International Scholars Journals

International Journal of Agricultural Extension and Rural Development ISSN 3254-5428 Vol. 7 (2), pp. 001-005, February, 2019. Available online at www.internationalscholarsjournals.org © International Scholars Journals

Full Length Research Paper

Impact of credit uptake on performance of improved indigenous chicken enterprises among smallholder farmers in Kenya

[1]Sarah L. Mango*, [1]Eric K. Bett, [1]Newton Nyairo

[1]Department of Agribusiness Management and Trade, Kenyatta University, P.O Box 43844-0100, Nairobi, Kenya.

Accepted 30 December, 2018

Availability of credit has been applauded as the most important resource for the success of any business venture. In Kenya, Youth enterprise development fund has been extending credit services to youths in chicken business since 2006 as a strategy by the government to create employment opportunities for the youths. However, information on whether this credit facility has increased both income and productivity levels remains scanty and undocumented. The proposed study sought to establish the impact of the fund on both income and the number of chickens raised in Siaya County. Multistage sampling technique was employed to sample both credit and non credit beneficiaries in the study area. Both primary and secondary data were utilized in the study where primary data was collected by semi-structured questionnaire. Propensity score matching with the aid of STATA version 11.0 statistical software was employed to establish whether there was a significant difference between the treated and untreated groups. Results revealed that use of credit had a statistically significance impact on farm income P<0.05 and number of chickens raised P<0.05. The study recommended for awareness creation among youths on the existence of the credit and creation of another microfinance fund to carter for the elderly farmers

Keywords: Indigenous chicken(IC), credit, impact, youths, propensity score matching.

INTRODUCTION

Agriculture is the mainstay of Kenya's economy, currently contributing 24 percent of GDP directly, and another 27 percent indirectly. According to the Agriculture Sector Development Study (2009), the sector also accounts for 65 percent of Kenya's total exports and provides more than 18 percent of formal employment. More than 60 percent of informal employment is in the rural areas. Omiti, (2015) found that poultry contributes 30% to the agriculture sector, 55 % to the livestock sector and 7.8% to the GDP. Additionally, the poultry sector employs 2-3 million people in Kenya. Sock et al. (2013) identified poultry production as a high potential agribusiness value chain that cuts across regions with entrepreneurship and employment ability for young people.

Gem Sub County has a high potential for growth in the poultry industry with over 80% of the homesteads still keeping poultry for subsistence. About 79% of the total poultry population consists of indigenous breeds. Production of improved local poultry breeds has been promoted in the Sub County as a technology meant to enhance commercialization of the enterprise. The efforts of various stakeholders which also targeted youthful poultry producers, aimed at improving the livelihoods in the region which has a poverty level of 46%.

The YEDF in Gem Sub County has disbursed a total of KES 3,845,000 to youth groups and KES 473,800 to individuals within groups since its inception in the year 2006. 16% of the beneficiary groups invested the fund in

Corresponding author. E-mail: geosar2013@gmail.com

poultry production (YEDF Gem, 2016). However, there is no documented evidence on the impact of credit uptake on either income levels or the scale of production. The current study will fill this knowledge gap. The findings from this study will enable policy makers, development partners, microfinance institutions and agricultural sector service providers to develop workable strategies to enhance growth in the indigenous chicken value chain.

Ojo olu (2009) studied impact of MF on entrepreneurial development using linear regression and found that MFIs have a significant effect on entrepreneurial activity but less significant effect on entrepreneurial development. In another study, Muwewa (2010), on impact of MF on growth of SMEs in Machakos County, found using multivariate regression model, that provision of MFI services had a significant effect on annual growth in sales of enterprises. Yusuf et al. (2014) adopted the use of gross margin analysis and regression models to examine the profitability of different microenterprises as a measure of business performance. His study found that trading yielded the highest turnover, while farming yielded the lowest. In the study conducted by Rotich et al. (2015) on the effects of Microfinance services on the performance of small and medium enterprises in Kenya found there was a strong relationship between the extents of the provision of microfinance and the performance of the SMEs with the MFIs significantly impacting on the performance of the SMEs.

A study by Murekefu (2013) on selected factors affecting the development of indigenous poultry value chain in Vihiga County using descriptive studies found that farmers who accessed credit had a highly significant increase in labour employed and use of quality feeds. In addition she found access to credit to have a positive correlation with intensive poultry production systems. Wainaina et al., (2012) concluded in his study on impact of contract farming on small holder poultry farmers' income in Kenya that farmers had to be facilitated with access to credit in order to participate in and be successful in contract farming. Okoth et al. (2011) found no significant effect of the YEDF on growth of youth enterprises in Kenya, but subsequent studies by Makani (2015), Kitavi (2015), Ratemo (2014) and Nyongesa (2014) found a positive effect on business growth, turn over, employment creation and increased income respectively.

MATERIALS AND METHODS

The study area and Sampling

Gem Sub County is one of the six sub counties in Siaya County with a surface area of 403.7km ². It borders 8 Sub Counties and is administratively divided into 6 wards, 9 locations and 39 sub-locations. The arable land measures 322.24 km2 which is under crop production and natural vegetation cover. The remaining 81.46 km² is under homesteads, schools, hospitals, roads and town/market centres.

Sample size

Primary data was collected with the aid of structured questionnaires administered by trained enumerators in a cross sectional survey design conducted between January and February 2018. Primary data collected included socio-economic factors; age, gender, household size, nature of business ownership, family labour and role in poultry value chain.

The vehicle for analysis was binary logistic regression model while performing the analysis; STATA 11 statistical package was used.

A sample size of 217 respondents was obtained using Kothari`s formula for an infinite population as follows;

$n = \frac{z^2 pq}{e^2}$ ..... (4)

n is the sample size,

p is the proportion of the population (50%) containing the major attributes of interest (youth farmers of improved indigenous chicken). This is chosen because the proportion of population rearing IIC is unknown.

Q is 1-p,

Z is the standard variation of 1.96 given a confidence level of α =0.05 and

e is the acceptable precision level of 7.0%

A sample size of 217 was thus selected based on the following computation;

1.96x1.96x0.5x0.5/0.07x0.07 = 196

Since it is difficult to determine the exact population of youth farmers keeping IIC in the study area due to continuous influx of such chicken, the assumption was that 50% of the chicken farmers in the study area rear chicken. The acceptable precision of 7.0% was chosen because of the smaller sample size hence higher confidence level of the results. The final number of questionnaires administered was 217 representing an increase of 10% to carter for non response rate (Israel, 1992).

Data Collection

Data collection instruments for this research include use of semi-structured questionnaires and primary data from literature, county livestock office and YEDF office. The data was cleaned, coded, and analyzed through a statistical analytical database. The data was archived for future reference.

Data analysis

Propensity scores were estimated using logit model due to its computational simplicity. The model of analysis was expressed as:

$P(X) = Pr (D= 1|X) = F (\beta 1X1 + \ldots\ldots\ldots\ldots\ldots\ldots + \beta_k X_k)$ (8)

where :

D is the indicator of participation, D =1 if a farmer is a beneficiary of YEDF credit and 0 if s/he is a non-beneficiary.

X_i represents a set of independent variables which are similar across all smallholder IIC farmers.

This study aimed at estimating the impact of YEDF on the smallholder IIC farmers. In order to achieve this, two conditions were established: the common support assumption and conditional independence assumption (Kothari, 2005).

$D \perp X \mid P(X)$ (9)

This means that the pre-uptake characteristics of the YEDF beneficiaries and non-beneficiaries must be the same and should be conditional on the propensity score and each individual has the same probability of taking up the YEDF. This implies that the probability of smallholder IIC farmer's participation is conditional on farmer's socio-economic and institutional factors. Rosenbaum and Rubin (1983) have shown that if potential outcomes are independent of participation conditional on covariates they are also independent of participation conditional on a balancing score (X) or Average Effect of the Programme (AEP). The balancing assumption dictates that the propensity score of participation P (D=1 for participants) = P(X) must be conditional for the evaluation of the effect of the programme. On the other hand, the conditional independence assumption (CIA) requires that the independent variables are independent of participation but conditional on propensity score. It also assumes that selection is exclusively based on observable characteristics and the model is expressed as:

$Y1Y0 \perp D \mid P(X)$ (10)

Where,

$Y_1 Y_0$ are the potential outcomes with or without program,

D is the participation variable

P(X) is the propensity score.

For any given propensity score, exposure to YEDF program is random and therefore beneficiaries and non-beneficiaries of the program should be on average observationally identical (Mugenda and Mugenda, 2003). Once the propensity score has been computed the Average effect of participation (AEP) can be estimated as follows:

$AEP = E \{Y_{1i}-Y_{0i} /Dí=1\}$

$= E \{E \{Y_{1i}-Y_{0i} /Dí=1, P (Xí)\}\}$

$= E \{E \{ Y_{1i}| Dí=1 P(Xí)\}-E\{ Y_{0i} /Dí=0, P(Xí)\}\ Dí=1\}$

Where:

AEP is the average effect of participation,

Y_{1i} is the potential outcome if farmer is YEDF participant,

Y_{0i} is the potential outcome if the farmer is not a participant in YEDF.

ATT is the average treatment effect on the treated which indicates the mean differences between the scores among YEDF beneficiaries and non-beneficiaries who are identical in observable characteristics. In order to see the effect of the treatment of the propensity score technique, Becker and Ichino (2002) proposed different matching methods that include Nearest Neighbour Matching, Radius Matching, Kernel Matching and Stratification Matching.

RESULTS AND DISCUSSION

Performance of IIC business was evaluated using two parameters; farm income and the number of chickens reared. The hypothesis to be tested was whether farmers who used credit from YEDF in chicken business had increased income and chickens reared than their counterparts who did not use credit. To establish these, a sample of 76 households participating in credit uptake (treatment) was matched with 141 households that did not use credit (control). All the three matching algorithms; nearest neighbour, Kernel and caliper method were used. The procedure involved establishing propensity scores by carrying out a binary logistic regression on factors influencing YEDF uptake. The coefficients of the regression equation were used as propensity scores and were matched between credit adopters and non adopters to establish the region of common support between the two cohorts.

The impact of YEDF credit on income and number of chickens raised was evaluated using the three marching. The differences in both income and number of chickens rose between the two cohorts which was as a result of adoption and non- adopting of microfinance credit was arrived at by evaluating the average treatment of the treated (ATT), average treatment of untreated (ATU) and the average treatment effect (ATE) .This is shown in the table 3.1.

Results of table 3.1 above indicates that when nearest neighbour method is used as matching algorithm, the ATT on income is significant at 5% and the ATT on number of chickens raised is significant at 1%. The radius caliper method showed that the ATT on income is significant at 5% while the ATT on number of chicken raised was significant at 1%. Kernel method did not show any significance in both the income and number of chicken raised ($p>0.1$). However the ATT values for both nearest neighbour and caliper method were similar in all the outcome variables.

The nearest neighbour method results showed that the difference in income between the treated and the control was Ksh. 10,864.27 hence resulting in the decision to reject the second hypothesis. The results also indicated that the difference between the number of chicken kept under the treated group and the non treated group was 119 chickens. Consequently, the decision was

Table 3.1. Evaluation of impact of YEDF on performance of IIC..

Matching	Performance	Treated	Controls	Difference	S.E	T-value
Nn	Income	26641.80	15777.77	10864.02	5931.71	1.83**
No. chicken	159.83	40.55	119.27	42.49	2.83***	
Caliper (0.3)	Income	26641.80	15777.77	10864.02	5931.71	1.83**
	No. chicken	159.83	40.55	119.27	42.42	2.83***
Kernel	Income	26651.34	35090.06	8438.71	29297.54	0.29
	No. of chicken	165.53	138.88	26.65	150.14	0.18

Source: Own survey 2018, * significance at 10%, **significance at 5%, ***significance at 1%.

to reject the third hypothesis. The results for both the nearest neighbour and caliper method were similar. Based on the two matching methods, credit uptake has a statistically significant increase on both the number of chickens raised and the farm income in the study area. The increase in number of chicken for the treated group can be attributed to the incentive to purchase large amount of stock and adequate feeds for chicken. Increased income levels for the treated group compared to the untreated can be matched with; high growth rates of chicken which results to faster maturity period, economies of scale in bulky procurement of inputs and sales of chicken and big live weight per chicken at the point of sale.

The findings corroborate with other researchers; Girabi and Mwakaje (2013) established that credit access increases production since farmers are able to procure inputs at the required time. Waud (2013) reported that in Bangladesh, efficient utilization of inputs resulted into increased revenue due to accessibility to credit.

CONCLUSION AND IMPLICATIONS

Results of impact assessment established that YEDF uptake was found to significantly raise farm income from Ksh. 15,777.77 to Ksh. 26,641.80. Similarly, farmers who took YEDF were able to increase their number of chicken reared by 119 compared to those who did not take credit. This indicates a significance gain in overall performance. Farmers who took credit from YEDF utilized the funds in constructing new poultry house, bought starter birds and purchased poultry feeds. However some farmers were not aware of the existence of the YEDF and whether it can fund agricultural projects. The government and other nongovernmental financial bodies should enhance availability of capital in form of credits to farmers. In implementing this, an alternative fund should be created for the elderly cohort. The study found that the elderly invested more in IIC business and were more likely to go for credit than the young farmers.

REFERENCES

County Government of Siaya, (2013) County Intergrated Development Plan 2013-2017; retrieved from: iscrc.ilegkenya.org/documents/Siaya%20CIDP-2013-17.pdf

GOK (2009). Agriculture Sector Development Strategy. Retrieved from: http://www.fao.org/fileadmin/user_upload/drought/docs/Agricultural%20Sector%20Development%20Strategy.pdf

Kothari C. R (1990). Research Methodology, methods & techniques. New Delhi: New Age International (p) ltd.

Mugenda M& Mugenda A. (2003) Research method quantitative and qualitative approaches; Nairobi, acts press.

Murekefu F.S . (2013) Selected factors affecting the development of indigenous poultry value chain in Vihiga District, Vihiga county. Retrieved from: https://irlibrary.egerton.ac.ke/jspui/handle/123456789/278

Mwewa (2010). *The effects of microfinance services on the growth of small and medium enterprises in Machakos County*. Retrieved from: http://erepository.uonbi.ac.ke/handle/11295/58984

Nyongesa M. (2014) Influence of YEDF on the growth of enterprises: a case of youth enterprises in Butula constituency. Retrieved from https://repository.uonbi.ac/ke/handle..../74041

Ojo O. (2009) Impact of microfinance on entrepreneurial development: a case of Nigeria. Retrieved from; https://www.researchgate.net/publication/228716385_Impact_of_microfinance_on_entrepreneurial_development_The_case_of_Nigeria

Rosenbaum; P. & Rubin, D. (1983). The Central Role of the Propensity Score in Observational Studies for Causal Effects, *Biometrika,* 70 (1), pp. 41-55.

Rotich, I., Lagat, C. & Kogei, J. (2015). Effects of Microfinance services on the performance of small and medium enterprises in Kenya, *African Journal of Business Management, 9* (5), pp. 206-211.

Sock, M., Nwaobasi, D., Some, J., Elienne, S., Dialle, M., Epoupa, R. & Mabohlal, C. (2013). Multi -Country assessment of youth employment and entrepreneurship opportunities in high potential agriculture value chains. Derlberg Global Development

Advisors, The Master Card Foundation, Save The Children.

Wainaina, P., Okello, J. & Nzuma, J. (2012). Impact of contract farming on small holder poultry farmer's income in Kenya. International Association of Agricultural economist, 2012 Conference, August 18-24, 2012, Foz do Iguaçu, Brazil.

Yusuf S.A, Amao J.O, Olawale O. (2014)Effect of micro credit on small scale enterprises in osun state , Nigeria. Retrieved from: http://www.aijcrnet.com/journals/Vol_4_No_6_June_2014/20.pdf