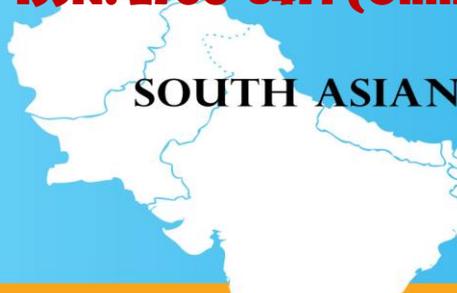


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## GROSS MARGIN ANALYSIS OF BENEFICIARIES AND NON-BENEFICIARIES OF AGRICULTURAL CREDIT AMONG POULTRY FARMERS IN OSUN STATE NIGERIA

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### ABSTRACT

This study compared the profitability of beneficiaries and non-beneficiaries of agricultural credit among poultry farmers and also investigated the factors influencing the output of poultry production in Osun state. Multi-stage sampling technique was used to select 96 respondents in the state and well-constructed, a pretested questionnaire was used to collect data from the poultry farmers. The data collected were analyzed using descriptive statistics, budgetary techniques, multiple regression analysis and student t-test.

The average age of poultry farmers in the study area is 53 years; poultry production is dominated by males with a percentage of 53.1%, 93.1% of the respondents had formal education, 31.25% of the poultry farmers are users of credit. The gross profit margin for beneficiaries of credit among poultry farmers was ₦742,222 while that of non-beneficiaries of credit was ₦365,434. The student t-test revealed that there is a significant difference between the profitability of beneficiaries and non-beneficiaries of credit at 5% significant level of probability. The study, therefore, recommends that poultry farmers should use cheap labour and government should provide credit at low cost through formal financial institutions and agencies that would check farmer's activities as they keep up with loan payment and effective use of credit to ensure productivity and sustainable poultry enterprise.

### INTRODUCTION

#### Background to the study

Agriculture is an essential economic sector of the world economy (Priyanka and Anil, 2015), it remains an important part of the West African economy, providing 30-50% of GDP in most countries (Camilla and Bara, 2003). The place of agriculture in the development of Nigeria and the entire West Africa countries is outstanding, it does not only provide food, clothing materials, and shelter but also provide employment opportunities for over 75 percent of the people, raw materials for industries, market for industrial goods, income and foreign exchanges through external trade (Mgbakor *et al.*, 2014). A prominent component of the Nigerian agricultural sector with abundant social and economic potentials in the livestock sector.

Livestock sector plays a crucial role in the economy and livelihood through agricultural diversification and income generation, it plays a vital role in the overall economic development of farm households and the nation as a whole (Uddin *et al.* 2017). Among all the livestock-based

vocations, the poultry sector occupies a pivotal position because of its enormous potential to bring about rapid growth. Importance of poultry subsector is chiefly in the provisions of meat and egg as well as the direct and indirect provision of employment and the contribution to the Nigerian gross domestic product and national income. The poultry sector is one of the most important agricultural sectors serving as a sheet anchor in the provision of ready cash in emergency needs as well as an important source of protein for consumers; it has greatly played roles in supplying of affordable and available protein product for the people (Effiong and Konye, 2017).

According to Chukwuemaka (2013), poultry is the term used to refer to a wide range of birds of various species that have been domesticated it involves chickens, turkeys, ducks, geese, guinea fowl, pigeons, peacock, peafowl, ostriches, and quail. Poultry farming is the process of raising domesticated birds for farming meat or eggs for food and or sales usually poultry are farmed greatly with chicken being the most numerous, chicken raised for the egg are usually called layers while chickens raised for meat are called broilers (Compassion in World Farming USA, 2010). Poultry farming may be intensive, extensive or semi-intensive in terms system of production, they are differentiated based on their flock size, input and output relationship. Poultry production is one of the major subsectors that has provided Nigerians with nutrient and protein in terms of the meat egg which are generally acceptable (Adedeji *et al.*, 2014). Poultry production constitutes about 25% of the gross domestic product of Nigeria economy with a current worth of US \$8 billion which is about ₦1.6trillion (Agro Nigeria, 2014), poultry products (eggs and chickens) contribute about 36.5% of protein intake of Nigerians and also Nigeria is the largest producer of eggs in Africa (Agro Nigeria, 2014 ). However, in Nigeria, the use of modern technology has not been fully integrated into poultry production with facilities such as hatcheries, feed-mills and storage facilities among others; this is due to inadequate capital and lack of access to credit facilities (Athanasius, 2017).

Agricultural credit is defined as a type of financing used to provide funding for agricultural producers, marketers and other individuals or groups of individuals in the agricultural value chain. This may be in the form of a letter of credit, loans or banker's acceptance documents. This is generally used to provide investment from outside resources to the farming sector (Asogwa *et al.*, 2014; Adebayo, 2008). Agricultural credits allow farm business activities to take place by supplying farmers with financial credit that might not be otherwise available to them, this financing is crucial to subsistence farmers to be able to run successful farming and also for commercial farmers to facilitate rapid economic growth. Agricultural credit needs to be made available to farmers to increase productivity, make competition with foreign investors fair to enhance economic growth and hence development. Credit supply to farmers is widely perceived as an effective strategy for enhancing agricultural productivity (Philip *et al.*, 2008).

Mahmood *et al.* (2009) opined that agricultural credit is considered essential to the process of improving agriculture, the introduction of easy and cheap credit is the quickest way of boosting agricultural production. The argument is that the agricultural sector depends more on credit than any other sector of the economy because of seasonal variations in the farmer's return, the risk and uncertainty associated with farming, and credit requirement in the transformation of subsistence to commercial farming. The credit provides the opportunity for farmers to earn more money and improve on their standard of living. (Mahmood *et al.*, 2009; Olagunju, 2010).

According to Sakyi (2008), financial intermediaries are continually faced with challenges in providing financial services to the agricultural sector. In view of the reluctance of the formal financial institutions to enter rural market because of the high cost and risk of doing business in harsh economic

and physical environment, however, the informal financial institutions emerged, but typically they are only able to offer a narrow range of financial services in a small geographical area (Mpuga, 2010).

Agriculture in Nigeria suffers a lot of problems such as land tenure system, poor road, lack of agricultural machinery and equipment, credit facilities, lack of extension services amongst others. The importance of agricultural credit, however, cannot be overstated in light of these challenges, because agricultural credit plays an important role in agricultural development, credit has a crucial role for elimination of farmers financial constraint to invest in farm activities invariably increasing productivity and improving technologies, and resolving other constraints to agricultural development. Credit accessibility is important for the improvement of quantity and quality of farm product so that it can increase the farmer's income and avoid rural migration (Kohansal *et al.*, 2008). There is indeed a great need for the revitalization of agriculture to facilitate economic development especially in the aspect of making agricultural credit accessible and available, as the government is on the verge of diversification of the economy through agriculture, these same impediments affecting agriculture also affect the economical gainfulness of poultry production in Nigeria. Over the years, the problems associated with the agricultural credit to poultry farmers have been one of such impediments that have gained the attention of many researchers.

#### **Statement of the research problem**

The demand for eggs and poultry meat has significantly increased in recent years across the world (Heise *et al.*, 2015). Due to the high population growth in Africa and growing income, this trend is very likely to continue over the next few years. Therefore, the consumption of poultry products will increase by 200% between 2010 and 2020 for at least some countries in sub-Saharan Africa (Obi 2003; USDA, 2013). Exploring into this opportunity, there is no doubt it will reduce some measure of economic burden from the large population of the unemployed.

The poultry industry in Nigeria had been rapidly expanding in past years increasing from 185,300MT in 2001 to 268,000MT in 2011 (USDA, 2018). The Nigerian economic statistics reveal annual economic growth rates that averaged over 7% in recent decades, making Nigeria one of the fastest-growing economies in the world (Byerlee *et al.*, 2013). However, this growth has not reduced poverty or created much-needed jobs. Unemployment is still very high, and more than 60% of the population lives below the poverty line (Heise *et al.*, 2015). Nevertheless, the poultry sector is particularly important in that it has generated employment and contributed to GDP and export revenue earned in Nigeria. According to FAO (2013), the general acceptability of poultry products and poultry production can be explained by the fact that poultry has many advantages over other livestock, poultry production involves low cost of investment, poultry birds are good converters of feed into usable protein in meat and eggs, and the return on investment is quite high, therefore farmers need a relatively small amount of capital to start a poultry farm, there are no major taboo on the consumption of poultry meat and egg, the production cycle is quite short, so capital is not tied up over a long period. Aboki *et al.*, (2013) also revealed that eggs, one of the major products of poultry production, are more affordable for the common person than other sources of animal protein.

However the poultry industrial sector of Nigeria is being faced with a lot of challenges that subsequently inhibit poultry production to meet the increasing demands for poultry products (eggs and meat), these problems are associated with accessibility of agricultural credits by poultry farmers which would increase the poultry productivity and hence raise income, poultry farmer's accessibility to agricultural credit would increase capital asset available to the farmer and make poultry products more available to Nigeria economy, this would, in turn, provide employment along the value chain of

agricultural production, provide food in terms of cheap proteins, foreign exchange earnings when they are exported and increase Nigeria gross domestic product (Nosiru, 2010). Indeed government has been formulating credits, and financial, policies through schemes and programs for the agricultural sectors, Eze *et al.*, (2010) found that government had made serious effort at making good agricultural policies through schemes, programs and institutions, examples of such schemes are the Agricultural Credit Guarantee Schemes Fund (ACGSF), since 1978 till date, established by act No 20 of 1978, this offers a 75 percent guarantee backed by the central government of Nigeria (CBN) on agricultural credit default, net amount realized from disposal from security for such credit, others are Small and Medium Enterprises Equity Investment Scheme (SMEEIS),2001, Refinancing and Rediscounting Facility (RRF), 2002 to date, Agricultural Credit Support Scheme (ACSS), 2006 till date, Large Scale Agricultural Credit Scheme(LASACS), 2009, and Supervised Agricultural Loans Board, and the programs are National Accelerated Food production programme (NAFPP), 1972 to 1974, Agricultural Development Program (ADP), 1975, Operation Feed the Nation (OFN), 1976, Green Revolution programme, 1980, Rural banking programme1977to1991, Community Banking programme 1991 to 2007, National FADAMA Development programme, Family Economic Advancement Programme (FEAP)1997-2001, National Poverty Eradication Programme (NAPEP) 1999 till date, Microfinance, 2005 till date.

However, further problems are associated with the accessibility of the agricultural credit supplied by the governments; despite the fact the government had made possible efforts in the formulation and implementation of financial policies in supplying credits to the poultry farmers, only limited numbers of poultry farmers have been able to benefit from such credits and financial policies, programs and scheme, and many poultry farmers are yet to benefit from such programs, this is majorly due to administrative bottlenecks, several stringent conditions attached to lending, and socio-economic characteristics of the poultry farmers. Effiong and Konye (2017), stated that majority of the poultry farmers also contribute to the problem of credit acquisition through their lack of education, lack of collateral securities and high rate of default to mention but a few. In general, the financing of agriculture most times poses a great challenge, most of it from failing policies of the government, high-interest rate from local money lenders and limited numbers of private investment companies (Effiong and Konye 2017). If the agricultural credit is granted to poultry production enterprises it will increase their output, expand their scale of operation and consequently, generate high returns in income and improvement in the standard of living. Although several studies have been conducted on accessibility and the use of agricultural credit in poultry production, (Habib 2010; Asogwa, 2014 and Effiong and Konye, 2017) only little have been done on the comparative analysis of the performance of beneficiaries and non-beneficiaries of agricultural credits among poultry farmers in the study area.

The disparity between the productivity of the farmers that had access to agricultural credits is quite significant and has created a lagging effect in the poultry production which calls for a detailed examination and a comparative study of the performance of beneficiaries and non-beneficiaries of agricultural credit in poultry production, not much studies have been made on this discrepancies' and only little effort has been made on measures that can bridge this discrepancies' by providing measures that make agricultural credits accessible to poultry farmers. In light of this, this study tends to look at and compare the performances of beneficiaries and non-beneficiaries of agricultural credits in poultry production in the study area, Given this; this study tends to provide answers to the following questions

i. What are the socio-economic characteristics of the poultry farmers in the area of study?

ii. What are the costs and returns on poultry production (and hence profitability for the) for beneficiaries and non-beneficiaries of agricultural credits?

### Research hypothesis

This study attempts to test this hypothesis;

There is no significant difference between the production output of the beneficiaries and non-beneficiaries of agricultural credits among poultry farmers in the area of study.

### Study area and sampling procedure

This study was carried out in Osun state, southwestern Nigeria, situated in a tropical rain forest zone.

It covers an area of approximately 8802  $km^2$ , the people are predominantly peasant farmers cultivating mostly food crops and practising livestock production such as the rearing of poultry, goats, sheep, pigs and rabbit as well as the marketing of their products (Adebusola, 2008). It lies between latitude 7° 30' 0" N and longitude 4° 30' 0" E. Osun state lies at an elevation of 246 meters above the sea level, it is a landlocked state blessed with the presence of many rivers and streams which serves the water need of the state, bounded by Ogun state to the south, Kwara state to the north, Oyo state to the west, and Ekiti and Ondo state to the east.

Multistage sampling technique was used, the first stage involved the purposive selection of three Local Government Areas (LGAs) based on the prevalence of poultry farmers in the Local Government Areas namely Osogbo, Ilesha east and Ile-Ife Central Local Government Areas. The second stage involved a random selection of four towns from the Local Governments Areas based on high populations of poultry farmers in the areas, the third stage involved the random selection of beneficiaries and non-beneficiaries of credit from the towns to have a sum of 96 respondents.

### Analytical techniques

Descriptive statistics, budgetary analysis, student "t" test and regression analysis were used to analyze the collected data.

Descriptive statistics were used to describe the socioeconomic and farm characteristics of the poultry farmers in the study areas, this was done using mean frequency distribution and percentages.

**Budgetary technique** was used to evaluate the level of profitability of beneficiaries and non-beneficiaries of credit among poultry farmers in the study area, it was computed as monetary, cost, revenue of the total farm output either sold, consumed by the farmers household or given out as gifts, cost are value attached to the inputs while returns are value attached to output.

Profit = Total Revenue – Total Cost

**Student t-test** was used to test the hypothesis that there is no significant difference in the production output of beneficiaries and non-beneficiaries of agricultural credit, at a level of 5% significance.

$$T = \frac{X1 - X2}{\sqrt{S_{X1-X2}}} \quad S_{X1-X2} = \sqrt{\frac{S_{X1}^2}{N1} + \frac{S_{X2}^2}{N2}}$$

X1 = mean of poultry farmers with credit

X2 = mean of poultry farmers without credit

N1 = sample size for farmers with credit

N2 = sample size of farmer without credit

S1 = standard error of farmers with credit

S2 = standard error of farmer without credit

T = estimated t-value

## RESULTS AND DISCUSSION

Table 1 showed that the average age of the respondents is approximately 52 years ( $\pm 1.201$ ), which indicates that majority of the poultry farmers in the area are tending towards ageing. The older the farmers become the better their understanding thus making them more experienced, this is in line with the study of Sanusi and Olagunju, (2013). Poultry farming in the study area is male-dominated as about 53.1% of the sampled farmers are male, this may be as a result of the high demand of time and effort to be engaged in an enterprise like poultry farming. Most of the respondents (86%) are married. 93.7% of the respondent had formal education and it will help them in quick adoption of innovations, ideas and knowledge which can improve their efficiency, this result is in line with the findings of Aboki *et al.* (2013). Majority of the farmers 78.2% had been in the business well enough over a decade and at such would be more experienced with a sound understanding of the enterprise and the risk associated with it which would enhance more productivity and income. The average number of respondent's household size was found to be 5 the implication of this is that the majority of the poultry farmer's family in the study area, have a fairly large household size which is in line with the discovery of Effiong *et al.* (2017).

Only 31.25% had access to credit, while 64.75% did not have access to credit mostly due to lack of awareness, lack of interest, high rate of interest on loan, application not being granted, lack of collateral/security, which obviously has hindered expansion of business, and had retarded their income except for those who had fixed asset which in cases of production has been used for several years and thus reduce their farm cost, this is in line with result obtained by Habib, (2010). The sources of loan to beneficiaries of credit and rate of interest in percentage include 2 respondents got loan from money lenders at 10% interest rate, 6 of the respondent got money from Relatives and friends at 0% interest rate, 7 of the respondents got money from Esusu/cooperatives at 5% interest rate, another 7 respondents got money from the Micro-finance banks at 8% interest rate, 3 respondents got money from the Commercial banks at 14% interest rate, another 3 respondent got money from Bank of Agriculture (BOA) at 7% interest rate while 2 of the respondent were opportune to get loan from states and local government aids at 3% interest rate. out of the 30 respondents that had access to credit only 22 of them used the entire loan for poultry production implying that the remaining 8 respondents used part of the loan for other purposes (Nabi *et al.* 2018).

39.71% of the farmers who are not beneficiaries of loan indicated lack of collateral as the cause of not to getting loan, 19.12% claimed they were not interested in credit, 2.94% revealed that they were not aware of credit facilities available, this may be attributed to being that they constitute the percent of farmers who do not have formal education, 7.35% claimed that their application was declined by the financial institution, while 30.88% of this non-beneficiaries of agricultural credit attributed it to high-interest rates. 50% of the respondents are into layers and egg production, 43.52% are into broilers production, and 6.48% are into cockerel production. Respondents were asked to list some of the major constraints to poultry production on their farms. Some of the response obtained include Outbreak of diseases, Fluctuating market prices, Lack of access to funds for capital, Theft, Urbanization, Excessive interest rates on loans, Poor power supply, Influence of predators, and Bad weather condition, this is in line with the result obtained by (Habib, 2010).

**Table 1: Socio-demographic characteristics**

Characteristics	Frequency	Percentage	Mean
<b>Age (years)</b>			
30-40	15	15.6	52(1.201)
41-50	30	31.3	
51-60	29	30.2	
61-70	18	18.8	
Above 70	4	4.2	
<b>Marital status</b>			
Married	86	89.6	
Single	8	8.3	
Widowed	2	2.1	
<b>Sex</b>			
Male	51	53.1	
Female	45	46.9	
<b>Household size</b>			
1-4	29	30.2	5.18(1.7)
5-9	55	57.3	
>9	12	12.5	
<b>Level of education(year)</b>			
0	6	6.3	
≤ 6	3	3.1	
7-9	4	4.2	
8-12	10	10.4	
13-14	26	27.1	
15-17	39	40.6	
>17	8	8.3	
<b>Types of poultry production</b>			
Layers	56		
Broilers	16		
Both layers and broilers	24		
<b>Scale of Production</b>			
Small farm (<1000)	60		
Medium (1000<5000)	32		
Large (5000 and above)	4		
<b>Farming experience</b>			
1-5	21	21.9	11.72(6.7)
6-10	39	40.6	
11-15	26	27.1	
16-20	6	6.3	
21-25	2	2.1	
>26	2	2.1	

<b>Access to Agricultural Credit</b>			
Non- beneficiaries	66	64.75	
Beneficiaries	30	31.25	
<b>Sources of Loan(interest rate)</b>			
Moneylenders (10%)	2		
Relatives and friends (0%)	6		
Cooperative/Esusu (5%)	7		
Microfinance banks (8%)	7		
Commercial banks (14%)	3		
Bank of agriculture (7%)	3		
State and Local Government aids(3%)	2		
<b>Use all loan on poultry production?</b>	22		
Yes	8		
No			
<b>Hindrance to access to credit</b>			
No awareness	4		
Not interested	2		
No collateral	27		
Application not granted	12		
High-interest rate	21		

SOURCE: Field survey 2019

#### **Cost and return analysis of poultry farmers in the study area**

The budgetary analysis of the poultry farmers that are beneficiaries of loan shows that they got higher profit than those that do not have. The total revenue of the poultry farmers having access to credit was ₦882, 840 while the total revenue of non-credit users was ₦449, 790. The total variable cost of poultry farmers who make use of credit was gotten to be ₦140, 618 while that of farmers that do not make use of credits ₦84, 356. The gross margin was found to be ₦742, 222 for poultry farmers that use credit, and ₦365, 434 for those that do not make use of credit. The total cost incurred was found to be ₦381, 993 and ₦219, 988 for poultry farmers that make use of credit and those that do not use credit respectively. The net income (NI) was found to be ₦500,847 and ₦229,802 for poultry farmers that use credit and those that do not use credit respectively. The profit of farmers who make use of credit was found to be ₦500,847 and ₦229,802 for non-credit users. T-test statistics show that there was significant difference between the total revenue, total variable cost, total fixed costs, and profit of the poultry farmers having access to credit and those that lack access to credit, also total fixed cost was statistically significant at  $P \leq 0.05$ , BCR of 2.3111 and 2.0446 for poultry farmers that make use of credit and those that do not make use of credit respectively. This indicates that poultry farming is generally profitable in the study area.

**Table 2: Budgetary Analysis of the Profitability of Poultry Farmers with Users of Credit and Non-Credit Users**

Items	Credit User	Non-Credit Users	T-test
<b>Total Revenue (TR) (₹)</b>	<b>882840</b>	<b>449790</b>	<b>0.519***</b>
<b>Variable costs (VC)</b>			
Staff	5098	1792	
Rent	11787	6444	
Disinfectants	1558	500	
Maintenance cost	3900	2870	
Feed	94252	63894	
Transportation	5706	700	
Veterinary service	2599	2143	
Electricity/light source	3239	1463	
Taxes	4000	1486	
Interest rate	5486	1007	
Miscellaneous	2993	2057	
<b>Total variable costs (TVC)(₹)</b>	<b>140618</b>	<b>84356</b>	<b>0.823***</b>
<b>Fixed costs (FC)</b>			
Land	52500	33333	
Deep litter	71667	35000	
Drinking trough	3235	1224	
Feeding trough	3394	1670	
Battery cages	31667	19636	
Crates	2004	1446	
Birds/fowl	46365	43323	
<b>Total Fixed Costs (TFC)(₹)</b>	<b>241375</b>	<b>135632</b>	<b>1.713**</b>
<b>Total costs (TC)(₹)</b>	<b>381993</b>	<b>219988</b>	<b>0.985</b>
<b>Gross margin (TR – TVC)(₹)</b>	<b>742222</b>	<b>365434</b>	<b>0.436</b>
Net income (GM – TFC)(₹)	500847	229802	<b>1.365***</b>
<b>Profit (TR – TC)</b>	<b>500847</b>	<b>229802</b>	<b>1.365***</b>

\*\* Statistically significant at 5%;\*\*\* Statistically significant at 1%

SOURCE: Field survey, 2019

Profitability Indicator	CreditUsers	Non-Credit Users	Pooled	T - value
<b>BCR</b>	2.3111	2.0446	4.3557	1.462
<b>OER</b>	0.1593	0.1875	0.3468	- 0.739
<b>ROI</b>	1.3111	1.0446	2.3557	0.004

**Comparison of the production output of beneficiaries and non-beneficiaries of agricultural credits among the farmers in the studied area**

The appropriate statistical test to be employed in solving this problem is called student t-test. This statistical tool is mostly used to compare the means of related samples

Null hypothesis: There is no significant difference between the production output of the beneficiaries and non-beneficiaries of credits among poultry farmers in the area of study.

Alternative hypothesis: It is significantly different between the production output of the beneficiaries

and non-beneficiaries of credits among poultry farmers in the area of study.

Ho:  $\beta^0 = \beta^1 = 0$ , Ha:  $\beta^0 \neq \beta^1$ .

The result obtained from the t-test analysis shown in table 23 revealed that the level of poultry production output between beneficiaries (763kg) of loan and non-beneficiaries (695kg) significantly differs at the 5% level of probability, hence the null hypothesis is rejected these findings in is in line with the study of Effiong and Konye (2017).

**Table 3: T-test showing the difference of means production output of loan beneficiaries and non-beneficiaries of the loan concerning production output**

Loan Status	Mean (production output)	Standard Deviation	t-values
Beneficiaries	763.7118	10.1858	36.622**
Non-beneficiaries	695.5342	98.1120	23.289**

SOURCE: data analysis (2019).

\*\* Significant at  $P \leq 0.05$

#### Conclusion and recommendation

From the findings of this study, it can be concluded that poultry production is profitable in the study area and sharp significance difference exist between the returns of the beneficiaries and non-beneficiaries of credit in the area hence, access to loan by all poultry farmers would increase their profitability. Arising from this study are the following recommendations, the Government should encourage poultry farmers by providing credit to increase their access and use of loan. Poultry farmers should have access information relating to getting loans, Poultry farmers should be encouraged to form and join associations as membership of association can improve their knowledge of credit access and keep them abreast of government credit initiatives. Further research should be carried out on allocation and efficiency in the use of credit among the beneficiaries of loan, poultry farmers.

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