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**DETERMINANTS OF MICROCREDIT SUPPLY TO FARMERS
IN KANO STATE, NIGERIA: A TOBIT MODEL APPROACH**

The objective of this paper was to investigate the factors influencing microfinance banks credit supply to farmers. Microlevel data was gathered from the microfinance banks in Kano State, Nigeria. Evidence reveals that additional marketing staff employed by a microfinance bank increases the rate of credit supply by 10.8%, while increase of 1 km distance away from a bank reduced chances of a farmer being supplied with credit by 19%. However, having a bank account and being a farmer with off-farming business increased the chances of crediting by 10.1% and 11% respectively. Based on these findings, it is recommended that microfinance banks should employ more marketing staff for fund mobilization and disbursement to rural areas. It is also recommended that government should encourage farmers into off-farming businesses.

Keywords: microcrediting; farmers; Nigeria; Tobit model; off farming business.

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**ЧИННИКИ ВПЛИВУ НА МІКРОФІНАНСУВАННЯ ФЕРМЕРІВ
ШТАТУ КАНО, НІГЕРІЯ: АНАЛІЗ ТОБІТ-МОДЕЛІ**

У статті досліджено фактори, що впливають на доступність кредитування та мікрофінансування для фермерів, для чого зібрано та проаналізовано дані щодо мікрофінансових банків штату Кано, Нігерія. Аналіз отриманих даних доводить, що розширення маркетингового персоналу на одну вакансію у мікрофінансовому банку підвищує доступність мікrokредитів на 10,8%, в той час як збільшення відстані між філіалом банку та фермером на 1 км знижує ймовірність кредитування на 19%. Наявність банківського рахунку, а також ведення іншої діяльності, крім фермерської, підвищує ймовірність мікrokредитування на 10,1% та 11% відповідно. На основі отриманих результатів розроблено рекомендації щодо роботи маркетингових служб мікрофінансових банків. Також надано рекомендації місцевому уряду відносно стимулювання позафермерської діяльності жителів сільських територій.

Ключові слова: мікrokредитування; фермери; Нігерія; тобіт-модель; позафермерські види діяльності в сільській місцевості.

Форм. 3. Табл. 3. Літ. 39.

Юсуф Ібрахім Кофармата, Саллауддін Хассан, Шрі Деві Апланаїду
**ФАКТОРЫ ВЛИЯНИЯ НА МИКРОФИНАНСИРОВАНИЕ
ФЕРМЕРОВ ШТАТА КАНО, НИГЕРИЯ:
АНАЛИЗ ТОБИТ-МОДЕЛИ**

В статье исследованы факторы, влияющие на доступность кредитования и микрофинансирования для фермеров, для чего собраны и проанализированы данные по микрофинансовым банкам штата Кано, Нигерия. Анализ полученных данных доказывает, что увеличение маркетингового персонала на одну вакансию в микрофинансовом банке повышает доступность микрокредитов на 10,8%, в то время как увеличение расстояния между филиалом банка и фермером на 1 км снижает вероятность кредитования на 19%. Наличие банковского счёта, а также ведение другой деятельности, кроме фермерской, повышает вероятность микрокредитования на 10,1% и 11% соответственно. На основе полученных результатов разработаны рекомендации по работе маркетинговых служб

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микрофинансовых банков. Также представлены рекомендации для местного правительства касательно стимулирования внефермерской деятельности жителей сельских территорий.

Ключевые слова: микрокредитование; фермеры; Нигерия; тобит-модель; внефермерские виды деятельности в сельской местности.

Introduction. Microfinance institutions are of paramount importance for sustainable development of many developing nations. Microfinance banks are financial institutions created to extend financial packages to the urban poor, rural families, SMEs and generally low-income earners. It raises the standard of poor people, attracts investments and encourages women to become economically more active. These financial services could be provided by both government and non-governmental organizations, credit unions, savings and loan cooperatives, banks and non-bank financial institutions (Odi et al., 2013; World Bank, 2007). Therefore, microfinance institutions have become strategic for human empowerment and poverty alleviation. 3 features distinguish conventional banks from microfinance one which are: operational flexibility, the size of loans and (non)-requirement of tangible collateral (Akanji, 2006; Bardhan and Udry, 1999; Iganiga, 2008).

M.A. Eneji et al. (2013) stated that capital inaccessibility has been considered as one of causes of unemployment and poverty in Nigeria. For this reason, over the years, successive governments in Nigeria have initiated a series of programs to extend financial services to the poor. This includes the conversion of Community Bank (CBs) into the Microfinance Bank on December 15, 2005 under the supervision of the Central Bank Nigeria (CBN). Evidence shows that 363 de novo cooperatives and 606 community banks were promoted to microfinance banks in 2007 making the total of 969 microfinance institutions in 2010 for the purpose of funds mobilization and credit disbursement to population in Nigeria (Nwigwe et al., 2012). Added to these are the creation of Agricultural Cooperative and Rural Development Bank (NACRDB) in 2000 and later the Bank of Agriculture (BON) in 2011 with the sole aim of providing banking and financial services to the poor. However, the supply of credit is still inadequate as most of the credits have been rationed at the credit market to Nigerians (Kofarmata et al., 2014). For instance, formal financial institutions provided services to only about 35% of economically active population and the remaining 65% were excluded in the system owing to adverse social, economic, religious and cultural inhibitions (Badiru, 2010; CBN, 2005). A lot of studies has been conducted with regard to credit access (Nwaru, 2011; Ugwumba and Omojola, 2013), but the present study aims to investigate the determinants of microcredit supply by microfinance banks to rural farmers using microlevel data from the lenders perspectives, rarely being found in literature. Section 2 and Section 3 of this paper review the recent related literature and the methodology, while Sections 4 and 5 contain discussion of findings and conclusion, Section 6 contains policy recommendations.

Brief literature review. The question of why rural households opt to borrow from secondary financial institutions rather than primary ones has been a subject of intense discussions in literature on agricultural finance. One strand of literature attributes it to the adverse selection and moral hazard due to information asymmetry effect (Hoff and Stiglitz, 1990). Proponents of this theory maintain that because of the difficulties

to secure collateral, farmers might not be able to obtain loans from formal lenders. Consequently, they mostly rely on microfinance. The other side of literature argued that cost of lending inhibits households from sourcing formal credits, and therefore, turn them to informal lenders (Guirkinger, 2008). Most of these loans, especially those obtained from families and friends might have lower interest rates, are more flexible and do not require formal documentation. Therefore, cost of lending tends to be lower in comparison with formal loans (Yuan and Gao, 2012). In addition, non-collateral requirement in the informal setting might be explained by the fact that informal lenders tend to have more statistics on borrowers' investments, assets, income and consumptions. This information advantage allows informal lenders offer flexible contracts which lessen the default risks (Boucher et al., 2008; Guirkinger, 2008; Zeller, 1994). According to A. Armendariz and J. Morduch (2010), the micro-finance approach has addressed the issue of information asymmetries and lack of tangible assets through intense screening of borrowers and flexible repayment opportunities adjusted to cash flows of households. Since the introduction of Grameen Bank in 1983, the relevance of microfinance banks has increased in developing nations. This is due to the ability of microfinance banks to provide financial services to a large number of farmer in rural areas.

For many decades, the issue of microcredit access has been a subject for discussion around the globe. A number of empirical studies have investigate microfinancing activities. In view of that M.A. Eneji et al. (2013) found that loan application of female-headed family and poor households are more likely to be rationed than otherwise. But the application of a farmer with productive assets is likely to succeed in Nigeria. Practical knowledge that female-headed family has been marginalized in lending activities has been also confirmed by S. Kacem and S. Zouari (2013) in the case of Tunisia.

Similarly, using two-stage least square method, J.C. Nwaru (2011) found that the possibility of credit supply increases with lender's liquid asset, years of experience and credit price. This is similar to finding of J. Donkor and F.A. Duah (2013) in Ghana that lending increases with an increase in total deposits.

In addition, A. Gbadebo et al. (2013) found that farm size, household size and farming returns positively and significantly increase the chances of credit supply, while monitoring cost (time lag) decreases the chances of credit market participation. Evidence from the study of Y. Yuan and P. Gao (2012) in China indicates that the probability of participation in formal crediting increases with age but then decreases once as individual gets older. This result is in agreement with (Akudugu, 2013).

Undoubtedly, microfinance has impacted positively on rural families by providing them with agricultural investment, community development and asset financing (Odi et al., 2013). However, high interest rates, collateral requirement, lack of information and administrative bottlenecks are found to constrain farmers from engaging in commercial farming (Ugwumba and Omojola, 2013).

Most of the mentioned empirical studies used information from the borrowers' perspectives, neglecting the supply-side in explaining the determinants of credit supply. And this gap has been acknowledged in this research. Moreover, analyzing the factors that influence credit supply from the side of different microfinance banks might lead to more convincing recommendations. The fact that operational capacity

of microfinance banks has limited coverage in most of the developing world might be better understood from the position of these banks.

Methodology. Following the literature review, this section deals with the study area, nature of data and estimation procedure.

Data and study area. This study was conducted in Kano State, North-Western part of Nigeria. This state is regarded as #1 in terms of agricultural production with highly sophisticated irrigation facilities covering about 3 mln ha. Apart from this, it is also home to the second largest industrial city in Nigeria and has won the title of "Center of Commerce" with population of 9,383,682 as of 2006 (National Population Commission, 2006). Up to the end of 2012, the state has only 8 microfinance banks. However, in a government move to revamp economic activities in the state due to reduction in Federal Government subventions to states brought about by dwindling oil revenue, 37 new microfinance banks were established and licensed by the CBN in addition to the existing 8, making the total of 45 microfinance banks (Vanguard, 2013). This effort paid off due to the fact that 10 out of 44 local governments are without commercial banks, but as of 9th August, 2013, 20 microfinance banks started their operations and today there is a microfinance bank in each of the 44 local government units (The Citizen, 2013; The Nation News, 2013).

However, sampling might not be appropriate for the selection of the respondents due to the size of population, hence all 45 microfinance banks in the state were taken into consideration in this paper. In addition, questionnaire technique was used to collect necessary information, and it has been organized in such a way that all the relevant information necessary for the analysis were included.

Tobit regression model. The objectives of this study is to make an inferences on the factors influencing the availability of credit by microfinance banks under the assumption that these banks were established to extends financial services to rural areas. Though, due to the risk associated with agricultural lending (Barry and Robison, 2001), we expect that not all of these microfinance banks have observable loans, hence the possibility of censoring.

Therefore, in order to solve this problem in line with econometric modelling, we used a Tobit model (Tobin, 1958), otherwise called a censored model or limited dependent variable regression model (Gujarati and Porter, 2009). Following D.A. Dillman (2000), R.C. Fair (1978), W.H. Greene (2002) and J.E. Mcdonald and R.A. Moffitt (1980), the Tobit model could be expressed as:

$$y_i = X_i\beta + \varepsilon_i \quad \text{if } X_i\beta + \varepsilon_i > 0, \quad i = 1, 2, 3 \dots N; \quad (1)$$

$$y_i = 0 \quad \text{if } X_i\beta + \varepsilon_i \leq 0, \quad i = 1, 2, 3 \dots N, \quad (2)$$

where y_i is the dependent variable defined as the amount of credit disbursed by microfinance banks to farmers; X_i is the vector of independents variables; N is the total observations; β is the vector of the coefficients in the model; ε_i is the error term which is assumed to be normally distributed with zero mean and constant variance σ^2 or $\varepsilon \approx N(0, \sigma^2)$. The model is estimated using maximum likelihood method (MLM), and then the empirical model is presented below in equation:

$$\begin{aligned} CRS_i = & \varphi_{0i} + \varphi_1 LIQ_i + \varphi_2 MKS_i + \varphi_3 PRF_i + \varphi_4 DIS_i + \\ & + \varphi_5 EXP_i + \varphi_6 ACC_i + \varphi_{07} TRD_i + \varepsilon_i, \end{aligned} \quad (3)$$

where *CRS* is the observable and unobservable amount of credit supplied by microfinance banks; *LIQ* is the liquidity of banks measured by current asset over current liability; *MKS* is the number of marketing staff in a microfinance bank; *PRF* is bank's profit dummy with 1 if the bank is making profit and 0 otherwise; *DIS* is the distance between farmers and microfinance bank in km; *ACC* is a dummy assigning 1 if the bank considered farmers' with bank account before advancing credit; *TRD* represents the entrepreneurial ability of the microfinance bank's customers, assigning 1 for farmers with other activities apart from agriculture; *EXP* is the years of business experience of a microfinance bank.

Based on literature, the study hypothesizes that cash at hand (*LIQ*), marketing staff (*MKS*), profits (*PRF*) and years of business experience (*EXP*) are likely to increase credit supply by microfinance banks. Similarly, having an account with the bank (*ACC*), and farmer being engaged in other business activities like trade are also hypothesized to increase the volume of credit supply, while being far away (*DIS*) may discourage credit supply due to higher transaction costs. The rest of information is summarized in Table 1.

Table 1. Descriptive statistics, authors'

Variables	Mean	SD	Skewness	Kurtosis
<i>CRS</i>	33.56	20.96	0.97	3.33
<i>EXP</i>	3.02	0.73	1.32	3.34
<i>MKS</i>	3.11	0.49	0.15	3.00
<i>DIS</i>	71.77	39.40	-0.36	1.58
<i>LIQ</i>	28.64	16.26	1.21	3.14
<i>TRD</i>	0.89	0.32	-1.46	3.12
<i>PRF</i>	0.55	0.50	-0.18	1.03
<i>ACC</i>	0.83	0.39	-1.19	3.24

Table 1 reveals that the average amount of credit supplied by the microfinance banks is 33,559,990 NGN, while the total cash (*LIQ*) at hand by this bank is 28,639,830 NGN. In addition, each of these microfinance banks has an average business experience (*EXP*) of 3.02 years with 3 marketing staffs (*MKS*) to cover up to an average of 71.77 km (*DIS*) to mobilize customers. However, farmers with high off-farming activities (*TRD*) such as trading and those with bank account (*ACC*) are seem to be the most favorable clients of these banks as evidenced from the descriptive statistics.

Discussion of result. As previously explained, the Tobit model was used to analyse the determinants of microcredit supply to farmers in Kano, Nigeria. The estimated results are presented in Table 2.

Post estimation tests. Evidence in Table 3 shows that none of these variables has a multicollinearity problem as the variance inflator factor (VIF) computed using P.B. Ender (2014) are below two for all the variables with the average VIF of 1.33. These values are within the benchmark as in (Hairet al., 2010).

The estimates of this model were also subject to the specification test using Cameron and Trivedi's decomposition information matrix (IM) test (Long and Trivedi, 1992) and were found to be statistically insignificant even at 10% suggesting homoscedastic normal residual and therefore fit for the analysis.

Table 2. Tobit regression model, authors'

Variables	(1)	(2)	(3)
	OLS	Restricted Tobit	Unrestricted Tobit
LIQ	0.113	0.151	0.142
	(0.165)	(0.179)	(0.158)
MKS	9.368*	9.995**	10.75**
	(4.908)	(4.926)	(5.085)
PRF	14.30*	9.829	13.95***
	(5.299)	(5.906)	(5.224)
DIS	-0.193**	-	-0.193***
	(0.073)	-	(0.069)
EXP	1.870	-0.075	1.990
	(3.693)	(4.334)	(3.486)
ACC	9.554	8.171	10.13*
	(5.770)	(4.941)	(5.693)
TRD	9.576*	15.37***	11.21*
	(5.139)	(4.810)	(5.553)
Constant	7.313	-8.789	2.493
	(9.810)	(10.33)	(10.78)
R ²	0.354	0.03	0.05
Lr-test		4.77	4.77
Prob > χ^2		0.092	0.092
F-test			4.09
Prob > F			0.002

Note: Robust standard errors in parentheses, *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$, model 1 is the ordinary least square estimates, Model 2 is the restricted Tobit model, while Model 3 represent unrestricted Tobit model.

Table 3. Tests for goodness of fit, authors'

Tests	p-value	VIF
Wald Test	0.010	-
Likelihood Ratio Test	0.092	-
IM-test	0.907	-
Multicollinearity	-	1.330

Discussion of result. For proper model assessment, 3 different models have been estimated, see Table 2; the Ordinary Least Square (Model 1); the restricted Tobit (Model 2); and unrestricted Tobit (Model 3) regression coefficients. Table 2 shows that Model 1 yields inefficient as estimates compared to Model 3 due to the effect of censoring. Similarly, the coefficient of ACC is not significant even at 10% in Model 1, while the coefficients of MKS is under estimated with OLS, but found to be more efficient with Tobit estimates from Model 3. On the other side, the likelihood ratio test for the models' comparison that the restricted Tobit (Model 2) nested in unrestricted Tobit (Model 3) has been found to be true by the significance of χ^2 as indicated in Table 2.

With respect to the unrestricted Tobit model, the significance of F-statistics with the p-value of 0.002 indicates that Model 3 fits significantly better than a model with

no predictors. And this is supported by the significant result of Wald test at 5% level, indicating that at least one of the variables is different from zero in Table 2.

Available evidence in Table 2 indicates that most of our variables are consistent with the hypothesized relationships, and their influence on the probability of credit supply have been confirmed by their tests of significance at different levels. Positive statistically significant coefficient of *MKS* indicates that all things being equal, an increase of one marketing staff employed by a microfinance bank will increase the expected rate of credit supply by 10.8%. This category of staff mobilizes funds and disburse credit especially in rural areas with poor infrastructure. Therefore, without this staff, farmers might find it difficult to operate an account in a bank due to high transaction costs and other inconveniences. For this reason, marketing staff are regarded as a proxy for a bank branch, due their ability to extend financial services closer to the people.

The positive significant coefficient of *PRF* at 1% shows that on average an increase in profit per turnover by a microfinance bank is likely to increase credit supply by approximately 14%. This suggests that if a microfinance bank makes profit at the end of each financial year, credit supply will increase by 14% in a new financial year. This finding is in agreement with the motives of reinvestment and firm expansion. Similarly, the marginal significance coefficient of *ACC* suggests that the chances of credit supply increases by 11.2% for bank account holders. It follows that having a bank account increase the credit supply for the account owner. In many cases, borrowers are required to open an account before credit advancement. This mechanism has been used by microfinance banks in order to increase their chances of repayment. And it also implies that having more deposits account by a bank will increase the total deposits of these banks; and this will motivate microfinance banks to supply more credit in order to generate more revenue (Donkor and Duah, 2013). In addition, the coefficient of *TRD* is found to be significance at 10% indicating that credit supply is 10.1% higher for farmers engaged in trading as compared with full-time farmers. According to D. Laha et al. (2011) and P. Mpuga (2010), banks might prefer to offer credit to the farmers engaged in other, off-farming business in order to guarantee subsequent repayment.

In contrast, the negative significance coefficients of *DIS* indicate that to every additional 1 km away from a microfinance bank, the amount of credit supply goes down by 0.2%. This is obviously because transaction cost is likely to increase if a borrower is living far away from a lender. This finding is in agreement with (Akudugu, 2013; Gbadebo et al., 2013; Ugwumba and Omojola, 2013).

However, the coefficients of *LIQ* and *EXP* are not statistically significant even at 10%, but, together did not deviate from theoretical and logical expectations. It follows that to every reasonable additional cash by a microfinance bank, credit supply will increase by 0.14%. An additional one year of experience for a microfinance bank will induce credit supply by approximately 2%. This finding is consistency with the findings of J.C. Nwaru (2011).

Conclusions and policy implications. The principal aim of this study was to analyze the determinants of microfinance bank lending to farmers using a set of financial characteristic (*LIQ* and *PRF*), microfinance bank entrepreneurial ability (*EXP* and *MKS*), transaction cost (*DIS*) and some important attributes of farmers (*ACC* and

TRD) that are rarely tested. In line with the objective, the study found that *PRF*, *MKS*, *TRD* and *DIS* were the important determinants of credit supply by microfinance banks. Though, *LIQ* and *EXP* were not significant statistically in the model, but their relevance has been grounded by further theoretical expectation.

Based on the research outcome, the paper recommends microfinance banks in Nigeria should employ more marketing staff for fund mobilization and credit disbursement to rural areas, so as to get more deposits and channel it to prospective borrowers. It is further recommended that the government should encourage rural farmers to embark on off-farming businesses and other off-season activities so as to realize fuller their entrepreneurial skills and explore new business opportunities in their environment.

References:

- Akanji, O.* (2006). Microfinance as a Strategy for Poverty Reduction. *CBN Economic & Financial Review*, 39(4): 1–20.
- Akudugu, M.* (2013). The Determinants of Financial Inclusion in Western Africa: Insights from Ghana. *Research Journal of Finance and Accounting*, 4(8): 1–10.
- Armendariz, A., Morduch, J.* (2010). *The Economics of Microfinance*. 2nd ed. Cambridge, Massachusetts: The MIT Press.
- Badiru, I.O.* (2010). Review of Small Farmer Access to Agricultural Credit in Nigeria. *International Food Policy Research Institute*, Vol. 25.
- Bardhan, P., Udry, C.* (1999). *Development Microeconomics*. Oxford University Press.
- Barry, P.J., Robison, L.* (2001). Agricultural Finance: Credit, Credit Constraints, and consequences. In: B.L. Gardner and G.C. Rauser (eds.). *Handbook of Agricultural Economics*. Vol. 1A: 513–571. Agricultural Production, North-Holland.
- Boucher, S.R., Carter, M.R., Guirking, C.* (2008). Risk Rationing and Wealth Effects in Credit Markets: Theory and Implications for Agricultural Development. *American Journal of Agricultural Economics*, 90(2): 409–423.
- Cameron, A. C., Trivedi, P.K.* (2009). *Microeconometrics Using Stata*. A Stata Press Publication StataCorp LP College Station, Texas.
- CBN (2005). *Microfinance Policy, Regulatory and Supervisory Framework for Nigeria*. Publications of Central Bank of Nigeria: 1–27.
- Dillman, D.A.* (2000). *Mail and Internet Surveys: The Tailored Design Method*. 2nd ed. New York: John Wiley and sons.
- Donkor, J., Duah, F.A.* (2013). Relationship between Savings and Credit in Rural Banks with Specific Reference to Ghana. *The Special Issue on Contemporary Research in Business and Social Science*, 4(8): 210–221.
- Ender, P.B.* (2014). *Collin: Command to Compute Collinearity Diagnostics*. Los Angeles, CA: UCLA Academic Technology Services, Statistical Consulting Group.
- Eneji, M.A., Umejiakwu, R., Ushie, O.S., Ifeoma, G.* (2013). The Demand for Credit, Credit Rationing and the Role of Microfinance: Evidence from Poor Rural Community in Cross River State. *Science Journal of Economics*, 139: 1–13.
- Fair, R.C.* (1978). A Theory of Extramarital Affairs. *Journal of Political Economy*, 86(1): 45–61.
- Gbadebo, A., Ademayowa, A., Mobolaji, A., Ayanyemi, A.* (2013). Determinants of Farmers' Demand for Micro-finance: The Case of a Rural Community in Nigeria. *Journal of Economics and Sustainable Development*, 4(5): 24–31.
- Greene, W.H.* (2002). *Econometric Analysis*. 5th ed. Prentice Hall, Upper Saddle River, New Jersey.
- Guirking, C.* (2008). Understanding the Coexistence of Formal and Informal Credit Markets in Piura, Peru. *World Development*, 36(8): 1436–1452.
- Gujarati, D.N., Porter, D.C.* (2009). *Basic Econometrics*. 5th ed. McGraw-Hill International: NY New York.
- Hair, J.F., Black, J.W., Babin, B.J., Anderson, E.R.* (2010). *Multivariate Data Analysis*. 7th ed. Edinburgh: Pearson Education Limited.
- Hassan, M.T., Rehman, A., Rizvi, A., Khan, R., Ayuub, S., Baloch, U., Lodhi, M.A.* (2012). Elasticity of Credit Demand in Agriculture sector in Pakistan. *International Journal of Learning and Development*, 2(1): 613–627.

- Hoff, K., Stiglitz, J.E.* (1990). Imperfect and Rural Information Credit Markets-puzzles and Policy Perspectives. *The World Bank Economic Review*, 4(3): 235–250.
- Iganiga, B.O.* (2008). Much Ado About Nothing: The Case of the Nigerian Microfinance Policy Measures, Institutions and Operations. *Journal of Social Science*, 17(2): 89–101.
- Kacem, S., Zouari, S.* (2013). The Determinants of Access to Financial Services for Micro-credit Associations: Application on Tunisian Case. *Journal of Business Management and Economics*, 4(2): 31–46.
- Kofarmata, Y.I., Applanaidu, S.D., Hassan, S.* (2014). Determinants of Participation in Credit Market among the Farmers in Northern Nigeria. *Australian Journal of Basic and Applied Sciences*, 8(8): 85–92.
- Laha, D., Kuri, D., Kumar, P.* (2011). Determinants of Financial Inclusion: A study of Some Selected Districts of West Bengal, India. *Indian Journal of Finance*, 5(8): 1–20.
- Long, J.S., Trivedi, P.K.* (1992). Some Specification Tests for the Linear Regression Model. *Sociological Methods & Research*, 21(2): 161–204.
- Mcdonald, J.F., Moffitt, R.A.* (1980). The Uses of Tobit Analysis. *The Review of Economics and Statistics*, 62(2): 318–321.
- Mpuga, P.* (2010). Constraints in Access to and Demand for Rural Credit. Evidence from Uganda. *African Development Review*, 22(1): 115–148.
- Nwaru, J.C.* (2011). Determinants of Informal Credit Demand and Supply among Food Crop Farmers in Akwa Ibom State, Nigeria. *Journal of Rural and Community Development*, 6(1): 129–139.
- Nwigwe, C.A., Omonona, B., Okoruwa, V.O.* (2012). Microfinance and Poverty Reduction in Nigeria: A Critical Assessment. *Australian Journal of Business and Management Research*, 2(8): 56–62.
- Odi, N., Olukotu, A.G., Emmanuel, A.* (2013). Impact of Microfinance on Rural Transformation in Nigeria. *International Journal of Business and Management*, 8(19): 99–107.
- The Citizen (2013). 20 Micro-finance Banks begin Operations in Kano // thecitizenng.com.
- The Nation News (2013). Kano State Establishes 20 Micro-finance Banks // thenationonlineng.net.
- Ugwumba, C.O.A., Omojola, J.T.* (2013). Credit Access and Productivity Growth among Subsistence Food Crop Farmers in Ikole Local Government Area of Ekiti State, Nigeria. *Journal of Agricultural and Biological Science*, 8(4): 351–356.
- Vanguard (2013). CBN Inaugurates 37 Newly Licenced Micro-finance Banks // vanguardngr.com.
- Weber, R., Musshoff, O.* (2013). Can Flexible Microfinance Loans Improve Credit Access for Farmers. *Agricultural Finance Review*, 73(2): 255–271.
- World Bank (2007). *Globalization, Growth and Poverty: Building an Inclusive World Economy*. World Bank Policy Research Report. New York: Oxford University Press.
- Yuan, Y., Gao, P.* (2012). Farmers' Financial Choices and Informal Credit Markets in China. *China Agricultural Economic Review*, 4(2): 216–232.
- Zeller, M.* (1994). Determinants of Credit Rationing: A Study of Informal Lenders and Formal Credit Groups in Madagascar. *Food Consumption and Nutritional Division, Discussion Papers*, 2: 1–45.