

ANALYSIS OF FORMAL MICROCREDIT TRANSACTION COSTS INCURRED BY ARABLE CROP FARM-HOUSEHOLDS IN AKWA IBOM STATE, NIGERIA

Ekpenyong, K.J. and Igwe, K.C.

Department of Agricultural Economics, Michael Okpara University of Agriculture, Umudike, P.M.B. 7267, Umuahia, Abia State, Nigeria

Corresponding Authors' email: 84kufre@gmail.com; kayceigwe@gmail.com

ABSTRACT

This study estimates the magnitude and determinants of transaction costs incurred by smallholder arable crop farm-households in formal microcredit market in Akwa Ibom State. A multi-stage sampling technique was employed in choosing 108 beneficiaries of formal microcredit. A structured questionnaire was used for the collection of primary data from the respondents. Descriptive statistics was used to calculate the magnitude of transaction costs incurred by the households in the microcredit market and multiple regression technique was employed in determining the significant factors that influence the transaction costs incurred by households in the market. The result obtained showed that the most important transaction cost component was opportunity cost of time (₦5576.41), followed by travelling cost (₦3272.62). The study also showed that loan size, interest cost and waiting period had significant positive relationship with microcredit transaction cost at 1%; distance to lending institution and savings were both positively signed but significantly related to transaction cost at 10% while education had a significant negative relationship with transaction cost at 1%. To drastically reduce microcredit transaction costs, policies that will enable farmers to attain higher level of education are advocated; credit administrative procedure that is less time wasting should be put in place in financial institutions that offer microcredit to ensure timely disbursement of microcredit facilities to farm households; and sanction in the form of heavy monetary fine should be meted out to financial institutions that fail to ensure timely disbursement of microcredit facilities to farmers.

Keywords: Microcredit, transaction costs, arable crop, and households

Introduction

Microcredit has over the years been used as a development tool, especially in the developing world mostly targeting poor and vulnerable farm households (Akudugu, 2014). Microcredit has also come to be regarded as a supplementary development paradigm, which widens the financial service delivery system, by linking the large rural production with formal institution (Harish, 2012). Though, the financial system in Nigeria has witnessed a lot of policy incentives to ensure that actors in the agricultural value chains have access to credit to finance their operations (Olomola, 2014), the cost of the facility has continually remained high and a great source of worry to both borrowers and prospective borrowers, thereby discouraging participation in credit market. Stringent credit conditions also deter participation in credit market. Some other factors that hinder participation in credit market include susceptibility to high level of risk, operation of farm business at small-scale level, poor technical ability, lack of adequate capital (Ton,

2010), geographical barriers in poor and isolated places, lack of economies of scale, marketing risks and large transaction costs (Macharia, *et al.* 2014). Transaction cost does not only impede market participation but also adversely affects level of access to credit and makes rational choice of credit source difficult.

Transaction costs comprise every cost apart from interest cost that are incurred by borrowers in the course of obtaining credit (Hosseini *et al.*, 2012). The presence of these costs partially explains why some farmers participate in the market and some do not (Cuevas, 2014). One of the major obstacles militating against the expansion of microcredit availability is the high transaction costs of credit operations to both lenders and borrowers (Fachini *et al.*, 2008). Formal financial services are not available in places where the poor can easily access them at affordable costs (DFID, 2010). Poor infrastructure (road) often increases the transaction costs of market participation (Takeshima,

2008). When transaction costs are large, they need to be measured and explained (Okoye *et al.*, 2010). High microcredit transaction cost portrays a disturbing gross inefficiency in the credit delivery system and has the capacity to cause the poor to remain perpetually entangled in poverty. Though there are a lot of studies on transaction costs in a number of countries, it is argued that transaction costs can differ from one country or region to another depending on the condition of the road and communication network, among other things (Osebeyo and Aye, 2014) and the relative magnitude of these costs depends on the farmers' access to infrastructure (Akramov, 2009). Transaction costs can also differ as a result of differences in market type, type of institution (specialized or conventional) from which credit is obtained and credit scheme or segment (micro or macro credit).

Some studies have been done on the determinants of transaction costs. However, only few of these studies are important to agriculture (See for example: Igwe and Egbuson, 2013; and Hosseini, *et al.*, 2012), as they both have to do with borrower-farmers); while other researches on transaction costs determinants tend to focus on Small and Medium Enterprises (SMEs) that have nothing to specifically do with agriculture. Besides, though the studies concern themselves with credit markets, they do not specify the credit segment considered. Much is, therefore, needed to be studied on the determinants of microcredit transaction costs of borrower-farmers. Transaction costs associated with exchange are the embodiment of access barriers to market participation by resource poor smallholders (Randela *et al.*, 2008; Makhura *et al.*, 2001; Holloway *et al.*, 2000; Delgado *et al.*, 1999 and Coarse, 1960). Empirical evidence has shown that transaction costs have a negative link with market participation (Osebeyo and Aye 2014; Macharia *et al.*, 2014). Therefore analyzing the factors that influence microcredit transaction costs would have remarkable policy implications which would help in reducing transaction cost of microcredit in order to encourage participation of smallholder farm households in formal microcredit market. The objectives of this study are to calculate the microcredit transaction costs incurred by smallholder arable crop households and to estimate the factors that significantly influence the level of transaction costs incurred by the households in Akwa Ibom State of Nigeria.

Methodology

Study Area

The study was carried out in Akwa Ibom State. It is one of the states in the South-South geopolitical zone of Nigeria. The State is made up of 31 Local Government Areas, which are divided into six

Agricultural Zones, viz. Uyo, Ikot Ekpene, Abak, Eket, Etinan and Oron. It lies between latitudes 4⁰33'–5⁰33'N and longitudes 7⁰25'–8⁰25'E and is located in the South Eastern part of the rain forest zone of Nigeria. It occupies a total land area of 7.246 square kilometers, with a population of 3.9 million people (NPC, 2006). The weather condition of the State favours various crops all year round. The main crops cultivated in the State include yam, maize, cassava, fluted pumpkin, plantain, water leaf, okro, swamp rice, oil palm, and cocoyam.

Sampling Technique

The study employed multistage sampling technique to select respondents. From the six Agricultural Zones of the State, two agricultural zones, Uyo and Abak were purposively selected due to the availability of a good number of formal financial institutions, including Bank of Agriculture, in the zones. The second stage involved random selection of Eight Local Government Areas from the two Agricultural Zones. A clan was randomly selected from each of the eight chosen Local Government Areas in the third stage. In the fourth stage, a village each was randomly selected from each of the clans. A list of all arable crop farm-households which are from the selected eight villages who participated in microcredit scheme of Bank of Agriculture and/or Microfinance Banks (hereinafter called BOA and MFBs respectively) in 2017 or had applied that year for the facility but were not given was confidentially collected from the credit officers working in the banks. This served as the sampling frame. From the sampling frame, thirty respondents were randomly chosen per village, making the total sample size to be 240 respondents.

Data Collection

With the help of well-trained enumerators, primary data were collected from the 240 respondents using structured questionnaire. However, this study employed the data from 108 respondents who benefited from the credit scheme of either BOA and or MFB.

Data Analysis

Following Hosseini *et al* (2012), descriptive statistics was employed to calculate microcredit transaction costs incurred by the farm households. Hosseini *et al.* (2012), The Ordinary Least Square (OLS) multiple regression technique was employed to assess the relationship between transaction cost and the variables, suggested by literature, that influence it (objective three). The relationship is implicitly given as follows (Hosseini *et al.*,2012; Igwe and Ebuson, 2013):

$$TC_i = f(Z_i) \quad (1)$$

Where:

TC_i = the transaction cost for i th transaction.
 Z_i = a matrix of i th explanatory variable that affects the measure.

The different functional forms are specified as follows:

The Semilog: $TC_i = b_0 + b_1 \ln X_1 + b_2 \ln X_2 + b_3 \ln X_3 + b_4 \ln X_4 + b_5 \ln X_5 + b_6 \ln X_6 + b_7 \ln X_7 + b_8 \ln X_8 + b_9 \ln X_9 + b_{10} \ln X_{10} + U_i$ (2)

Linear: $TC_i = b_0 + b_1 \ln X_1 + b_2 \ln X_2 + b_3 \ln X_3 + b_4 \ln X_4 + b_5 \ln X_5 + b_6 \ln X_6 + b_7 \ln X_7 + b_8 \ln X_8 + b_9 \ln X_9 + b_{10} \ln X_{10} + U_i$ (3)

Exponential: $\ln TC_i = b_0 + b_1 X_1 + b_2 X_2 + b_3 X_3 + b_4 X_4 + b_5 X_5 + b_6 X_6 + b_7 X_7 + b_8 X_8 + b_9 X_9 + b_{10} X_{10} + U_i$ (4)

Double log: $TC_i = b_0 + b_1 \ln X_1 + b_2 \ln X_2 + b_3 \ln X_3 + b_4 \ln X_4 + b_5 \ln X_5 + b_6 \ln X_6 + b_7 \ln X_7 + b_8 \ln X_8 + b_9 \ln X_9 + b_{10} \ln X_{10} + U_i$ (5)

Where:

TC = Transaction cost (naira)
 $\ln TC$ = The logarithm of transaction cost (naira)
 X_1 = Age (years)
 X_2 = Gender (Dummy: Male = 1, 0 otherwise)
 X_3 = Formal education (years)
 X_4 = Membership of cooperative society (Dummy: Yes =1, 0 otherwise)
 X_5 = Value of assets (naira)
 X_6 = Distance to lending institution (kilometers)
 X_7 = Loan size (naira)
 X_8 = Interest amount (naira)
 X_9 = Waiting period (gap or period between loan application and disbursement)
 X_{10} = Savings
 b_0 = Intercept
 b_1 - b_{10} = coefficients of regression
 μ_i = Error term

Unit transaction cost = $\frac{\text{Transaction Cost}}{\text{Credit Size}}$

Unit transaction cost rate = $\frac{\text{Transaction Cost}}{\text{Credit Size}} \times 100\%$

Coefficient of Variation = $\frac{\text{Standard deviation}}{\text{Mean}} \times 100\%$

Results and Discussion

Magnitude of Transaction Costs Incurred by Households in Microcredit market

The components of transaction costs incurred by participants in microcredit market in Akwa Ibom State is presented in Table 1. The result reported the mean

costs corresponding to each category of transaction cost incurred by borrowers.

The finding showed an average cost of ₦3272.62 (travelling cost), ₦5576.41 (opportunity cost), ₦982.77 (paper work), ₦858.83 (office cost), ₦736.84 (guarantee and collateral cost), ₦890.41 (supervision cost) and ₦407.72 (other costs) resulting in a total mean transaction cost of ₦11880.73. The requirements associated with the opportunity cost of time accounted for the largest transaction cost (₦5576.41), representing 46.93% of the total transaction costs. This result is in line with the finding of Hosseini *et al.*, (2012) study that found opportunity cost of time higher than other transaction costs components in obtaining credit in rural Iran. Following, in order of importance, are the traveling cost, paperwork cost and supervision cost representing 27.54%, 8.27% and 7.49% of the total transaction costs respectively. The magnitude of the farmers' transaction cost can be appreciated when viewed in relation to the standard deviation, minimum and maximum values. The results showed that all the means of the transaction cost components (except travelling cost) were greater than their standard deviations indicating that the variations in the microcredit transaction costs incurred by the borrowers were large. The extent of largeness in variability of microcredit transaction costs incurred by respondents is also expressed by the margin between the mean minimum and maximum value (range), which is ₦29,860 (i.e. ₦30,350 - ₦490) and the coefficient of variation of over 50% (54.5%). This, perhaps, indicates a great disparity in microcredit transaction characteristics between the institutions that constitute the formal microcredit market in the study area (BOA and MFBs) and a great need for harmonisation of such characteristics. Such harmonisation may include ensuring uniformity in cost of loan application form; a statutory stipulated time lag between loan application and disbursement that must be obeyed by all formal financial institutions that offer microcredit; etc.

A unit transaction cost of 9.32% of the contracted amount is high since it will bring the aggregate cost of microcredit to 21% (i.e. 9.32% "transaction cost rate" plus 12% interest rate) for BOA microcredit scheme beneficiaries and to about 35% (average of 26% interest rate per annum plus 9% transaction cost of the contracted microcredit sum) for MFB microcredit scheme beneficiaries. Aggregate "credit cost rate" that exceeds a single digit is worrisome. The results, therefore, indicate that the financial institutions impose significant transaction costs directly or indirectly on the farm households in Akwa Ibom State making the cost of credit in the market very high.

Determinants of Level of Microcredit Transaction Costs among Participants in the Credit Markets

The results in Table 2 show the regression estimates of the determinants of Microcredit transaction cost incurred by microcredit market participants in the study area.

The regression estimates of the determinants of microcredit transaction costs incurred by the farmer-participants in microcredit market in Akwa Ibom State, Nigeria are shown in Table 2. The regression models all had high adjusted R^2 , indicating that all the four functional forms estimated had relatively high explanatory powers; and that most of the socio-economic variables that influence the transaction costs of microcredit incurred by farm households in the study area were included in the models. The Exponential model had the lowest explanatory power of 63%, followed by the Cobb-Dougllass and Linear models with explanatory powers of 66% and 74% respectively.

However, among the four functional forms estimated, the Semi-Log form was chosen as the lead equation since it had the largest R^2 value, F-value, highest number of significant factors and agreement with *a priori* expectations. The F-value was highly significant at 1% level indicating a regression of best fit. The R^2 value of 0.7952 showed that 79.52% of the variability in transaction cost was explained by the independent variables.

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The result showed that the coefficient of education was negatively signed and significant at 1% level of probability. This implies that any increase in years of education will lead to decrease in transaction cost incurred by the participants in the microcredit market.

This is expected and in accordance with *a priori* expectation. A farmer with advanced level of education is expected to process and source for credit at lower transaction costs due to their level of understanding and exposure. The educated borrowers are knowledgeable about the various rules, terms and conditions of the financial institutions regarding microcredit market. They utilize information on loan acquisition procedure maximally and complete the loan application forms themselves without paying anyone to do it for them, thereby circumventing some costs (e.g. office costs); unlike the illiterate ones who swallow every information *viz-a-viz* credit facility given to them by unscrupulous bank officials and other agents *hook, line and sinker*. Antwi and Yankyira, (2017) noted that as the farmer advances in education, the more he gets to understand the credit process making him able to supply all needed items on time in order to get the needed loan. Likewise, educated people are able to get closer to the bank credit officers to request for more information that will help them to access the loan easily; hence the microcredit transaction costs incurred by them will reduce.

The coefficient of distance to the lending institution was positive and significant at 5% level of probability. This implies that any increase in distance to the lending institution will result in increase in transaction costs incurred by participants in the microcredit market. This is also expected and in conformity to *a priori* expectation. Proximity of borrowers to lending institutions has implication on transport costs as well as on monitoring costs. The applicants may monitor the screening process to ensure that there are not screened out or short-changed. Transaction cost increases in terms of travelling cost and opportunity cost in the form of hours spent on the journey when the distance between the house of the farmer and the bank becomes far away from each other (Ghatak, 1999; Masuko, and Marufu, 2003 and Fachini *et al.*, 2008).

The coefficient of loan size was positively signed and highly significant at 1% level of probability. This implies that any increase in loan size will lead to increase in transaction cost incurred by farm households in the State. This is expected and in consonance with *a priori* expectation. The plausible explanation to this is that farmers must incur more transaction costs in the form of collateral perfection, application fee, processing and administrative costs to obtain bigger size loans (Antwi and Yankyira, 2017).

The result also showed that the coefficient of interest amount was positive and highly significant at 1% level of probability indicating that any increase in interest

will increase transaction cost among the participants in the study area. This is expected and in agreement with *a priori* expectation. Credit facilities with higher interest rates will cause borrowers to pay more costs per unit of credit accessed. Interest on loan varies directly with transaction cost. This confirms the findings of Ghatak, (1999) and Hosseini *et al.* (2012).

The coefficient of waiting period was positively signed and highly significant at 1% level of probability. This indicates that any increase in waiting period will lead to increase in transaction costs incurred by farm households in the State. This is also expected and in accordance with *a priori* expectation. The longer the gap between the loan application and microcredit disbursement, the larger the transaction cost since the borrower has to spent time in monitoring and following up the process. Timeliness in loan approval and disbursement reduces borrowers' transaction costs (Chulangani and Ariyawardana, 2010).

The coefficient of savings had a direct relationship with transaction cost and significant at 10% level of probability. This indicates that any increase in savings will lead to increase in microcredit transaction costs incurred by the farm households in the State. This is against *a priori* expectation probably because the respondents were poor and only saved money in bits in the institutions from where credit was sought rather than save in lump sum; and as such, could not reduce transaction costs. Saving money in bits in the institutions presupposes incurring more transport costs and opportunity cost of time.

The result contradicted the findings of Antwi and Yankyira, (2017) who found that farmers who have investments or savings (in the form of fixed deposit and treasury bills) with the banks that extended credit facilities to them were able to argue for lower processing fees and were also able to get their loans approved on time without much struggle thereby reducing their transaction cost of obtaining credit. This is because if the banks decide not to reduce the processing fees, the farmers can equally decide to terminate their investments and this will affect the deposit base of the banks. The coefficients for age, membership of cooperative and access to financial information had a positive relationship with transaction cost but were not significant while coefficients for gender, value of assets, and household size were negative but also not significant.

Conclusion

This study examined the determinants of transaction costs incurred by arable crop farm households in formal microcredit market in Akwa Ibom State.

Opportunity cost of time and travelling cost were the most important transaction cost components. Policy aimed at increasing credit size for microcredit market participants should be vigorously pursued in order to reduce borrowers' transaction costs per unit of credit. The maximum BOA microcredit limit of ₦250,000 should be reviewed upwards to reflect current economic realities. Furthermore, credit administrative procedure that is less time wasting should be put in place in financial institutions that offer microcredit to ensure timely disbursement of microcredit facilities to farm households. Sanction in the form of heavy monetary fine should be *meted out* to financial institutions that fail to ensure timely disbursement of microcredit facilities to farmers. There is need to examine the policy of mandatory savings rate (which stands currently at 10 percent of credit demand in formal microcredit market according to most respondents) with a view to reducing it. This will go a long way in reducing microcredit transaction cost. Policies aimed at ensuring the proliferation of pro-poor financial institutions, particularly in rural areas, should be formulated and implemented. Increase in the number of formal financial institutions that extend microcredit to farm households will facilitate closer proximity of borrowers to lending intuitions and reduction in microcredit transaction cost.

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Table 1: Magnitude of Microcredit Transaction Costs Incurred

Components	Mean	Std. dev	Minimum	Maximum	Rank
Travelling cost	3272.62	3292.25	180	10500	2 nd
Opportunity cost	5576.41	3101.32	826.39	16250.00	1 st
Paperwork cost	982.77	369.98	500.00	2000.00	3 rd
Office costs	858.83	414.12	300.00	2000.00	5 th
Guarantee and Collateral costs	736.84	247.57	300.00	1500.00	6 th
Supervision costs	890.41	494.81	200.00	2000.00	4 th
Others	407.72	209.69	100.00	900.00	7 th
Transaction costs	11880.73	6472.34	490.00	30350.00	
Unit transaction cost	9.32				
Coefficient of variation	54.50				

Source: Field survey, 2017

Table 2: Regression Estimates of the Determinants of Microcredit Transaction Costs Incurred by Microcredit Market Participants in Akwa Ibom State

Variable	Parameter	Linear	Exponential	Cobb-Douglas	Semi log +
Constant	b ₀	4972.26 (2.40*)	7.9873 (31.07***)	3.3310 (1.98*)	-48014.970 (-3.63***)
Age (years)	X ₁	32.8444 (1.18)	0.0053 (1.52)	0.1629 (1.18)	1221.870 (1.12)
Gender	X ₂	-514.728 (-0.9)	0.0022 (0.03)	-0.0054 (-0.07)	-626.273 (-1.02)
Education(years)	X ₃	-67.2878 (-0.48)	0.0179 (1.02)	0.1702 (1.00)	-1068.340 (-3.20***)
Member of cooperative	X ₄	313.3442 (0.43)	0.03171 (0.35)	0.0319 (0.37)	451.906 (0.66)
Value of land (Naira)	X ₅	-0.0038 (-0.59)	-7.41 x 10 ⁻⁷ (-0.92)	-0.0491 (-0.88)	-137.662 (-0.31)
Distance to lending bank (km)	X ₆	-81.2099 (-1.68*)	0.0141 (2.35**)	0.0858 (1.51)	873.916 (2.52**)
Loan size (Naira)	X ₇	0.1027 (4.26***)	4.43 x 10 ⁻⁶ (1.48)	1.4223 (1.73*)	29489.750 (4.55***)
Interest amount (Naira)	X ₈	0.2944 (3.32**)	-9.60 x 10 ⁻⁶ (-0.87)	1.7985 (2.30*)	30847.750 (5.02***)
Waiting period (days)	X ₉	93.2851 (5.76***)	0.1154 (5.74***)	0.1143 (0.81)	1777.970 (5.71***)
Savings (Naira)	X ₁₀	0.1003 (0.83)	0.00002 (1.06)	0.7470 (2.04*)	4199.242 (1.92*)
R ²		0.7700	0.6762	0.6989	0.7952
R ⁻		0.7406	0.6349	0.6604	0.7691
F		26.22***	16.36***	18.18***	30.42***

Source: Field survey, 2017

*** and ** are significant at 10%, 5% and 1% level of probability respectively. + = lead equation