Scientific Papers Series Management, Economic Engineering in Agriculture and Rural Development
Vol. 17, Issue 3, 2017
PRINT ISSN 2284-7995, E-ISSN 2285-3952

FACTORS INFLUENCING PERFORMANCE OF NATIONAL DIRECTORATE OF EMPLOYMENT AGRICULTURAL GRADUATE FARMERS IN IMO STATE, NIGERIA

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Abstract

This study analyzed factors influencing performance of National Directorate of Employment Graduate farmers in Rural Agricultural Development Training Scheme of Imo State, Nigeria. A multi-stage random sampling procedure was used to select 90 (45 cassava and 45 poultry farmers). Data were collected through a structured questionnaire and analyzed using descriptive statistics such as frequencies, percentages, mean counts. Return on Investment and multiple regression models. The result from the study showed that 57.78% of the farmers were males with mean farming experience of 14 years and farm size and flock size of 1.5 hectares and 90.5 birds respectively. The result also shows that incomes from cassava and poultry farming were ₦325,500.00 and ₦421,400.00 respectively. Cassava and poultry production enterprise was a lucrative business with a Return on Investment (ROI) of 142.40%.and 138.40% respectively. The multiple regression analysis result revealed that coefficients for age, marital status, household size, farming experience, flock size, crop output and poultry output influenced performance of cassava and poultry farmers' performance. It is therefore recommends proper funding of the scheme, awareness and sensitization of the programme agricultural activities and monitoring of graduate farmers for effective performance of their farming activities.

Key words: *factors, cassava, poultry, graduate farmers, NDE*

*1USD = 175 NGN (Nigeria Naira) at the time of the research

INTRODUCTION

Nigeria is faced with many desperate job seekers from various secondary and tertiary institutions. However, these individuals are susceptible to frustration as a result of lack of job opportunities within which they can begin to feed themselves. Above all, there are no jobs, and for those who are employed, retrenchment cruelly stare them in the face [17]. There is increase in population and geometrical increase in youth population with an attendant low or zero employment for the learning youths of the Nigerian society. This situation is particularly prevalent in the rural areas eventually leading to rural-urban migration of the youths. It is a chain event that leads to low level of food production and under development of the population [16]; [8]. With fewer youth into agriculture, the long-term future of the agricultural sector, the present poor state of decline in agricultural production has dimmed the hope of raising its level to ensure sustainable food security for the ever increasing population of Nigeria [5]; [13].

Agriculture is a necessity for the growth and development of any nation. [2] opined that many factors contribute towards the development of agriculture in Nigeria. In many developing countries, efforts at agricultural progress have failed because of inadequate attention to one or more components of successful policy and thus over the years reduced agriculture revenue generation. [3] reported that in Nigeria, Africa's most populous country, a legacy of sharp practices and an economy based primarily on oil exports has left the agricultural sector significantly weakened and millions of Nigerians hungry.

World Food Monitoring Report indicated that Nigeria has consistently maintained the leading position as world largest producer of cassava in recent years. Annual production record of cassava in Nigeria stands at about 38.7 million metric tons [9]. This achievement is largely due to availability of improved varieties of

cassava from National Root Crops Research Institute (NRCRI) Umudike and International Institute of Tropical Agriculture (IITA) Ibadan, all in Nigeria. These improved varieties were developed to boost the productivity of cassava [18]. The poultry sector in other hand globally is highly dynamic, particularly in developing countries that are evolving in response to rapidly increasing demand for animal products. Poultry production and consumption has increased in the world [23]. Poultry meat accounts for about 87% chicken and 6.7% Turkey of the global meat consumption [8]. [13]; [6], report that the major contribution of poultry consumption in improving *per capita* nutrients level is well documented; however, further improvement would be possible by encouraging the unemployed to venture into the business and improving the profitability of producers through up-taking of poultry technologies.

Over the years Nigerian government has introduced and implemented several policies and programmes aimed at revamping the agricultural and poverty alleviation or reduction programmes meant to reduce the level of poverty, give hope and succour to the poor and/ or move towards some sort of wealth creation [20]. However, evidence suggests that the key to alleviating poverty in many parts of the world is a more productive and profitable agricultural sector. This is because agriculture paves the way for economic growth in poorer nations, through income distribution and building of a sustained economic growth through development agencies [25].

Attempt at reducing the rate of unemployment in Nigeria especially among youth necessitated the establishment of National Directorate of employment (NDE), in recognition of the role agriculture can play as a spring board for employment generation and self-sufficiency in food production. The Rural Agricultural Development and Training Scheme (RADTS) were established to train unemployed youths in agricultural production [17]. It is not yet ascertained since the commencement of scheme in the state, whether performance of agricultural mandates has been achieved through cassava and poultry farming. It is against this backdrop that the paper analyzed factors influencing performance of Graduate farmers of Rural Agricultural Development Training Scheme of National Directorate of Employment in Imo State, Nigeria.

The specific objectives were to:

(i)describe the socio-economic characteristics of the NDE graduate farmers

(ii)determine the performance of cassava and poultry NDE agricultural graduates in the scheme; and

(iii)determine factors influencing performance of the graduates in cassava and poultry farming

MATERIALS AND METHODS

The study was carried out in Imo State. The state lies within latitudes 4º 45'N and 7º 15'N, and longitude 6º 50'E and 7º 25'E. It occupies the area between the lower River Niger and the upper and middle Imo River. The state is bounded on the east by Abia state, on the west by River Niger and Delta state; and on the north by Anambra State, while Rivers state lies to the south. The state is located within the rainforest belt of Nigeria, and the temperature ranges between 20º C and 30º C. Agriculture is the major occupation of the people. The major food crops produced include cassava, yam, cocoyam, maize, and melon. Imo state is made up of 27 Local Government Areas (LGAs) and three Agricultural zones of Okigwe, Owerri and Orlu. The NDE beneficiaries were chosen from the list of trained beneficiaries of Rural Agricultural Development and Training Graduates of NDE. A multistage random sampling technique was used to select LGAs and respondents. First, six (6) local government areas namely Owerri North, OwerriWest, Isiala Mbano, Orlu, Ezinihitte Mbaise and Ohaji/Egbema, out of twelve (12) LGAs where the programme was located were randomly selected for the study. From the list, fifteen (15) practicing agricultural graduate trainees were randomly selected from six (6) Local government Areas giving a total of ninety (90) respondents. Data were analyzed by the use of descriptive statistics such as frequency distribution, percentages, means and

tables, Return on Investment Analysis and multiple regression analysis.

Model Specifications

(A)The Return on Investment was used as proxy for performance of the trainees. The R.O.I. model gives profitability as a measure of the Rate of Investment. It expresses net revenue as a percentage of total investment. According to Ibeagwa *et al*. (2012), the model is shown below:

Return on Investment (R.O.I) =

$$\frac{\text{Net Revenue per annum}}{\text{Total cost incurred per annum}} \times \frac{100}{1}$$

The Net revenue is given by Total revenue - Total cost

where:

Total cost = Total variable cost + Total fixed cost

Beneficiaries with ROI higher than 50% were considered to be performing well. Those with ROI below 50% were considered poor performers.

(B)In determining factors influencing the performance of cassava and poultry farmers in the scheme multiple regression analysis was used.

The four functional forms of regression model viz: linear, semi-log, exponential and cobb-Douglas were employed, The best fit was chosen as the lead equation based on its conformity with econometric and statistical criteria such as the magnitude of R^2, F-ratio and number of significant variables.

The function is specified as

$Y = f(X_I, X_2, X_3 \ldots\ldots\ldots\ldots\ldots X_{8+} e_i)$.

The four functional forms are expressed as follows:

Linear Function

$$Y=b_0+b_1X_1+b_2X_2+b_3X_3+b_4X_4+b_5X_5+b_6X_6+b_7X_7+b_8X_8+ b_8X_8+ +ei$$

Semi – log function

$$Y=L_nb_0+b_1L_nx_1+b_2L_nx_2+b_3L_nx_3+b_4L_nx_4+b_5L_nx_5+b_6Lnx_6 +b_7Lnx_7+b_8Lnx_8+ ei$$

Exponential function

$$LnY=b_0+b_1X_1+b_2X_2+b_3X_3+b_4X_4+b_5X_5+b_6X_6+b_7X_7+b_8X_8 +ei$$

Cobb Douglas Function

$$LnY=L_nb_0+b_1L_nX_1+b_2L_nX_2+b_3L_nX_3+b_4L_nX_4+b_5L_nX_5+b_6L nx_6+b_7Lnx_7+b_8Lnx_{8\,+}\,ei$$

where,

Y = Performance (Return on Investment) (₦)

X_1= gender (male = 1, female = 0)

X_2= age (years)

X_3= marital status (married =1, otherwise=0)

X_4 = education level (number of years spent in school)

X_5 = household size (number of persons eating from the same pot)

X_6 = farming experience (years)

X_7 = farm size (hectares)

$X_{8=}$ cassava output (kg)

e_i = error term

Table 1. Distribution of Socio-economic Characteristics of NDE Graduate Farmers in the Study Area

Variables	Indices	Standard Deviation
Gender (males)	57.78%	
Age (years)	43.40	10.93
Secondary Education	56.11%	
Farming Experience (years)	14	10.1
Farm Size (hectares)	1.5	0.04
Flock Size (number of birds)	90.5	79.44
Farm income (₦) Cassava Farming	325,500	232,114
Farm income (₦) Poultry Farming	421,400	319,320

Source: Field Survey, 2014

1USD = 175 NGN (Nigeria Naira) at the time of the research

Return on Investment (Performance) of Cassava and Poultry Farming in the Study Area

Return on Investment Analysis of Cassava Farming

Distribution of respondents according to the return on investment of cassava farming is shown in Table 2. The result reveals that the total revenue realized from cassava farming among beneficiary farmers was ₦252,000.00, with total variable cost of ₦166,200.00, Total Fixed Cost of ₦18,158.00, Gross margin of ₦

166,200.00 and a Net Income ₦148,041.50. The Return on Naira invested in cassava farming was ₦ 1.60 indicating that any N1 invested by a farmer in cassava farming in Imo State he gets ₦1.60. The result indicates that the NDE beneficiaries had a high Return on Investment of 142.40%.This result agreed with the result of the research work of [12], as they realized ROI of 90.51% from large scale cassava farmers, which was above 50%.

Return on Investment Analysis of Poultry farming

Table 2. Distribution of Respondents according to Return on Investment of Cassava and Poultry Farming

Items	Cassava Farming (₦)	Poultry Production(₦)
Revenue	252,000.00	703,800.00
Total variable cost	85,800.00	256,100.00
Total fixed cost	18,158.00	39,148.32
Gross Margin	166,200.00	447,700.00
Net farm income	148,041.50	408,551.68
Return on Naira Invested	1.60	1.52
ROI (%)	142.40	138.40

Source: Field Survey, 2014
1USD = 175 NGN (Nigeria Naira)
Performance Decision: 50% and above = High Performers, Less than 50% = Low Performers

Distribution of respondents according to the return on investment of Broiler production is shown in Table 2. The result reveals that the total revenue realized from poultry farming among beneficiary farmers was ₦703,800.00, with total variable cost of ₦256, 100.00, Total Fixed Cost of ₦39,148.32, Gross margin of ₦447,700.00 and a Net Income ₦408,551.68. The Return on Naira invested in poultry farming was ₦ 1.52 indicating that any ₦ 1 invested by a farmer in cassava farming in Imo State he gets ₦1.52. The result also indicates that the NDE beneficiaries had a high Return on Investment of 138.40% which is above 50% stated as the performance bench mark.
This result is in conformity with the findings of [14] where the return on investment on poultry production in Anambra State was 147%.

Factors Influencing Performance of NDE Graduate Farmers in Cassava Farming

The result in Table 3 shows the Ordinary Least Square multiple regression estimates of the determinants of NDE arable crop farmers in the study area. The Cobb-Douglas functional form was chosen as the lead equation because of a high R^2 value, number of significant factors and agreement with *a priori expectations*. The R^2 value of 0.8469 indicates 84.69% variability in farm income explained by the independent factors. The Z value of 12.07 was highly significant at 1% level of probability indicating that the regression was a good fit.
The coefficient for gender was positive and significant at 5% level of probability. This implies that the male crop farmers had performed in the enterprise than their female arable crop counterparts. The coefficient for marital status was negative and significant at 5% level. This implies that farmers who are single performed than their married counterparts. This is against *a priori expectation* probably because farmers who are married seem to be distracted with overwhelming domestic responsibilities. The coefficient for household size was also negative and significant at 5% level. This also is against *a priori expectation* probably because large household size which should have provided family labour may not be readily available. The negative sign showed that as performance decreases household size also increases. This is in line with the work of [7]. This may be because most time the children are in school. The coefficient for farm size was positive and significant at 10% level of probability. This is expected because increase in farm size will lead to more crop output thereby increasing performance of beneficiaries in the enterprise. The coefficient for crop output was positive and highly significant at 1% level of probability. This is expected and in agreement with *a priori expectation.* This implies that the increase in crop output will lead to a corresponding increase in performance of the beneficiaries in the enterprise.

Table 3. Regression Estimates of the Determinants of Performance of NDE Cassava Farmers in the Study Area

Variables	Linear	Exponential	Cobb-Douglas+	Semi-log
Constant	75688.81	11.5402	10.8921	-853090.6
	(0.38)	(29.78**)	(30.84***)	(-1.31*)
Gender	74382.18	0.2789	0.6681	79417.62
	(1.11)	(2.16**)	(2.63**)	(1.08*)
Age	688.65	0.0129	0.9771	228242.8
	(0.16)	(1.59*)	(1.45*)	(1.17*)
Marital Status	-77096.68	-0.2435	-0.2801	-72632.58
	(-2.50**)	(-4.11***)	(-2.24**)	(-2.17**)
Education	-13992.92	-0.02223	-0.2544	-9857.04
	(-0.34)	(-0.28**)	(-0.85)	(-0.11)
Household Size	-12123.57	-0.0330	-0.0880	-21825.61
	(-1.12*)	(-1.59*)	(-2.38**)	(-1.81*)
Farming Experience	7586.92 (2.03**)	0.00060 (0.84)	0.1346 (0.73)	41928.86 (0.78)
Farm Size	20361.55 (2.86**)	0.04197 (3.07***)	0.41126 (1.96*)	117503.30 (0.76)
Crop Output	0.4729	0.00001	0.6222	16695.79
	(1.61*)	(21.77***)	(8.22***)	(0.76)
R^2	0.3277	0.5807	0.8468	0.2133
R Adjusted Z	0.2613 4.94***	0.4689 74.77***	0.8016 12.07***	0.1347 2.71**

Source: STATA 8A Results, 2014
Variables in parentheses are Z-values + = lead equation
P≤ 10, ** P≤ 0.5 and *** P≤ 0.1

Factors Influencing Performance of NDE Graduate Farmers in Poultry Farming

The result in Table 4 shows the OLS multiple regression estimates of the determinants of NDE poultry farmers in the study area. The Linear functional form was chosen as the lead equation because of a high R^2 value, number of significant factors and agreement with a *priori expectation*. The R^2 value of 0.5228 indicates 52.28% variability in farm income explained by the independent factors. The Z value of 4.71 was highly significant at 1% level of probability indicating that the regression was a good fit. The coefficient for age was positive and significant at 1%. This implies that any increase in age is expected to lead to a corresponding increase in performance. This is against *a priori expectation* probably because the aged farmers seem to be more credible thereby making more sales than their younger counterparts. This result is in contrast with [21] as they found that age of farmers had profound effect in output and performance..

The coefficient for marital status was negative and significant at 10% level. This also implies that the poultry farmers who were single made more income than their married counterparts. This may be because they do not have overwhelming responsibilities affecting their production of livestock in the area. The coefficient for household size was negative and highly significant at 1% level. This is against *a priori expectation* probably because large household sizes bring about huge consumption needs thereby leading to a decrease in the level of performance among the poultry farmers. [1] in their study found that household size is an important input for unpaid labour. The coefficient for farming experience was positive and significant at 10% level of probability.

Table 4. Regression Estimates of the Determinants of Performance of NDE Poultry Farmers in the Study Area

Variables	Linear+	Exponential	Cobb-Douglas	Semi-log
Constant	409481.7	25200	10.2124	-424239.20
	(1.46*)	(12.16***)	(4.42***)	(-0.64)
Gender	-2503.59	0.0802	0.1028	-1957.24
	(-0.04)	(0.31)	(0.40)	(-0.03)
Age	12444.99	0.0235	0.7626	348923.50
	(2.93***)	(1.52*)	(1.27*)	(2.02**)
Marital Status	-67769.41 (-2.00**)	-0.0725 (-0.56)	-0.1265 (-1.03*)	-78757.80 (-2.22**)
Education	-80542.95	-0.2126	-0.6448	-222673.30
	(-1.47*)	(-1.06*)	(-1.66*)	(-1.88*)
Household Size	-355509.86 (-2.97***)	-0.1222 (-2.80**)	-0.4458 (-2.75**)	-117319.90 (-2.50**)
Farming Experience	6323.10 (1.88*)	0.0038 (0.32)	0.1323 (0.80)	30137.67 (0.63)
Flock Size	324.21	0.0025	0.2946	6886.34
	(2.98**)	(2.55**)	(2.36**)	(1.90*)
Poultry Output	341.97 (1.10*)	0.0008 (-0.78)	-0.1673 (-1.30)	-44814.17 (-1.20*)
R^2	0.5228	0.3412	0.3001	0.40441
R Adjusted Z	0.4142 4.71***	0.2644 3.14***	0.2211 2.53**	0.3255 2.60**

Source: STATA 8A Results, 2014
Variables in parentheses are Z-values + = lead equation
P≤ 10, ** P≤ 0.5 and *** P≤ 0.1

This implies that experienced farmers performed than their counterparts who had no or little poultry experience. This result is in agreement [4]that the more farmers remained in the farming business, the more they got acquainted with the risk elements and ways of militating possible losses through them. The coefficients for flock size and poultry output were positive and highly significant at 1% land 10% levels of probability respectively.

This implies that any increase in flock size and poultry output will lead to a corresponding increase in poultry performance. This is

expected and in accordance with *a priori expectation.*

CONCLUSIONS

The result from this study has revealed that the scheme impacted positively on the graduate farmers farming activities. The result indicates that the NDE graduate farmers had a high Return on Investment of 142.40%. and 138.40% from cassava and poultry farming respectively. Factors such as gender, marital status household size, farm size crop output influenced performance of the cassava farmers in the scheme. Also, age, marital status, household size farming experience, flock size and poultry output influenced performance of the poultry farmer's performance in the scheme.

The study therefore recommends; proper funding of the scheme in order sustain its training mandates, awareness and sensitization of the programme agricultural activities to encourage youths participate in the scheme and follow – up and monitoring of graduated farmers to ensure that they judiciously utilize incentives provided by the scheme.

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