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Socio-economic Determinants of Turkey Production among Nigerian Soldiers

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Abstract: The socio-economic situation of the country has given rise to increased agricultural activities not only among the civilian population but also among the members of the Nigerian Army. According to World Bank, Poverty in Nigeria has increased dramatically with 66% of the population living below National Poverty line, compared with 43% in 1992. This has socio-economic implications to the Nigerian army as well. As a result, many soldiers have resorted to selected agricultural enterprises especially Turkey production as a way of alleviating the economic situation. A total of 60 soldiers covering all the ranks and file of the Nigerian Army were randomly selected from the 82 Division of the Nigerian Army. Four barracks were purposely selected due to their interests in Turkey Production. The barracks include Eburutu Barracks Calabar, Abakpa-Enugu, Zamani Ikwot Cantonment PH and 82-Division Records, Abakaliki. Data generated were analyzed using regression analysis, benefit-cost ratio, and descriptive statistic. The major factor that enhanced turkey production among soldiers were income and previous farming experience. The enterprise was not only profitable but also viable. Efforts should be made to encourage more soldiers to embrace this enterprise.

Key words: Socio-economic determinants, production systems, Turkey production, Nigerian soldiers

Introduction

Nigeria, a major oil producing country in the world has recently been classified among the poorest countries. According to World Bank poverty has increased dramatically with 66% of the population living below the poverty line as against 43% in 1992. It has been observed that there is no country in Africa whose deterioration in socio-economic status has been so severe as that of Nigeria, to the extent that within the last five years half of the population is living below poverty line (World Bank, 2000). This has given rise to a number of strategies and activities. As a result of this, the recent times have witnessed sharply expanded programmes, techniques and innovations in agricultural production in Nigeria in order to address the deteriorating socio-economic situation.

Primary emphasis has been placed on the technology and resource use in order to increase food production. In many cases, simply to keep output in step with population growth (Ukoha, 1999). Significant innovative breakthroughs have been made in the production of key food crops and livestock's in Nigeria in order to bridge the food deficit gap. While some aspects of these innovative approaches in agriculture were either taken for granted or less understood, even when they have made significant contribution to the socio-economic well being of the populace.

Turkey production has become a popular enterprise among the members of the armed forces, an activity that hitherto would have passed unnoticed. Mills (1990) has unequivocally stated that the major pre-occupation of all developing countries these days is simply how to improve the social, economic and political status of the

people. According to Uma (1974), it involves the improvement of the living standards of the mass of the low income population and making the process self sustaining. Improving the living standard of the people involves the setting of priorities in the mobilization and the use of resources like in the case of turkey.

The growth of turkey industry in Nigeria has risen to 1.5-2 million tons per year. This fast growth in the industry was made possible by intensification of production and development of large breeds with standard weights ranging from 15-17 kg for male and 8-10kg for female. Some of these come from homestead, (Ogundipe and Dafwang, 1986; Ojewola, 1993). Turkey production in Nigeria has largely remained at the small holder level due to various reasons ranging from management problems to lack of incentives by Government. This is the case with the soldier-farmers (Udokainyang, 2001). There is obvious lack of information on specific requirements for turkey production in Nigeria, which may be attributed to low level of research in Nigeria. Moreso, the lack of interest on turkey production was mainly due to the government policy that liberalized turkey importation since 1977. According to Thear and Fraser (1986) imported turkey formed about 60% of the total turkey in Nigeria market, while the rest is supplied by other sources including soldiers.

Nigerians consume about 8.6g animal protein per day with turkey accounting for about 1.5g despite its great potentials in the supply of good quality animal protein and high rate of turnover of investment (Oluyemi, 1985; Ojewola 1993; Ojewola *et al.*, 2000). According to FGN and UNICEF (1990), Turkey has no consumption problems as 116 million Nigerians are active

consumers.

Though, there is no official information on the contributions of soldiers to the National output, they are classified as small holder turkey farmers. However, the interest shown among the soldiers of 82 Division of the Nigerian Army motivated this study.

The emphasis on socio-economic determinants was to elicit information on those variables that would enhance adoption of the practice especially now that the Federal Government has restricted the importation of Turkey products. In addition, turkey production has not been given its rightful attention in Nigeria despite the fact that it is known to grow faster and bigger than other poultry breeds with high rate of return on investment. As efforts are being made to expand the scope of turkey production in Nigeria to keep pace with the rising demand, it has become necessary to identify and analyze the socio-economic determinants of turkey production among the members of the armed forces. This would enhance the contribution of turkey enterprise as a resource base for youth employment, industrial development and export. The role of turkey production in the development of any community or group as a source of income and its place in uplifting the socio-economic status of the people cannot be ignored. It is our belief that the outcome of this study will go a long way towards the realization of sustainable agricultural policy in Nigeria.

Specifically, the study would achieve this through the following:-

- (i) determining the production systems adopted by the farmers
- (ii) determining the profitability and assessing the viability of the enterprise.
- (iii) identifying the socio-economic determinants of turkey production among the soldiers
- (iv) identifying the major problems facing turkey production among soldiers.

Materials and Methods

This study covered the 82 division of the Nigerian Army. It was purposely selected because of its importance in turkey production. 82 Division of the Nigerian Army covers nine states of the Federation namely Enugu, Anambra, Imo, Abia, Ebonyi, Rivers, Akwa Ibom, Cross River and Bayelsa States. It comprises three brigades and 13 barracks. The vegetation ranges from mangrove forest, swamps to rainforest in south coast of the area. The rainfall pattern follows the vegetation pattern being heavy from south-south and reducing as it moves northwards. The major occupation of the people is agriculture.

A multi-stage random sampling technique was used to capture the four barracks which were purposely selected namely Eburutu, Abukpa, Zamani Lekwot and 82 division Records, Abakaliki. In each barrack a list of all the turkey soldier-farmers was recorded, and from the list 15

soldiers were randomly selected covering all the ranks and file in each barrack. In all, a total of 60 soldiers were used for the study. The data were collected between 2001 and 2002 production periods.

Data analysis: The first specific objective was achieved using descriptive statistics, such as means and percentages. Objective two involved the collection of detailed information on all items of cost and revenue associated with the various production systems. From this, the net farm income and the rate of return to investment were calculated using profitability measures. The viability of the enterprise was determined using Benefit-Cost Ratio .

$$\frac{\sum_{t=1}^n \frac{B_t}{(1+r)^t}}{\sum_{t=1}^n \frac{C_t}{(1+r)^t}}$$

Where,

B_t = discounted value of benefits

C_t = discounted value of costs

n = number of years

t = 1,2,3,n number of years

r = rate of discount

Σ = sum of all

The BCR was applied using historical data according to Asumugha and Obiechina (2000). It was based on previous Benefits and costs derived from the farmers record between 1996 to 2001, and 1996 was used as the base year, this was discounted using 16% prevailing interest rate. Benefits were regarded as income accruing to the soldier in each year as a result of involvement in the enterprise while costs were all the items of costs incurred in the production of turkey in each year. This was used to capture the viability of the enterprise.

The socio-economic determinants was analyzed using a regression estimation, which was implicitly stated as

$$TP = F(Ms, Le, Fs, Ye, In, Af, Rk, e).$$

Where:

TP = Turkey output (tons)

Ms = Marital status (dummy) (1 = married, 0 = single)

Le = Level of education (years)

Fs = Family size (number)

Ye = Years of experience (years)

In = Income (Naira)

Af = Age of the farmer (years)

Rk = Rank of the Soldier, dummy (1 = Officer, 0 = other ranks)

e = Error term

It is expected that ms, le, fs, ye, In, and Rk will positively influence Tp while Af will negatively influence Tp. The combined use of the simple correlation coefficient, the

adjusted coefficient of multiple determination R^2 and the standard errors of the estimates indicated that there was no serious problem of multi-collinearity in the test. This is in agreement with Okorji 1989.

The model was tried in the four functional forms namely linear, power function, exponential and semi-log forms. The lead equation was chosen based on the magnitudes of the coefficients, a *priori* expectation as well as the over all significant level of the F-ratios.

Results and Discussion

Turkey production systems adopted by the soldiers:

Table 1 shows the production systems adopted by the soldiers.

There were three main production systems identified by the soldiers. They included extensive, semi-intensive and intensive systems.

Table 1: Distribution of the Soldiers according to production systems

Production systems	Number	Percentage
Extensive	10	16.7
Semi-intensive	45	75.0
Intensive system	05	8.31
Total	60	100%

Source: Field survey, 2002

The result showed that most soldiers used semi-intensive system in the production of turkey. The system is most convenient to be used. In this the birds were not restricted except during the evening. They were fed with water in the morning and evening, with the combination all or any of the following wheat offal, sorghum wasters, rice husk, palm kernel meal, cowpea hull, and maize offal. In the extensive system, the birds were given food at specific location occasionally as local scavengers. Also make shift shelters, kitchen left-overs and scraps were provided. Small sized flocks were confined in backyards to protect against theft, wind and rain. Reproduction was identified to be by natural method. It was only 17% of the soldiers were involved in the extensive production system while 8.31% restricted their birds in a small building or hot otherwise known as intensive. This system is more expensive.

Profitability of turkey enterprise among soldiers: The profitability of turkey production among the members of the Armed Forces is presented in Table 2.

Table 2 shows the cost-return structure of the enterprise per annum by an average soldier-farmer. Within the period, an average-farmer invested a total of N39412.51, out of which N32787.24 were variable costs and N6625.27 were fixed assets. The net income which represents the return to capital, management and family labour amounted to N20587. This gives a rate of return to investment of 52.23%. That is, for every N1 spent on

turkey production, the average soldier-farmer was able to make 52 kobo as profit. According to Oluyemi and Roberts (2000), it is practicable in Nigeria to produce turkeys profitably on the small scale provided the enterprise is efficiently managed. The report by previous authors is in consonance with the finding of this study. The structure of costs incurred by an average soldier-farmer for the period under investigation shows that the variable costs accounted for about 83% of the total cost of production. While fixed assets took only 16.81% of the total cost of production. Furthermore feeds had the highest single item of cost, followed by day-old poults and labour with 44, 22 and 12% respectively. This underscores the importance of feeds, day old poults, and labour management in the production of turkey in the area. The cost structure analysis reveals that the efficient utilization of these items would enhance the profitability of the enterprise especially as resource base for youth employment. This calls for feed input subsidization as a way of encouraging youths as well as more soldiers into the enterprise.

Viability of turkey production among Nigerian soldiers:

Results of the Benefit-Cost Ratio (BCR) showed that the project was viable since the BCR is greater than one (Table 3).

It shows that project is viable based on the existing technology and rate of interest using 1996 as the base year. The analysis shows that capital allocation to turkey production under the existing technology is most profitable. This finding is in line with Oluyemi and Roberts (2000) who identified that turkey production in Nigerian is viable and profitable under small-scale management. The practice by some Nigerian soldiers perfectly fitted the above description.

Sensitivity analysis: The enterprise was further tested for its sensitivity to future fluctuations by increasing costs by upto 20% and leaving benefits constant as well as decreasing benefits by upto 20% and leaving cost constant; it was still found to be positive. The result is presented in Table 4.

Results of the analysis showed that taking 20% cost overrun and 20% reduced benefit, there was no significant change in the benefit. It also demonstrated that even if the costs of volatile variable inputs were increased without corresponding increase in the benefit, the enterprise would still be profitable. It shows that even if the cost of variable inputs which were found to be very volatile in the enterprise are increased without corresponding increase in the value of output, the enterprise would still be viable. This has implications in the poverty alleviation programme of the government. This analysis brings to focus the extent to which the enterprise would withstand negative changes in key variables which have major impact on the performance of the enterprise. Though the increase in cost of

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Table 2: Cost-Return Analysis Per Soldier-Farmer Per Annum

Item	Quantity	Price/Unit	Total Value (N)
Revenue			
Matured Turkey (About 4kg)	30	₦2000	60,000
Variable costs			
A day old poults	35	₦250	8750
Medication (Vaccination).			
New castle disease (NDV bottle (200ml)		₦260	260
Gumboro Vaccine I bottle (200ml)		₦260	260
Lasota I bottle (200ml)		₦260	260
Keprocery (antibiotics) I sachet (100g)		₦300	300
Kerosene	25 litres	₦25/litre	625
Water	427.06 litre	₦3/per 20 litres	64.6
Labour	267 hrs	8 hrs/manday (N150)	5018.18
Feed	23 bags of 25kg	₦750	17250.18
Total variable cost			32787.24
Depreciated fixed assets			
Housing			1951.60
Cages			3247.19
Feeders			687.51
Drinkers			738.97
Total fixed costs			6625.27
Netfarm income			20587

Source: Field Survey, 2002

Table 3: Benefit-Cost Ratio of Turkey production (1996-2001)

Years	Costs of production	Benefits	Discount factor (16%)	Discounted costs	Discounted benefits
1996 (1)	26420	42224	0.862	22774.04	51720
1997 (2)	24310	48006	0.743	18062.33	42587.27
1998 (3)	30160	49202	0.641	19332.56	32485.88
1999 (4)	32140	50680	0.552	17741.28	27159.50
2000 (5)	38402	57318	0.476	18279.35	22850.86
2001 (6)	39412	60000	0.410	16158.92	17311.84
Total				112348.48	183462.76

BCR = 183462.76 / 122348.48 = 1.63

Table 4: Sensitivity of Costs and Revenue and their effects on benefit

Variations	Effects on Benefit
No variation	₦ 60000
10% Increase in Costs	₦ 16646.8
20% Increase in Costs	₦ 12705.6
10% decrease in Revenue	₦ 14588
20% decrease in revenue	₦ 8588

Field Survey, 2001

production still brought positive impact on the enterprise, care must be taken in the management of the variable inputs, as they are most important in determining the profitability of the enterprise.

Socio-Economic determinants of the enterprise: The result of the econometric estimation presented in Table 5 , shows the power function as the lead equation as it proved superior to the other functional forms in terms of coefficient of determination, signs and significance of

the regression coefficients as well as F-ratios.

The R² figure shows that about 35% of the variation in turkey production is explained by the socio-economic factors included in the model. Though the value of R² is low, its effect is not harmful (Okorji 1989; Nwosu 1991;) The result indicates that level of education, age of the soldier and the rank contributed negatively to the output of turkey produced. On the other hand marital status, family size, farming experience and income contributed positively to the output of turkey.

The research findings indicate that the most important socio-economic variables in determining the output of turkey production are income of the soldier and previous farming experience. The variables are statistically significant at the 1 and 5% level respectively. This was expected because income and experience are crucial factors in turkey production. The previous income and experience could be used as stringent condition for securing government soft agriculture loan.

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Table 5: Regression Result of Socio-Economic Determinants of Turkey Production

Explanatory variables	Linear		Power function		Exponential		Semi-log	
Intercept	115670.62	(0.868)	8.062**	(3.023)	10.443**	(9.186)	185968.40	(0.385)
Marital status	-597.66	(-0.016)	0.0146	(0.062)	0.0774	(.236)	-14388.5	(-0.340)
Level of education	-381.76	(1.077)	-0.206	(-0.802)	-0.0068	(-0.162)	-4733.62	(-0.102)
Family size	7967.26	(0.936)	0.0772	(0.348)	0.0202	(0.278)	37934.16	(0.945)
Farming experience	2742.12	(0.335)	0.340*	(2.00)	0.0808	(1.158)	16207.93	(0.501)
Income	0.575	(1.083)	0.535**	(5.287)	0.00001**	(2.814)	27007.72	(1.473)
Age	-2785.91	(-856)	-0.753	(-1.092)	-0.0013	(-473)	-119846.4	(-959)
Rank	-23833.80	(-491)	-0.131	(-0.507)	-0.0971	(0.872)	27137.39	
R ²	0.07		0.35		0.25		0.11	
F-ratio	0.57 ^{NS}		8.51**		2.46*		0.877 ^{NS}	

Field survey 2001. NB: **, * indicates significant at 1% and 5% respectively. The numbers in parentheses are T-ratio.

NS = Non-significant.

Table 6: Distribution of farmers according to their most pressing problems

Problems	No.	Percentage
High cost of feeds	22	36.67
High cost of other inputs	18	30.00
Diseases and pests	10	16.67
Pilfering and predator attack	6	10.00
Infrastructure facilities	3	5.00
Adverse weather condition	1	1.67

Source: Survey, 2001.

Problems militating against turkey production: In the course of the study, it was identified that the soldier-farmers were confronted with six major problems. The result is presented in Table 6.

The result indicates that about 37% of the soldiers considered high cost of feeds as their most pressing problem while 30% considered high costs of other inputs as most militating factors. Furthermore about 17% of the farmers saw their most pressing problems as the diseases and pests while pilfering and predator attack were identified as the most limiting factor by 10% of the respondents. The other problems in order of importance are infra structural facilities and adverse weather condition.

Thus, most of the soldiers identified high cost of feeds and other variable inputs as the major limiting factors to turkey production. The cost of the variable inputs constituted about 83% of the total cost structure. These findings are in agreement with Akinwunmi and Ikpi (1980); Ayinde and Aromolaran 1998, who independently observed that livestock enterprises in Nigeria are beset by some constraints, major among them is the high cost of variable inputs.

Policy recommendations: To make turkey production attractive not only to soldiers but to other potential investors, the following policy recommendations are hereby suggested.

- (i) A pioneer turkey farmer cooperative should be encouraged by government to serve as morale booster and a forum for assisting other new entrants who might develop interest.

- (ii) Since turkey production among soldiers has been found not only profitable but also viable under the existing system, the unemployed especially the youths should be encouraged with soft loans to go into it to supplement their incomes thereby alleviating poverty and the deteriorating social economic status.
- (iii) Though the return on investment is high but there is still the urgent need for more research into the development of feedstuffs and other variable inputs that are cheaper as well as richer in concentrates and essential minerals, that would encourage the soldiers to adopt the intensive system of production especially as about 75% of the soldiers were using semi-intensive system.
- (iv) There is need for policy direction aimed at encouraging soldiers to use their idle time or leisure time to embark on small-scale turkey production. Especially as it has the potential of improving the socio-economic fortune of the other ranks or the relatively low income group. Moreso as the enterprise was found to have utilized mostly the idle family labour which was found to be zero in the barracks. The extent to which the potential of this activity would be enhanced will depend on the degree to which government policy on turkey importation is enforced. The effective implementation of the law on indiscriminate importation of turkey will enhance the development of appropriate and cost-effective farm-level technologies for attracting the youths, the unemployed and the part time farmers into the enterprise.
- (v) Efforts should be made to restructure the Nigerian Army in such a way that turkey production should be encouraged by the provision of extension agents and animal scientist to assist the soldier-farmers who have been found to be complementing rural farmers in increased food production.
- (v) Finally improved veterinary services and the extension agents should be directed to the soldier-Farmers, in order to further enhance their performance.

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