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Original Research Article

CREDIT CONSTRAINTS: ITS EXISTENCE AND DETERMINANTS AMONG POULTRY (EGG) FARMERS IN NIGERIA

Abstract

Access to productive resources at the level sufficient for economic and scale efficiencies by farmers is constrained by limited resource endowment and poor access to farm credit. With this in view, this study examined the existence and implication of credit constraint on poultry egg farmers in Ogun state, Nigeria. Primary data were collected with the use of structured questionnaire from 120 farmers drawn by a multi-stage sampling technique. Credit-constrained farmers (44.2%) are those whose credit request were either denied or not fully granted, unconstrained farmers (23.3%) are those whose credit demands were fully granted, and 32.5% of the respondents did not participate in the credit market. Descriptive statistics, Probit regression and Test of Difference of Means were used to analyze the data. The study revealed that 90% of the respondents were male, and 77.5% were married with 95% being literate. The mean age and years of experience were 43 years and 8.7 years respectively. For the sample, high transaction cost of loans (56.7%), fear of losing asset (35.8%), and credit rationing by banks (65%) were conditions determining the credit constraint status of farmers. The Probit regression model showed that age ($p<0.05$), marital status ($p<0.1$) and years of experience ($p<0.01$) of the farmer significantly affect the credit constraint status of the farmer. There is significant difference between the gross margin of credit constrained and unconstrained farms ($\alpha=0.01$). This study recommends that farmers should join or form cooperative societies in order to enhance credit accessibility. Government and other agencies should increase credit amount to the poultry egg sector through cooperative societies as this will enable farmers to increase their flock size which will invariably increase their profitability and efficiency.

Keywords: Credit, Constraints, Poultry (Egg) Farming, Production Efficiency

Introduction

The Agricultural sector in Nigeria has remained the largest contributor to the Gross Domestic Product of the nation's economy. For the past two decades it has contributed an average of 39% of the country's GDP and employing over 60% of its workforce. Over 80%

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of the country's population living in the rural areas are directly or indirectly dependent on agriculture for its livelihood (NBS, 2005). In the presence of an ever increasing population, a rise in agricultural growth is crucial to support the growing food needs of the people. A strong and an efficient farming sector would enable a country to feed its growing population, earn foreign exchange, generate employment and provide raw materials for expanding industries. Livestock sector is important for increased productivity in Nigerian agriculture. It provides food, fuel, fertilizer and draught to sustain the rural economy. It serves as a source of supplementary income for the rural farm households. Among livestock-based vocations, poultry occupies a pivotal position because of its enormous potential to supplement income from crop and bring about rapid economic growth. Poultry meat and eggs play a very useful role in bridging the protein gap in Nigeria. They are palatable, generally acceptable and most times very affordable. This acceptability cuts across nearly all cultural and religious boundaries in Nigeria. The importance of poultry to the national economy cannot be overemphasized, as it has become a popular industry for the small holders that have great contribution to the economy of the country. The sub-sector has assumed particular importance in improving the employment opportunity and animal protein production in Nigeria.

A rapid growth of the Agricultural sector as marked by increased food supply, overall employment and increasing share of the Gross Domestic Product, and achievement of production efficiency is only possible when farmers use better and improved agricultural inputs and technologies. To use better inputs and new technologies, the farmers require funds, which mostly come either from personal savings or from obtaining loans. However, savings among these farmers are of negligible amount and insufficient, thus, agricultural credit appears to be the last feasible means for agricultural investment. Credit is one of the components of financial services considered fundamental in meeting up with the investment needs of these farmers. Credit refers to the temporary transfer of inputs in the form of money, goods and services to a willing small scale farmer for agricultural purpose, with the borrowers' potential willingness and promise to pay in particular form after use and confidence by the lenders that the borrower will comply with the terms of utilization and repayment with or without monitoring. (Dicken, 2007, Omonona *et al*., 2008).

The crucial roles of credit in agricultural development and increased food production have attracted concerns from all stakeholders and the government in particular as a result of

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the vital and indispensable role which agriculture plays in the attainment of a viable and sustainable economic growth. Credit facilities have thus been described as the "oil" which eases the friction in the wheel of agricultural progress of any economy. Demand for credit is driven by the consumption, production and investment needs of the farmers. The need for which the credit is intended influences the market where the farmer participates. The rural credit market entails the formal and informal lenders. Agricultural credit enables farmers to buy improved production inputs which invariably enable them to increase their production and enjoy increased net income. Agricultural credit facilitates the use of agricultural capital, labour resources, accelerates adoption process and expands the scale of production. Unless credit is made available, transforming and expanding agricultural production among small scale farmers might be unrealistic. Agricultural credit affords the farmer the ability to make investment and ensure better combinations of resources that can be used to facilitate increase in output.

Access to credit and the eventual participation in a credit market has been faced with a number of constraints ranging from asymmetrical information on the borrower and the unwillingness of the profit-oriented lender to give loan to seasonal and high-risky agricultural investments. These multiple market failures give rise to heterogenous resource allocation across households with varying endowments of productive assets which invariably results in differing levels of production efficiency. An important assertion is that a household that is quantity rationed in the credit market, i.e. one that has unmet demand for contracts that exist in the market, will under-invest relative to a credit unconstrained household. Credit constraints usually take different forms; it could be quantity constraint a situation whereby the credit demand of a lender is unmet or not granted. Transaction-cost constraint situation occurs where a borrower that is willing to participate in the credit market at a given interest rate withdraws as a result of additional indirect cost associated with processing and administration of loans. Risk constraint situation results when a borrower withdraws from participating in a credit market for the fear of losing his/her asset. The descriptions above corroborate existing literatures that distinguishes between access to credit and participation in a credit market. A farmer has access to credit if he/she is able or entitled to borrow from a particular source, whereas it participates in the credit market if it actually borrows from that source of credit (Diagne et al., 2001). This implies that access to credit can be a constraint externally imposed on the farm households, while participation in a credit market is a choice made by a farm household. Thus, a household can have access but may choose not to

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participate in the credit market for such reasons as expected rate of return of the loan and/or risk consideration. This study conceptualizes credit constraints after Hussein and Ohlmer (2008) who defined credit constraints as the situation where the household cannot avail itself of the credit it desires at the prevailing relevant market conditions thus classifying households into credit constrained and unconstrained households.

Credit constraints have both direct and indirect effects on farm production. Directly, it affects the purchasing power of producers to procure farm implement and make farm related investments which they can fall back on to help them overcome credit constraints. Indirectly, it affects the risk behaviour of producers (Guirkinger and Boucher, 2005). Thus, a credit constrained farmer will invest in less risky and less productive technologies rather than in the more risky and productive ones. This risk behavior has negative effects on technical efficiency of the farmers in that it limits the effort of the farmer in attaining maximum possible output.

Studies have shown that a large percentage of farmers faced with credit constraints have low production efficiencies (Hussein and Olhmer, 2008; Dorfman and Koop, 2005; Coelli, 1995; Bravo-Ureta and Pinheiro, 1997). Credit has direct effects on agricultural production and the problem of credit constraint has been shown to be the major cause of low agricultural output which eventually cumulates into low farm income (Iqbal, 1986). It is interesting to know that many farmers do not even have access to any means of credit let alone insufficient amount. Formal sources of credit have some ambiguities and time-consuming procedure which most of the times do not favour small scale mixed farmers. Informal sources of credit also have peculiar problems such as small size of credit and high interest rates.

In Nigeria, the prevalence of credit constraints and their impact on production efficiency has led to low productivity on the farms. Economics of agricultural production at the micro-level is to attain the objective of profit maximization through efficient farm allocation of resources over a period of time or by either maximizing output from given resources or minimizing the resources required for producing a given level of output. Farrell (1957) referred to technical efficiency as the ability to produce the highest level of output given a bundle of resources.

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Credit market failures give rise to heterogeneous resource allocation and endowments of the farmers. Different production outcomes among these farm households results from this situation among other causes. A farm household that faces a binding credit constraint, ceteris paribus will misallocate its resources and under-invest compared to its unconstrained peer. Availability of finance and its accessibility crucially affect production start up and subsequent performance of the farmers. Barriers to access sufficient credit will have adverse effect on the technical efficiency of farm households.

Rural and small holder farmers in Nigeria as in most developing economies have limited capital base and have poor access to external finance. The inability of these peasant farmers to have access to adequate capital has heightened the problem of low efficiency in production. The influence of credit constraints on efficiency of production of farmers cannot be overemphasized. Inadequate credit supply is a central problem with which other production factors exert negative influence on farmers' output and efficiency. For farmers that are fortunate enough to have access to credit, the problem of low efficiency in production still comes up in situations where there is a wide gap between the amount of credit requested and the amount supplied. For some farmers, an addition of the payment made for the use of capital, cost of inputs and other costs far exceeds revenue from sales of farm produce. Akinade (2002) found that there are very few branches of commercial banks in the rural areas of Nigeria, adding to the constraints of farmers and this suggests that the accessibility to credit facilities by rural dwellers is inadequate. This study broadly investigated the existence, determinants and implications of credit constraints on production efficiency of poultry (egg) farmers in Ogun State, Nigeria. Specifically, the study determined the forms of credit constraint conditions in the study area; determined the factors influencing the credit constraint condition of poultry (egg) farmers and examined the effect of credit constrained condition on the production efficiency of poultry (egg) farmers in the study area.

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Overview of the Bank of Agriculture in Nigeria: Case study of Institutional Credit Market

The role of credit in the development of agriculture and the rural economy has been identified as critical in the Nigerian economy. It has been given a strong policy consideration as shown in the formation and contribution of the Bank of Agriculture in Nigeria formerly named National Agricultural Cooperatives and Rural Development Bank (NACRDB). The Bank of Agriculture basically functions in making of direct loans to farmers, farmers' cooperatives and also strengthens the local micro finance banks, which deliver credit at the local community level. The bank also performs additional function such as collaborating with the state and local governments, cooperative associations and local microfinance institutions to improve the welfare of farmers' groups by making agricultural loans available to them for farm investments and farm operating costs. Each state government in the country also has an institutionalized credit agency which has agriculture and other small businesses as its main focus. At other times, different and successive governments provide intervention funds under different schemes or initiatives such as Commercial Agricultural Development Project (CADP), World Bank Assisted FADAMA project, Crop-Specific funded research projects among other interventions. With all these channels, access and participation of the farmers has not been without constraints which are characterized with the formal financial markets. The challenge of political bias and affiliation, unwarranted bureaucracy and loan requirements have resulted in long processing time and high transaction costs. Thus, most farmers rely majorly on their personal savings and support from cooperative societies. Credit services by suppliers particularly the feed milling centres which is usually short term form part of the local credit market among the poultry farmers.

Methodology

Study Area

The study was carried out in Ogun state. This area was considered most appropriate because of heavy concentration of the livestock production, particularly poultry egg production.

The state has a land mass of about 1.7 million hectares and occupies about 1.9 per cent of the total land area of Nigeria and has about 2.5 percent of the Nigerian population. It is made up of 20 Local Government Areas spread across the four main agricultural zones of the state- Egba,

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Ijebu, Remo, and Yewa/Awori. Ogun state shares an international boundary with the Republic of Benin to the west. Within Nigeria, it shares borders with Oyo state to the north, Lagos state to the south, and Ondo state to the east.

The population of the state stands at 3.7million according to the National Population Commission of 2006. Ogun state lies within latitude 6^0N and 7^0N and 2.5^0E. There are two distinct seasons in the state namely, the rainy season and the dry season and two main types of vegetation which are the tropical rain forest and the guinea savannah. The tropical rainforest is found in the coastal areas, mainly in Ogun waterside and part of the Yewa zone. Rainforests are found in some parts of the Ijebu zones of the state. Guinea and derived savannah are found in most of the western and northern parts of the state. The concentration of livestock production, poultry egg production in particular in these areas could be traceable to the perceived favourable characteristics of the vegetation in the area. The vegetation in the area is predominantly rainforest and derived savannah.

Data Source and Method of Data Collection

Primary data were used for this study. The data were obtained through the administration of a well-structured questionnaire to collect information from the poultry (egg) farmers on their socio-economic factors affecting production. The respondents were limited to poultry (egg) farmers in other to give the study a focus.

Survey Techniques and Sample Size

A multi-stage sampling procedure was used to select poultry (egg) farms in the study area. The first stage is the random selection of two zones namely Abeokuta and Ijebu. The second stage involves a random selection of poultry service centres (Veterinary Stores and Feed Milling Centres) within the zones. These service centres were visited on randomly selected days within the week for the period assigned for each of the zones. Farm proprietors or managers who came to patronize these service centres on the days the centres were visited were interviewed. Within these zones also, the location of other poultry (egg) farms was possible with the help of farms that already had been interviewed. Therefore, a total of one hundred and twenty questionnaire were used. Poultry farms who were involved in layers production in the study area were purposively selected. A post – survey analysis showed that fifty-three (53) farms were credit-constrained, twenty-eight (28) were credit-unconstrained, and thirty-nine (39) farm were not participating in the credit market Table 1.

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Methods of Data Analysis

The data obtained from this study were analysed using both the descriptive and quantitative analytical tools.

Descriptive analytical technique involves the use of frequency tables, multiple response tables, and percentages.

Probit regression model was used to identify what factors determine the credit constrained condition of a poultry (egg) farmer. It examined the relationship between the probability of a farm being credit constrained or not with a number of explanatory variables.

The model is specified below;

$$C^* = \delta \sum_{t=1}^{n} Zi + \epsilon_i \quad \text{.....} \quad \text{(i)}$$

C* = Dichotomous (1,0), indicating whether observation i is credit constrained or not.

Zi = Represent a vector of explanatory variables for each farm unit i.

δ = A vector of parameters

ϵ_i = A random error term.

C* is the excess demand function for credit, if C*>0, it implies a situation where there is demand for credit as against what the farm is supplied.

Where

C = Credit status of the farm (constrained = 1, non-constrained = 0)

Z_1 = Age of the farm proprietor

Z_2 = Gender of the proprietor (male=1, female=0)

Z_3 = Years of formal education (years of schooling)

Z_4 = Land titling (titled=1, untitled = 0)

Z_5 = Farm size for poultry enterprise (no of layer birds)

Z_6 = Records/ Accounts Keeping (Yes=1, No=0)

Z_7 = Membership of any Farmers Association or Cooperative Society.(Yes=1, No=0)

Z_8 = Loan application (No=0, Yes=1)

Z_9 = Form of business ownership (Sole proprietorship=1, Others = 0)

Z_{10} = Registration status of the farm unit (Not Registered=0, Registered=1)

Z_{11} = Neighbour Use of Credit (No=0, Yes=1)

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Results and Discussion

Personal Characteristics of Poultry (Egg) Farmers

The average values and percentage distribution of the personal characteristics of the farmers are presented in this section. The age, gender and educational status of the poultry egg farmers are adjudged relevant as having implications on the productivity of the farmer, access to information on technology adoption and use and also the understanding of the behaviour of the credit market. The result showed that majority (90.0 per cent) of the credit constrained poultry egg farmers were males while 10.0 per cent of them were females (Table 2). The heavy participation of males in poultry egg production could be due to the rigor and stress which characterizes the poultry egg production business which not many females might be able to cope with. In some cases the input of the proprietor is not physical but in coordination and management of the farm business. The gender of the proprietor is predicted to influence the efficiency of the farm unit because some of the input of the proprietor is managerial and also physical. The distribution of the age of the respondents shows that 72.5 per cent were aged below 50 years of age. The study further showed that the average age of poultry (egg) farmers in the study area is 43 years, these findings agrees with the findings of Yusuf and Malomo, (2007) who reported an average age of 44 years for poultry (egg) farmers in the same Ogun state. The age of the proprietor informs of the vigor, versatility and likelihood of adoption of innovations and production technologies of the respondents.

The field survey further showed that majority 77.5 per cent, were married and 22.5 per cent were singles. The marital status of a farm proprietor has an implication for the household size and invariably the amount of family labour that is available for farm business. Results from the study showed that majority 89.2 per cent, of the poultry (egg) farmers had post – secondary education. This high level of education of the poultry (egg) farmers could be due to the fact that success and efficiency in poultry egg production like any other livestock production enterprise require some level of educational attainment by the farmer. The assertion above is premised on the fact that innovations on efficient production and management methods are constantly evolving to meet the challenges of the poultry enterprise. The years of education of the farm proprietor is thus expected to influence the efficiency or inefficiency of the farm unit. The study revealed that the average years of experience of the poultry (egg) farmers in the study area is 8.72 years with majority (59.2 %) of the farmers having above 5 years.

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Infrastructural Access to the Farms

The study looked into the level of infrastructures available around the poultry farms in the study area. The type of water sources available to the farms, the extent of rural electrification and also the quality of access road. These basic infrastructures are strategic to the success and efficiency of the agricultural sector, although the insufficiency or poor quality of these infrastructures have persisted in the agricultural sector of Nigeria. Table 3 showed that 65.8 per cent of the respondents sampled uses borehole, 26.7 per cent uses deep well while 7.5 per cent have both facilities. This high level of investment in these infrastructures could be adduced to the act that it is almost impossible to have a poultry farm without an independent source of water for production for the farm.

The result further showed that majority (60.0 per cent) of the respondents sampled are linked to the National grid, while 40.0 per cent of the respondents sampled are not linked to the National grid. All the poultry farm units so sampled all have a power generating machines which either serves as an alternative source generating electrical power or in other cases it serves as the main source of generating electrical power for farm use. Majority (61.7 per cent) of all farm units sampled have access roads are motorable but not tarred. Only 17.5 per cent of the access roads to these farms are tarred and are in good state.

Flock Size and Total Revenue of Poultry (Egg) Farmers

Table 4 showed the distribution of the flock size and the total revenue gotten from the enterprise. This total revenue includes both the revenue gotten from sales of eggs and also sales of spent layers. The poultry (egg) farmers are categorized based on their access and participation in the credit market. Majority of the sampled units for both credit constrained and credit unconstrained farm units operate at medium-scale of production. Following Binuomote *et al*. (2008), this study categorized small scale farms to those with flock size less

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than 1000 birds, medium-scale size to flock size between 1000 and 5000 birds, and large-scale size to size above 5000 laying birds. A large proportion (43.3 percent) of credit constrained and 45.0 percent of credit unconstrained farm units sampled were operating at a medium-scale. This agrees with the findings of Oleke and Isinika, (2011), who reported that 67.4 percent of commercial poultry egg farms in Tanzania were operating on the medium-scale. The study further revealed that 16.7 percent and 28.3 percent of credit constrained and credit unconstrained farm units respectively were operating on a large-scale.

The distribution of the total revenue showed that 41.7 percent and 50 percent of the credit constrained and credit unconstrained farm units had annual revenue above ₦10, 000, 000 from sales of eggs and spent layers. This could however be adduced to the size or scale of the poultry farms. It would however not be correct to conclude that the size or scale of a poultry farm is a function of its present credit constraint condition. Some farms have sufficient resources other than external financing to operate on a large scale

Distribution of respondents according to the forms of credit constraints

The distribution of respondents according to the forms of constraints they encounter in accessing credit facilities for use in agricultural operations or farm investments is discussed in this section and shown in Table 5. Having classified farms as whether they applied for loan or not, classification of non-applicant households requires additional information. The poultry egg farmers were first asked whether or not any formal lender would offer them a loan if they were to apply. If they said yes, they were then asked why they had not applied. In variance to Gurkinger and Boucher, 2005, all the farm production units were asked this qualitative questions whether or not they applied for loan. The qualitative questions that bothered on why they did not apply for loan to a formal financial institution was then used to categorize them into either they were transaction cost constrained, risk constrained or quantity constrained. The poultry egg farmers who indicated high interest rate, time factor, high level of paper work and high processing fees as factors hindering their

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participation in the credit markets were classified as being transaction cost constrained (56.7%), while those who responded that they would not mind participating in the credit market despite these factors were categorized as not being transaction cost constrained (43.3%). Poultry egg farmers who indicated that they would not participate though they have access to the credit market because of the fears of losing their assets were categorized as being risk constrained (35.8%) while those who said they would not mind putting their assets down as collateral to have credit to finance production were categorized as risk unconstrained farmers (64.2%). Farmers who responded that they have sufficient liquidity to start at the scale they have decided to start poultry egg production and as such were not willing to borrow were classified as credit (quantity) unconstrained (56.7%), while those who said they had no sufficient liquidity and have had their request rejected were classified as credit constrained (43.3%). Those who indicated that high collateral and rejection of their previous applications were classified as credit constrained (65%) while those who said no were categorized as credit unconstrained (35%).

Factors Influencing the Credit Constrained Condition of the Sampled Farm Units

The probit regression model was used to identify the factors that influenced the credit-constrained condition of the poultry egg farm units that were sampled in the study area. The maximum likelihood estimates of the probit regression model are shown in the Table 6. The log-likelihood estimate and the chi-square result of the model are significant at 1 percent level of significance, implying that the model is fit and suitable for the analysis and the variables.

The Pseudo R-square showed a value of 0.89 which in the parlance of the ordinary least square regression implies that the explanatory variables so considered in the model are determining 89 per cent of the probability of a farm unit being credit constrained. Out of the sixteen explanatory variables considered in the model, seven variables significantly influenced the credit constrained condition of the farm units. The age of the proprietor significantly but negatively influenced the credit constrained condition of the farmer at 5 per

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cent. This implies that the probability of being credit constrained decreases as age increases, in other words the older the proprietor of the farm the lower the likelihood of being credit constrained. The findings showed that the years of experience of the proprietor of the farm has a positive and significant influence at 1 per cent on the credit constrained condition of the farm. This implies that the higher the years of experience of the proprietor the higher is the probability of the farm unit being credit constrained. The coefficient of financial records is positive and significantly influenced the credit constrained condition of the farms at 5 per cent. This implies that keeping financial records by the farms increased their probability of being credit constrained. One of the prerequisite for qualification for loan in a formal sector is the ability to provide the past income statement of the farm which is only possible with keeping financial records. This observed coefficient as well as that of the year of experience does vary from a priori expectations of their signs. The result is however in tandem with that reported by Ojo, 2003.

The result further showed that loan application had a positive relationship on the credit constrained condition of the farms and significantly influenced the credit constrained condition ($p<0.1$). It is not expected that a farmer that does not apply for loan can get constrained but the level of significance reported imply that a farmer applying for a loan does not mean that its request will be fully met. The coefficient of neighbour use of credit, i.e whether a neighbour (farmer colleague or other relative) is participating in any financial market showed a positive relationship with the credit constrained condition of a farm unit and significantly influences it at 1 percent level of significance. Hence, the result showed that the variable is a significant determinant of credit use and invariably the credit constrained condition of the farm units and indicates the likelihood of such observations.

Membership of a cooperative society showed a negative relationship and significantly ($p<0.05$) influences the credit constrained condition of the farm units. The negative relationship and significant influence indicate that farm production units that are members of any cooperative societies are less likely to be credit constrained. The coefficients of land size, educational status, sex, livestock association, business ownership and registration status of the sampled farm production units have a negative relationship with the credit constrained condition of the farm production units, but at a non-significant level. The result implies that these variables have a likelihood of decreasing the probability of a farm production units from being credit constrained.

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Effect of Credit Constraints on the Profitability of Poultry Egg Production

The t-test of difference of mean was used to determine to what extent credit constraint affects the profitability of the poultry egg farm units. The value of the gross margin was used in order to avoid bias with respect to fixed factors. The result shows that there is a significant difference between the profitability (as represented by gross margin) of credit constrained and unconstrained farm units. The t-statistic was significant at 1 percent level of significance ($p < 0.01$). The t-value result which was significant at 1 percent level implies that we reject the null hypothesis and thus fail to reject the alternate hypothesis.

Conclusion and Recommendation

This study reveals that credit constrained condition in the livestock sector with particular emphasis on the poultry egg production sub-sector is a militating factor to improved efficiency among other management and socio-economic factors. The result shows that majority of the proprietors were males and married. Majority of them were middle-aged, above forty years of age and have the poultry business as their main occupation. Credit constraint condition exists in the study area in the form of quantity constrained, transaction-cost constrained and risk factor constrained conditions. These conditions were ascertained through responses gotten from qualitative questions bothering on their credit demand experiences. Age of the proprietor, years of experience, keeping financial records, loan application, neighbour using loan, marital status and cooperative membership among other factors, are factors that significantly influences the probability of a farm unit being credit constrained at differing levels of significance.

The following recommendations are made based on the findings.

1. Owing to the pronounced effect of constrained level on the efficiency of the poultry farms, the government should revisit the guaranteed scheme as well as develop a national formal credit policy alongside a credit bureau concerned with the financial information of small and medium scale and agricultural enterprises.

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2. Commercial banks should be made to commit to agricultural growth and development by way of recommending a minimum percentage of all loans given out to be directed to agricultural investors and ensuring effective implementation.

3. Poultry egg farm proprietors should endeavour to join or form cooperative societies as they will be able to avail themselves the opportunities of cooperative membership among which is access to credit. Government can help facilitate this process of cooperative formation.

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Table 1: The total sample size of one hundred and twenty poultry (egg) farmers in the study area was disaggregated based on their access and participation in the financial market.

Categories	Frequency	Percentages
Credit Constrained	53	44.2
Credit Unconstrained	28	23.3
Non-Users of Credit	39	32.5
Total	120	100.0

Source: Field Survey, 2011

Table 2: Personal Characteristics of Poultry (Egg) Farmers

VARIABLES	FREQUENCY	PERCENTAGES
Gender		
Male	108	90.0
Female	12	10.0
Total	**120**	**100.0**
Age of Respondents(years)		
Less than 30	23	19.2
31 – 40	27	22.5
41 – 50	37	30.8
Above 50	33	27.5
Total	**120**	**100.0**
Mean (Standard Error)	43.14 (1.14)	
Marital Status		
Single	27	22.7
Married	93	77.5
Total	**120**	**100.0**
Educational Status		
Primary Education	2	1.7
Secondary Education	7	5.8
Bachelor Degree	91	75.8
Postgraduate	20	16.7
Total	**120**	**100.0**
Years of Experience		
1 – 5	49	40.8
6 – 10	33	27.5
11 – 15	18	15.0
16 – 20	13	10.8
Above 20	7	5.8
Total	**120**	**100.0**
Mean (Standard Error)	8.72 (0.65)	

Field Survey, 2012

Table 3: Basic Infrastructures on Farms

VARIABLE	FREQUENCY	PERCENTAGES
Water Source		
Borehole	79	65.8
Borehole and Deep well	9	7.5
Deep well	32	26.7
Total	**120**	**100.0**

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Electricity Source(National Grid)		
Linked	72	60.0
Not Linked	48	40.0
Total	**120**	**100.0**
Access Road		
Non – Motorable	3	2.5
Tarred, in Good State	21	17.5
Tarred, in Poor State	22	18.3
Un-tarred but Motorable	74	61.7
Total	**120**	**100.0**

Field Survey, 2012

Table 4: Flock Size and Total Revenue from Poultry Egg Production Enterprise.

Variable	Credit Constrained		Credit Unconstrained		Non-Users		Aggregate	
Flock Size	Freq	%	Freq	%	Freq	%	Freq	%
Less than 500	7	13.1	4	14.3	10	25.6	21	17.5
501 – 1000	9	17.0	3	10.7	9	23.1	21	17.5
1001 – 5000	22	41.5	14	50.0	14	35.9	50	41.6
5001 – 10000	5	9.4	1	3.6	2	5.1	8	6.6
Above 10000	9	17.0	6	21.4	4	10.3	19	15.8
Total	53	100.0	28	100.0	39	100.0	120	100.0
Mean	6539.8		13541.43		2645.73		5500.84	
Standard Error	(1477.75)		(11922.15)		(562.82)		(1170.19)	
Total Revenue								
< 5, 000, 000	10	18.9	7	25.0	17	43.6	34	28.3
5,000,001 – 10,000,000	16	30.2	6	21.4	9	23.1	31	25.8
Above 10,000,000	27	50.9	15	53.6	13	33.3	55	45.8
Total	53	100.0	28	100.0	39	100.0	120	100.0
Mean (Std Error)	44,603,000		85,791,000		15,327,000		35,982,000	
Standard Error	(10,602,000)		(75,218,670)		(3,408,900)		(7,877,330)	

Source: Field Survey, 2012.

Table 5: Distribution of respondents according to the forms of credit constraints

QUALITATIVE QUESTIONS	RESPONSE YES/NO	TRANSACTION COST CONSTRAINTS	FREQUENCY	PERCENTAGE
High Interest rate, Time factor, High Level of Paperwork(Bureaucracy), High processing fees	YES	CONSTRAINED	68	56.7
	NO	UNCONSTRAINED	52	43.3
QUALITATIVE QUESTIONS	RESPONSE YES/NO	RISK CONSTRAINTS	FREQUENCY	PERCENTAGE
Fear of losing assets	YES	CONSTRAINED	43	35.8

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	NO	UNCONSTRAINED	77	64.2
QUALITATIVE QUESTIONS	RESPONSE YES/NO	QUANTITY CONSTRAINTS	FREQUENCY	PERCENTAGE
High Collateral, Have always been rejected.	YES	CONSTRAINED	78	65.0
	NO	UNCONSTRAINED	42	35.0
Have Sufficient Liquidity	YES	UNCONSTRAINED	68	56.7
	NO	CONSTRAINED	52	43.3

Source: Field Survey, 2012

Table 6 Determinants of credit constraints conditions of the poultry egg farms. (Probit Model)

Independent Variables	Coefficient	Standard Error	T-value	Marginal Effects
Age of Proprietor	-0.28637	0.11865	-2.4134**	0.0001
Years of experience	0.70258	0.24208	2.9023***	0.0001
Flock size	0.63835E-04	0.81552E-04	0.7827	0.0002
Land size	-0.19056E-01	0.24594E-01	-0.7748	0.0001
Financial Record	3.1301	1.4762	2.1204**	0.81698
Loan application	4.8947	2.5065	1.9528*	0.98171
Neighbour use	6.1557	2.1272	2.8938***	0.98488
Religion	3.7375	2.5740	1.4520	0.92668
Educational status	-0.20223	0.18428	-1.0974	0.0000
Marital status	5.9219	3.3180	1.7848*	0.98482
Sex	-2.3911	1.8107	-1.3205	-0.15087E-01
Livestock association	-1.9251	1.6506	-1.1662	-0.15068E-01
Membership of Cooperatives	-8.9320	3.9902	-2.2385**	-0.15090E-01
Land titling	0.47792	1.6448	0.29056	0.30443E-01
Business ownership	-1.5506	1.1536	-1.3441	0.0001
Registration status	-0.97940	1.5730	-0.62263	-0.14265E-01
Constant	2.8844	4.4022	0.65521	

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Log-likelihood Function	-8.1141***
Chi-square (χ^2)	150.127***
Pseudo R^2	0.89

Source: Field Survey 2012

The statistical level of significance are denoted as *, **, *** for 10%, 5% and 1% respectively.

Table 7: Test of Difference of Mean Profit between Credit Constrained and Credit Unconstrained Poultry Egg Farmers.

Constrained Status	Mean Gross Margin	Standard Deviation	t-value
Constrained	6.12E6	(1.30E6)	3.86***
Unconstrained	8.87E6	(4.09E6)	

Source: Field Survey 2012

Statistical Level of significance denoted as *** implies significance at 1%