₦50,000 monthly from agricultural activities. Findings also reported that inputs were not readily available in their communities. Their study was however limited to descriptive analyses, lacking counterfactual analyses of potential outcome differences, hence, we seek to advance and bridge the identified Research- knowledge gaps. These will further help to reveal the impact of an intervention on the participants, nonparticipants, and the entire population, which is broader, yet inclusive, and using robust methodologies for more impactful policy makings

Wongnaa and Seyram (2014) applied the Probit model to investigate factors influencing polytechnic students' decision to graduate as entrepreneurs. Results of the study showed that personality factors (extraversion, neuroticism, agreeableness), support from family members and friends, occupation of parents, entrepreneurship education, gender and access to finance have significant positive effects on their decision to graduate as entrepreneurs while students' care about public remarks on their decisions had a significant negative effect. To bridge existing research gaps, we set to investigate the impact of an entrepreneurial scheme on income generation among the scheme participants, nonparticipants, and the entire population, for more informed policy-making.

Besides, there may be tendencies that disbursed funds would be diverted into other non-agricultural enterprises by beneficiaries which is much likely to bring about reduced earning/ return, and may even neutralise the goal of the programme especially when there exists no significant counterfactual income level variability. Also, there is a need to assess how much a structured intervention has achieved its goal among its targeted audience.

Furthermore, favourable income statements of investment enterprises funded by external capital posit a higher probability of amortisation, relative to when the income statement is depressive, which flags a tendency of business enterprise-programme failure hence, raising a need for necessary remedying, to mitigate massive loss, and reduce or mitigate intervention scheme failure.

It is therefore important to investigate the existing situations in the highlighted regards. This study is further justified by the need to verify the several constraints that limit graduate participation in the scheme, especially in the study area.

Also, not much is known about the effect of the GEF

scheme on income enhancement within the agricultural sector especially in the study area. Hence, this study therefore specifically intends to assess the impact of the Graduate Entrepreneurial Fund on Agricultural Participants' income in the study area, by providing specific responses to the following research questions;

1. What are the socioeconomic features by GEF scheme participants' status in the study area?
2. what is the impact of the GEF scheme on the income of Agricultural participants in the study area?

METHODOLOGY

Study area and sampling

This study was conducted in Southwest Nigeria, owing to its Agricultural friendly climatic and edaphic conditions. It covers a total land area of 114,213 Km^2 and occupies 14% of Nigeria's landmass, with a population of about 38,257,260 (NPC, 2006). The region is bounded to the North by Kogi and Kwara States, to the South by the Atlantic Ocean, to the East by Edo and Delta States and to the West by the Republic of Benin. The area is dominated by Yoruba-speaking people with other non-indigenes (Figure 1). The annual rainfall average is 1570MM and temperature ranges from 25 - 27.5°C. The soil is deep, well-drained sandy - loam and the natural vegetation is mainly tropical forest. They also rear livestock in the region, such as poultry birds, goats, cattle, rabbits, sheep, and swine.

Primary data collection involved a multi-staged sampling technique for this study via a structured and pretested questionnaire. The first stage involved a purposive selection of two States (Osun and Ondo States) from the six States vis-à-vis; Ekiti, Osun, Lagos, Ogun, Ondo, and Oyo in Southwestern Nigeria. This is because they have the largest percentage of beneficiaries in the zone. The second stage involved stratification of graduates who have completed their NYSC programme into beneficiaries and non-beneficiaries of the Graduate Entrepreneurial Fund in each State. The list of the beneficiaries was obtained from the Bank of Industry in Osun and Ondo States. The third stage involved a total enumeration of sixteen (16) beneficiaries and thirty (30) beneficiaries in Osun State and Ondo States respectively. Also, a randomised selection of 32 non-beneficiaries and 60 non-beneficiaries of the programme in Osun and Ondo States, to make a considerable sample size of 138 respondents for the study.

Analytical techniques

Data collected were analysed using descriptive statistics, and econometric models, while descriptive analyses were done using SPSS version 21.0; Multivariate- Stepwise Regression was achieved using STATA version 15.0.

Propensity Score Matching

To determine the impact of the GEF scheme on the income of the beneficiaries, a stepwise multivariate binary logit regression model was used as follows;

$$P(X) = \Pr\{G = 1/X\} = E \quad (1)$$

Where $G = \{0, 1\}$ is the indicator of exposure to treatment characteristics (dependent variable). That is, G = 1, if exposed to treatment and G = 0, if not exposed. X is a multidimensional vector of observed characteristics (explanatory variables). These variables are those expected to jointly determine the probability of involving in the treatment and outcome.

The principal parameter in the non-experimental framework is the average treatment effect on the treated population (ATT) which is expressed as follows:

$$ATT = £(\Delta Y|G = 1, X) \quad (2)$$

$$= £(Y_1 - Y_0|G = 1, X) \quad (3)$$

$$= £(Y_1|G = 1, X) - £(Y_0|G = 1, X) \quad (4)$$

Where: G = 0/1 denotes control/treatment, respectively, X = set of matching conditioning variables, Y_0 = value of the potential outcome, Y_1 = value of the actual outcome, $£(Y_1|G = 1, X)$ = mean outcome from participation, $£(Y_1 - Y_0|G = 1, X)$ is the mean difference (counterfactual).

Estimating the mean effect of the treatment for the matched pairs:

$$ATT = £[(Y1|G = 1, P(X)] \quad = £[(Y0|G = 0, P(X)] \quad (5)$$

$$ATE = £[(Y1|G = 1, P(X)] \quad - £[(Y0|G = 0, P(X)] \quad (6)$$

Rosenbaum sensitivity formula

We have hidden bias if $\pi_j \neq \pi_k$ for some units j and k. In a sensitivity analysis, we ask how large the differences in π would need to be to change our basic inference. This is achieved through the use of the odds ratio. If π_j is the probability of treatment for unit j, then the odds that unit j receives the treatment is $\pi_j /(1- \pi_j)$. With the same being true for unit k, supposing that we knew the odds ratio of units with the same values of x was at most:

$$\frac{1}{\mu} \leq \frac{\pi j/(1-\pi j)}{\pi k/(1-\pi k)} \leq \mu \quad (7)$$

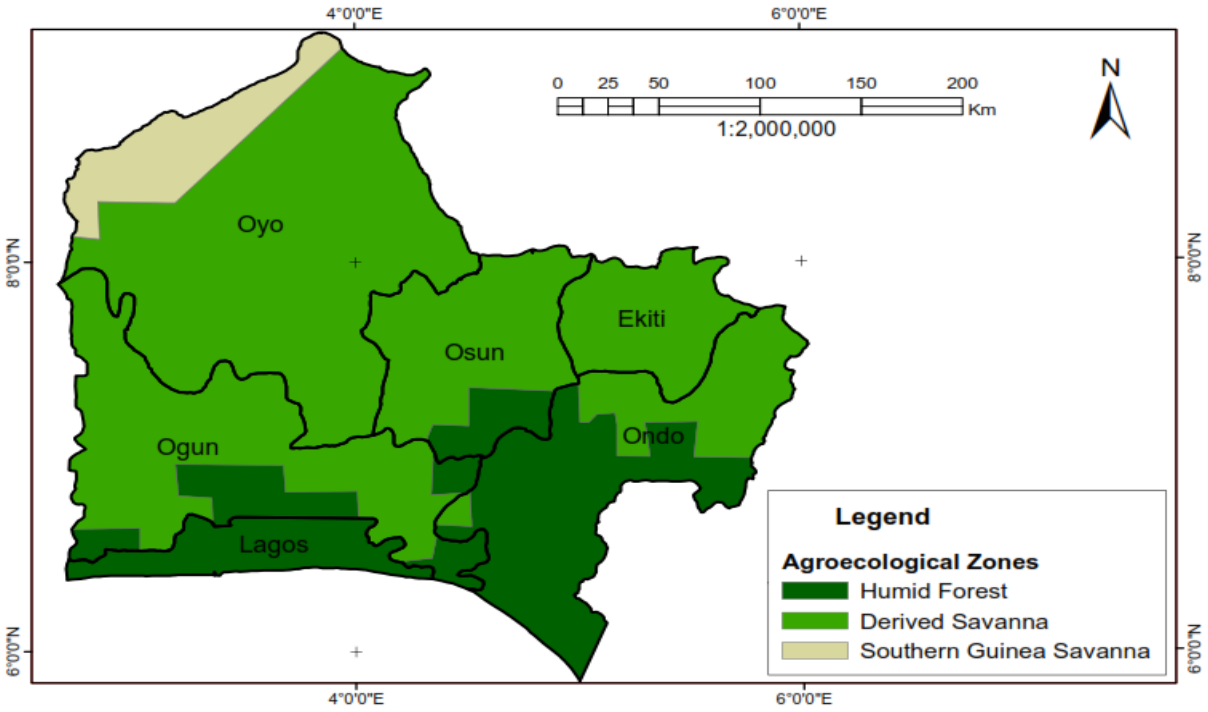

Figure 1. Map of Southwestern Nigeria (Source: Google Map).

If the values of $\mu = 1$, it implies that the odds ratio of treatment is the same and the study is free of hidden bias. If $\mu = 2$, then two units that have the same values of X could differ in their odds of receiving treatment by as much as a factor of 2.

The advantage of this approach over the conventional multiple regression, Probit regression, or logit regression is that it controls for sample normality (selection bias) for its estimates, with a limitation of multiple independent variables effect as selection convergence.

RESULTS AND DISCUSSION

Summary of the socioeconomic characteristics by agricultural participants' statuses

The results presented in Table 1 revealed that the graduate farmers who participated in the GEF programme were around the prime-productive age of about 30 years, and dominated by the male gender (same for the non-participant category), perhaps due to the intensive agricultural labour demands, while majority of the participants were not married and had at least 6 persons in their family. Also, the majority did not specifically study agriculture in school, graduated at least four years ago from tertiary institutions and observed the mandatory service year at least three years ago. Furthermore, most of the Agricultural GEF programme participants primarily engaged in agriculture while most non-beneficiaries engaged in other occupations. Besides, the majority of the participants had access to frequent extension services, 60.9 per cent indicated having a good experience with GEF. The majority enjoyed easy access to the GEF programme, while 46 per cent indicated monthly visit of GEF programme officials (Table 2). The majority reported delay in fund disbursement and indirect payment to the participant as their challenge in participating in the GEF programme and the majority indicated that it took between 1-10 months from their application to nomination (Table 2).

Impact of GEF programme on income of agricultural participants

The impact of the GEF programme on the income of Agricultural participants was estimated, using the nearest-neighbor matching procedures. The result of indicators of covariates after matching; an estimate of the average treatment effect, and the effect on the treated are presented as follows;

The propensity score matching estimates

Table 3 presents the results of the PSM estimates. The

Table 1. Socioeconomic characteristics by participation statuses.

Variable	Participants (n=46) Frequency (Percent)	Non-participants (n=92) Frequency (percent)
Age (years)		
21-25	10(21.7)	11(12.0)
26-30	19(41.3)	32(34.8)
31-35	17(36.9)	49(53.3)
Mean	30.3(±3.9)	32.0(±2.8)
Gender		
Male	32(69.6)	65(70.7)
Female	14(30.4)	27(29.3)
Marital Status		
Single	25(54.3)	44(47.8)
Married	21(45.7)	42(45.7)
Divorced	-	3(3.3)
Separated	-	1(1.1)
Widowed	-	2(2.2)
Household Size		
1-2	-	1(1.1)
3-4	6(6.5)	16(17.4)
5-6	18(19.6)	30(32.6)
6-8	17(18.5)	43(46.7)
>8	5(5.4)	7(7.6)
Mean	5.9(±3.0)	6.8(±2.9)
Highest educational qualification		
Bachelors/HND	34(73.9)	53(57.6)
PGD	7(15.2)	10(10.9)
Masters	4(8.7)	15(16.3)
Professional	1(2.2)	5(5.4)
PhD	-	9(9.8)
Awareness of GEF programme		
Yes	46(100.0)	10(10.9)
Enterprise name		
Poultry	20(43.5)	26(28.3)
Fish farming	18(39.1)	25(27.2)
Cassava/Maize farming	-	17(18.5)
Animal feed production	-	15(16.3)
Vegetables	8(17.4)	9(9.8)
Academic Specialisations		
Agriculture	12(26.1)	30(32.6)
Sciences	14(30.4)	21(22.8)
Humanities	13(28.3)	23(25.0)
Social sciences	7(15.2)	13(14.1)
Life sciences	-	3(3.3)

Table 1. Contd.

Variable	Participants (n=46) Frequency (Percent)	Non-participants (n=92) Frequency (percent)
Year of Graduation (years)		
1-2	11(23.9)	25(27.2)
3-4	15(32.6)	28(30.4)
5-6	21(45.6)	39(42.4)
Mean	4.9(±1.3)	5.2(±0.5)
Primary occupation		
Agriculture	33(71.7)	38(41.3)
Artisan	2(4.3)	13(14.1)
Civil service	3(6.5)	17(18.5)
Business	8(17.4)	24(26.1)
Access to extension service		
Yes	29(63.0)	28(30.4)
Frequency of extension service		
Rarely	-	6(21.4)
Sometimes	3(10.4)	12(42.9)
Frequently	15(51.7)	6(21.4)
Regularly	11(37.9)	3(10.7)
Membership of Cooperative		
Yes	21(45.7)	41(44.7)

Source: Field Survey Data analyses, 2021.

Table 2. Beneficiaries' perception about GEF programme participation

Variable	Frequency (n=46)	Percent
Participation in other government intervention		
Yes	9	19.6
Influence of other government intervention (n=9)		
Yes	8	88.9
Source of knowledge of GEF programme		
Internet	8	17.4
NYSC Officials	38	82.4
Experience with GEF programme		
Excellent	8	17.4
Good	27	58.7
Fair	10	21.7
Poor	1	2.2
Access to GEF programme support		
Easy	33	71.7
Difficult	13	28.3
Frequency of visit of GEF programme officials		
Fortnightly	13	28.3
Monthly	21	45.7
Rarely	12	26.0

Table 2. Contd.

Perception about GEF		
Very good	13	28.3
Good	28	60.9
Fair	5	10.8
Perception about other government program		
Good	15	32.6
Fair	31	67.4
Challenges with GEF program		
Poor monitoring	7	15.2
Low fund disbursed	2	4.3
Inadequate training on enterprise	6	13.0
Delay in Disbursement	2	4.3
Indirect payment to participant	20	43.5
Delay in fund disbursement and indirect payment	9	19.6
Duration from application to nomination(months)		
1-5	11	23.9
6-10	11	23.9
11-15	8	17.4
15-20	5	10.9
>20	11	23.9
Mean	16.3(±5.5)	

Table 3. Indicators of covariate balancing after matching.

Variables	Mean			t-test	
	Treated	Control	%Bias	T	p>|t|
Age	30.255	31.170	-18.5	-0.91	0.324
Formal Education	17.383	16.447	69.5	3.31***	0.001
Household Size	6.189	4.4894	67.2	3.95***	0.000
Off-farm Income	0.02979	0.8085	-106.5	-5.74***	0.000
Enterprise Experience	5.9149	5.4894	12.7	0.84	0.402
Cooperative	0.76596	0.2553	105.0	4.91***	0.000
Awareness of GEF scheme	0.97872	1.3404	-115.2	-2.9***	0.005
Number of employee	4.766	4.0213	37.5	2.08**	0.040
Income from enterprise	17702	7595.7	94.2	3.82***	0.000
LR chi^2	77.02				
Prob>chi^2	0.000				

Source: Field Survey Data analyses, 2021, **, & *** denotes 5%, & 1% significance levels.

common support condition was set and the balancing property was pegged at a 5% level of significance in the entire estimated system. The results in the table revealed that matching limits the control group, to increase the similarity of the subsample of the same cases that are directly compared with the treatment cases. Table 3 also shows that several variables such as years of formal education, household size, access to off-farm income, membership of cooperative, awareness of GEF programme, number of employees, and income from enterprise were statistically significant after matching indicating that the covariates were balanced and the pseudo-R^2 from probit estimation indicate a good matching quality for all the estimations. The results depict that the matching procedure was able to balance the characteristics in the treated and the matched comparison groups, which also corroborates the analytical findings of Gidey and van der Veen (2015) and Hando (2023) for the reduced form, and Busso *et al.* (2014) and Popoola and Obi-Egbedi (2020) for the structural forms.

Table 4. Result of ATT and ATE analyses on income impact of GEF programme.

Outcome	Parameters	Impact (₦10^3)
Income (ATT)	Treated	95.30204
	Control	54.105
	Difference	41.197
	Standard error	50.3
	t-statistics	1.93*
Income (ATE)	Treated	185.216
	Control	105.341
	Difference	79.875
	Standard error	43.133
	t-statistics	2.1**

Source: Field Survey Data analyses, 2021. Note: * *denote 5% level of significance.

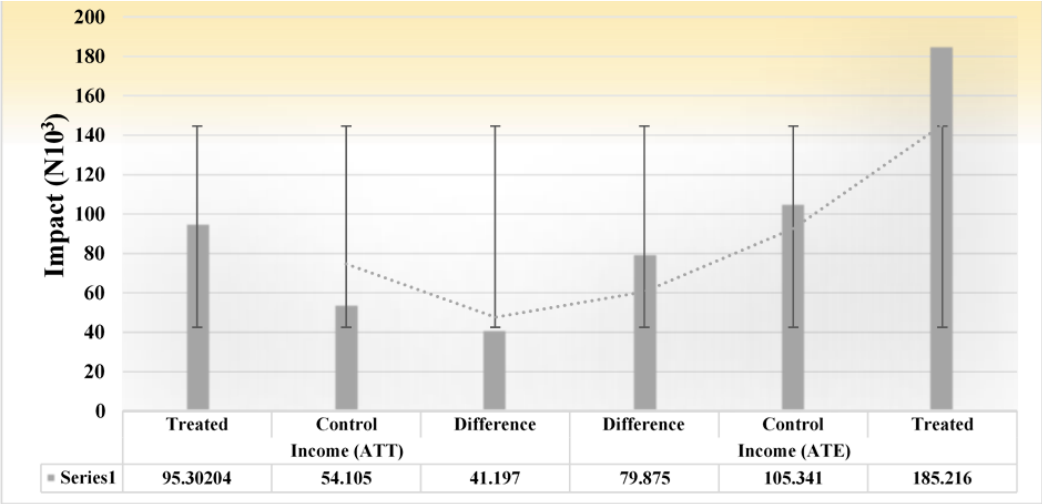

Figure 1. Impact of GEF Programme on Income.

Impact of GEF programme on income

The results on the impact of the GEF programme estimate is presented in Table 4 and Figure 2. where the matching estimates showed that the GEF programme had impact on the income of the beneficiaries of the program. Results showed that the monthly income of the participants from GEF programme amounts to 95.302 (₦10^3) while that of the graduates in agriculture that did not benefit from the GEF programme was 54.105 (₦10^3). The GEF Scheme participation impacted an income difference of 41.197 (₦10^3) on the average, and significant at 5% level. This shows that the GEF scheme favourably positioned the increased income earning capacity of Agricultural GEF scheme participants, who are also significantly better off than the nonparticipants. This attunes the finding of Popoola (2025), where financially included category significantly had higher returns to factor by at least 57.4% more, and Manthos *et al*. (2023), found that financial inclusion increased beneficiaries income by above 10%, relative to their nonbeneficiary counterparts, even five years later.

Conclusion and Recommendations

This study analyses how the graduate entrepreneurial fund (GEF) scheme impacted income levels among agricultural participants from South West Nigeria, and it concludes from the analytical findings that; the graduate farmers who participated in the GEF programme were around the prime-productive age of about 30 years, and dominated by the male gender (same for the non-participant category), while majorities of the participants were not married and had at least 6 persons in their family. Also, the majority did not specifically study agriculture in school, graduated at least four years ago from tertiary institutions and observed the mandatory service year at least three years ago.

Furthermore, most of the Agricultural GEF programme participants primarily engaged in agriculture while most non-beneficiaries engaged in other occupations. The majority also reported delays in fund disbursement and indirect payment to the participant as their challenge in participating in the GEF programme, indicating that it took between 1-10 months from their applications to nominations. Furthermore, the result on the impact of GEF programme estimate showed that a significant impact of GEF programme on income exists among the beneficiaries of the program, with the monthly income from Agricultural GEF programme participants exceeding that of the nonbeneficiaries by about 43.2%, showing that GEF scheme favourably positioned the income earning capacity of an average Agricultural GEF scheme participants, who are also significantly better off than the nonparticipants.

This study hence recommends that; more youth-oriented agricultural empowerments be further executed to boost the earning potentials of unemployed youths in the country, as revealed by this study. This, aside from income earning promotion among the unemployed youths will consequently propagate labour employment, and boost local food market supply to tackle food shortages linked to multidimensional poverty. It would also enhance the Nation's foreign trade potentials via increased export of Agro-allied commodities, hereby further boosting the nation's foreign earning capacity in the various Agro-allied commodities, hereby further boosting the Nation foreign earning capacity in the various Agro sub-sectors, given the resource abundance yet untapped. Also, there is a need to provide or introduce insurance, and a market security framework to secure participation owing to reduced risk burden benefits. Besides, fund disbursements to successful beneficiaries should necessarily be less bureaucratic, but rather timely, to encourage fund appropriation, and prevent undue lassitude. Also, regular progress monitoring in the form of income statement reporting will curb potential risks of enterprise failure, and the inherent habit of investment fund diversions by some distracted beneficiaries, while reducing delinquency rates.

CONFLICT OF INTEREST

The authors declared that no competing interest exists.

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