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# An Investigation into Credit Receipt and Enterprise Performance among Small Scale Agro Based Enterprises in the Niger Delta Region of Nigeria

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## Abstract

The study was designed to analyze credit receipt and enterprise performance by small scale agro based enterprises in the Niger Delta region of Nigeria. A multistage sampling technique was adopted in selecting 264 agro based enterprises and 96 agro based enterprises that accessed informal and formal credit respectively. The Heckman model was used to examine the factors affecting amount of informal and formal credit received by the enterprises. Financial ratios such as the current ratio and return on capital employed ratio were used in addition to the t-test to examine the performance of enterprises that borrowed from informal and formal credit markets in the area. Analyses of informal credit amount received reveal that gender, age and social capital are significant for the first hurdle, whereas gender, size, income, guarantor and social capital are significant for the second hurdle. Similarly, gender, education, age, size, and collateral are significant for the first hurdle for formal credit, while the second hurdle reported significant results with age, size, income, collateral and social capital. Formal credit was less accessible than informal credit but enhanced greater performance. Formal credit should be made to be easily accessible and efficiently utilized. This will go a long way in complementing the amnesty programme of the federal government of Nigeria in the region.

**Keywords:**

*Credit amount received, Credit Access, Enterprise performance, Agro-based enterprises, Niger delta region, Nigeria*

## INTRODUCTION

A little over four decades, the issues confronting the Niger Delta region of Nigeria have caused increasing national and international concern. The region produces immense oil wealth and has become the engine of Nigeria's economy, but it also portrays a paradox as the vast oil revenues barely touch Niger Delta own pervasive poverty, hence giving birth to formidable challenges to sustainable human development in the region (UNDP, 2006). People are more volatile, resulting in youth restiveness, conflicts between youths and community leaders, youths and government agencies, youths and multinational companies (UNDP, 2006). These propagated negative nominal and real shocks in every sector of the economy, including small business sector, with the economy operating under atmosphere of politically unstable environment, eroded productivity and declined private investments (Ministry of Niger Delta Affairs, 2011).

Studies on developing economies have considered financial development vital for economic growth and poverty reduction. Strong financial systems have helped delivered rapid growth as well as direct and indirect benefits, across income distributions (Honohan and Beck, 2007). Beck and Demircuc-Kunt, (2005) indicate that financial development reduces inequality by disproportionately boosting the income growth of the poor. Hence across Africa, access to finance is rightly seen as a key to unlocking the income growth for poor families, as much as for expanding trade (Honohan and Beck, 2007).

In this regard, policy makers have held the conception that micro and small scale firms in developing countries lack access to adequate financial services for efficient inter-temporal transfers of resources and risk coping (Besley, 1995). Without well-functioning financial markets, small scale firms may lack much prospects for increasing their productivity in many significant and sustainable ways (Nwaru, 2004). Based on these reasons, and the fact that traditional commercial banks typically have minimum interest in lending to small firms due to their lack of viable collateral and high transaction costs associated with the small loans that suit them, most developing country governments, have set up credit programs aimed at improving access to

credit (Arene, 1993; CBN, 2010).

Efforts targeted at small businesses are based on the premises that they are the engine of economic development, but market and institutional failures impede their growth, thus justifying government interventions (Gomez, 2008). However, the failure of government supported financial institutions is a convincing evidence of the need for a better understanding of how these firms in the Niger Delta, often operating in highly risky environment insure against risk and conduct their inter-temporal trade in the absence of well functioning financial markets (Ministry of Niger Delta Affairs, 2011). In response to these failures and in recognition of the critical role that credit can play in alleviating poverty in a sustainable way, innovative credit systems are being developed and promoted in Nigeria as a more efficient mechanism of improving micro and small scale firms' access to credit (CBN, 2010). This inefficient nature of the credit market presupposes the lack of adequate information relating to empirical issues on credit receipt by small scale agro-based enterprises and performance in post conflict Niger Delta.

Evidently, small scale enterprises have performed at very abysmal level (Hassan and Olaniran, 2011). This low performance has exacerbated poverty, hunger, unemployment and low standard of living of people in a country whose economics is ailing (Hassan and Olaniran, 2011). Considering the emergence of many formal and informal financial institutions in the Niger Delta, there is hope for small Agro-based enterprises, but to what extent has credit advanced to these enterprises influence performance? Assessment of the influence of financing is popular, but lacking among small agro based enterprises in a post-conflict context. Therefore, attempt to formulate credit policies without substantial information on how Agro-based firms respond to the credit market and factors militating against their response in a region such as the Niger Delta may be deficient, since it is not backed by empirical evidence. The study therefore sets out to investigate credit receipt and enterprise performance in the Niger Delta region of Nigeria.

**MATERIALS AND METHODS**

The study area was the Niger Delta Region of Nigeria. It lies between latitudes 4°2" and 6°2" north of the equator and longitudes 5°1" and 7°2" east of the Greenwich meridian (Tawan, 2006). Nine of Nigeria's constituent states make up the region, namely; Abia, Akwa Ibom, Bayelsa, Cross River, Delta, Edo, Ondo, Imo and Rivers states, with an area of 112,000 sq. km, a population of 27 million people, 185 LGAs, about 13,329 settlements; 94% of which have populations of less than 5,000 (Ojameruaye, 2008).

According to the Ministry of Niger Delta Affairs (2011), the climate of the Niger Delta Region varies from the hot equatorial forest type

in the southern lowlands to the humid tropical in the northern highlands and the cool montane type in the Obudu plateau area. Further, the wet season is relatively long, lasting between seven and eight months of the year, from the months of March to October.

The region has huge oil reserves and ranks sixth exporter of crude oil and third as world's largest producer of palm oil after Malaysia and Indonesia (Omafomwan and Odia, 2009). Further, the Delta leads in the production of timber, pineapple and fish, also; cocoa, cashew, rice, yam and orange are produced in large quantities in the area (Omafomwan and Odia, 2009). While cassava resources can stimulate the

Table 1: Distribution of small scale Agro-based enterprises by their Socio-economic characteristics.

Variables	Informal Credit Borrower Enterprises		Formal Credit Borrower Enterprises	
	Frequency	Percentage	Frequency	Percentage
<b>Age</b>				
1-4	146	55.30	41	
5-8	68	25.76	26	42.71
9-12	38	14.39	13	27.08
13-16	6	2.27	12	13.54
17-20	4	1.52	2	12.50
21-24	2	0.76	2	2.08
Total	264	100	96	2.08
Mean	5.35		6.92	100
<b>Gender</b>				
Male	184	69.70	61	
Female	80	30.30	35	63.54
Total	264	100	96	36.45
				100
<b>Accessibility of Credit Market</b>				
Informal Credit	264	60.13		
Formal Credit	96	21.86		
No Access	79	17.99		
Total	439	100		
<b>Years of Borrowing Experience</b>				
1-3	155	58.71	53	
4-6	76	28.79	28	55.21
7-9	21	7.95	8	29.17
10-12	8	3.03	5	8.33
13-15	4	1.52	2	5.21
Total	264		96	2.08
Mean	3.79	NN	4.09	1.49
<b>Level of Formal Education</b>				
No Formal Education	9	3.14	1	
Primary	83	31.44	18	1.04
Secondary	102	38.64	36	18.87
Tertiary	70	26.52	41	37
<b>Total</b>	264		96	42.7

Source: Field Survey, 2012

growth of local processing industries for fufu, garri, chips, flour, glucose, starch and pellets; massive furniture, building and craft industries can be built on the regions huge bamboo resources.

The major occupation of the people is fishing and agriculture but activities of oil companies have impacted on the environment with poor access to water, transport, telecommunication, power and fuel, housing, poor waste management, and poor educational structure (Igbuzor, 2006); this lead to conflict in the region some years back. Traditional industries in the area include canoe carving, pottery, cloth weaving, mat-making, thatch making (roofing materials), palm oil processing, food processing (garri, fufu and starch from cassava), local gin distillation etc. Small and Medium scale enterprises are found almost everywhere in the region. The main characteristics of these industries found in varying proportions throughout the region, are that they are based on manual artisanal technologies, local inputs and skills transferred chiefly through family upbringing and not via formal training or education (Ministry of Niger Delta Affairs, 2011). Further, the major lending credit institutions in the region are formal and informal credit institutions.

A multistage sampling technique was used in this study. Of the 9 Niger Delta States of Abia, Akwa Ibom, Bayelsa, Cross river, Delta, Edo, Rivers, Imo and Ondo states, three states were purposively selected based on high concentration of economic activities which are Agro-based The States were Bayelsa, Delta and River States. Further, three local Government Areas each were purposively selected from each of the three states, from which one each was randomly selected for the study. The Local Government Areas were Brass, Warri North, and Phalga This was possible with the help of staff of the Ministry of Economic Development/trade, the Small and Medium Scale Enterprise Associations resident in each state and by oral interview.

In the third stage, a list of Small Scale Agro-based enterprises was obtained from the Small and Medium Scale Enterprises Associations and the Local Government Business registration office. This list was stratified into three sectors namely manufacturing, services and trading sec-

tors, out of which two enterprise types were randomly selected from each of the three sectors, making it six. The enterprises selected were Bakery and Capentry/furniture- Manufacturing; Restaurants and Cold Room Services- Services; Poultry Feeds and drugs- Trading. Twenty of each of the selected enterprises from each sector was randomly selected for study. One hundred and twenty enterprises were selected from the three sectors in each local Government Areas of each state. In all, three hundred and sixty enterprises were selected from the three states. Furthermore, the 360 enterprises were stratified along credit source lines. On the whole, two hundred and sixty four enterprises that accessed informal credit and 96 enterprises that accessed formal credit were used for detailed study.

Data from the study were obtained from primary sources through the use of structured questionnaire and oral interview.

Before undertaking the actual data collection, research assistants were briefed on the use of the data collection instruments. This was implemented during the pilot study where the same personnel were used for pre-testing of the questionnaires. This was to ensure clear understanding of the instrument to avoid inconsistency and incomplete response. Changes were however considered on the questionnaire and problem statement after the pilot testing. Following the actual data collection, examination of the questionnaires was made in other to determine and drop questionnaires with inconsistent as well as incomplete answers. Though meticulously implemented, notwithstanding, however missing firms or non-respondents were encountered. The missing data was dealt with by matched sample from the frame. That is, those firms not in existence were matched by another firm in frame because of random sampling.

### Data analysis

Data were analyzed by the use of descriptive statistics such as frequency, means, percentages, etc. The Heckman model, selected financial ratios and the t-test were also employed in the study. The Heckman model is illustrated by the following equations:

(a) Index Equation  $d_i^* = X'_{i1}\beta_1 + U_i$ ,  $U_i \sim N(0,1)$ ... ..  
Threshold index equation =  $\{1 \text{ if } d_i^* > 0, \text{ and is } 0$

if  $d_i^* \leq 0$

(b) Amount of Credit received:  $t^* = X'_{2i}\beta_2 + V_i$ ,  
 $V \sim N(0, \delta^2)$

Threshold equation:  $t_i = \{t_i^* \text{ if } d_i = 1, 0 \text{ if } d_i = 0$

Where  $d_i$  = Probability of access to credit

$t^*$  = amount of credit received

$t_i$  = amount of credit received if respondent  $i$  has access to credit, 0 otherwise

Where  $d_i$  = Probability of access to credit

$t^*$  = amount of credit received

$t_i$  = amount of credit received if respondent  $i$  has access to credit, 0 otherwise

Other variables in the model were defined below:

GEN (Gender of the entrepreneur. Defined as dummy, takes the value of 1 for male and 0 for female.

EDU=Entrepreneur's Education. (This is the level of formal education attained by the owner/manager of firm. Measured by the total number of years the entrepreneur spent in receiving formal education).

AGE= Enterprise Age (Defines the total number of years that the business has been in existence. Measured in years).

SIZ= Enterprise Size (This describes the worth of the enterprise; total assets of the enterprise valued in Naira)

INT=Interest Amount; this is the total amount the borrower pays as interest charges on money borrowed.

INC= Income of firm (Receipts of the enterprises from sales in the last one year (Measured in Naira)

COL= Collateral (Defined as any valuable asset that eases the approval of formal credit (Measured as Dummy: 1 if firm provided collateral to access credit, 0 otherwise)

GUA= A person who pledges that a debt will be paid. (Binary; 1 if guarantor was available and 0 if not)

SOC=Social Capital (For informal credit; it describes borrowers acquaintance with lender. Measured as dummy, 1 if borrower is acquainted with lender, 0 otherwise. For formal credit, it describes membership of cooperative society, hence the number of people in the cooperative.

Further, financial performance of enterprise

was analysed using the:

(1) Return on Capital employed (ROCE)

(2) Current Ratio

1>Returns on Capital Employed Ratio = Net Profit after Tax/Capital employed

These ratios indicated how small scale agro based enterprises in the study area have used capital employed. Higher ratios implied greater efficiency.

2-Current Ratio = CA/CL

Where CA = Current Asset of enterprise valued in Naira (₦)

CL = Current liabilities of enterprise valued in Naira (₦)

Current Assets included cash and assets converted into cash within the last year, such as marketable securities, inventories, and prepaid expenses. Obligations that matured within the year were included in current liabilities and they included creditors, bills payable, accrued expenses, income tax liability and long term debts maturing in the current year. Ratios greater than one meant that small scale agro based enterprises in the study area has more current assets than current liabilities (or claims) against it.

## RESULTS AND DISCUSSION

### Socio-economic characteristics of respondents

The distribution of sampled small scale agro-based enterprises according to age of enterprise as shown in table 1 below reveals that 95.45% of informal credit enterprise borrower and 83.33% of formal credit enterprise borrower are under 12years of age. The mean ages are 5.35 and 6.92 for the informal and formal credit borrower enterprises respectively. This implies that most of the small scale agro-based enterprises that borrowed from the formal credit market are older than their informal credit borrower counterpart. The most common age fell within the range of 1-4years.

Gender of respondents show that 69.70% of the male entrepreneurs borrowed from the informal credit market whereas 63.54% borrowed from the formal credit market. Further, 30.30% and 36.46% of informal and formal credit borrower entrepreneurs are females. This implies that most male entrepreneurs tend to borrow from the informal credit market than the formal credit market. Doan *et al.* (2010) explain that

gender does not really matter in credit participation but plays a role in explaining loan size.

While 60.13% of agro-based enterprises have access to the informal credit market; only 21.86% have access to formal credit market. Further, 17.99% of the enterprises do not have access to formal or informal credit market. Access to external resources is needed to ensure flexibility in resource allocation and reduce the impact of cash flow problems (Bigsten et al., 2003). Firms with access to funding are able to build up inventories to avoid stocking out during crises while availability of credit increases the growth potential of the surviving firms during periods of macro-economic instability (Atieno, 2009). In appraising financial constraints to small scale farming in Etsako Local Government Area of Edo State, findings show that only 7% of small scale farmers have access to basic loan while 93% access loan from other sources like co-operative societies, personal savings and relations.

Further, more than 80% of agro-based enterprises who access informal and formal credit have been borrowing for more than 3 years. Further, average borrowing age for formal credit enterprise borrower is 1.5 years whereas informal credit enterprise borrowers have been borrowing for about 4 years.

Also, 96.6% of informal credit borrower entrepreneurs and 98.96% of formal credit borrower entrepreneur had one form of primary to tertiary education. This is significantly high and consis-

tent with MNDA (2004) which indicates that the adult literacy status of the Niger Delta states is about 78%, slightly higher than the national average of 54%, although marked differences exist among the states. Most entrepreneurs who borrowed from the informal credit market however had achieved secondary education level supplemented with training compared to formal credit borrower entrepreneurs. This may imply that most people with this level of education failed to find employment in the formal sector and thus resort to small scale enterprise activities.

The table 2 below presents the maximum likelihood estimates of the first part of the Heckmann model. The estimated probit regression model gave the Mc Fadden R-Squared of about 0.52 which implies that all the explanatory variables included in the model were able to explain 52% of the probability of the decision of small scale agro-based enterprises to access informal credit.

**Informal credit access by small scale agro based enterprises (First Hurdle)**

The table 2 presents the maximum likelihood estimates of the first part of the Heckmann model. The estimated probit regression model gave the Mc Fadden R-Squared of about 0.52 which implies that all the explanatory variables included in the model were able to explain 52% of the probability of the decision of small scale agro-based enterprises to access informal credit.

The coefficient of the first hurdle indicates

Table 2: Estimated determinants of informal credit access (First Hurdle).

	Coefficient	Std. Error	Z	Slope*	p-value	
<b>Const</b>	0.32658	0.572032	0.5709	-	0.56806	
<b>GEN</b>	-1.35722	0.426915	-3.1791	-0.10347	0.00148	***
<b>EDU</b>	-0.0435472	0.0310248	-1.4036	-0.0045343	0.16043	
<b>AGE</b>	0.0694754	0.0376283	1.8464	0.00723403	0.06484	*
<b>SIZ</b>	8.46569e-08	1.06843e-07	0.7923	8.81479e-09	0.42816	
<b>INC</b>	-6.2595e-09	7.12192e-08	-0.0879	-6.51762e-010	0.92996	
<b>INT</b>	-8.58228e-09	1.68174e-07	-0.0510	-8.93619e-010	0.95930	
<b>SOC</b>	2.58999	0.33906	7.6387	0.676166	0.00001	***
<b>McFadden R-squared</b>		<b>0.526944</b>		<b>Adjusted R-squared</b>	<b>0.415245</b>	
<b>Log-likelihood</b>		<b>-49.25958</b>		<b>Akaike criterion</b>	<b>114.5192</b>	

Source: Estimated From Field Survey Data, 2012

\*\*\* P < 0.01, \*\* P < 0.05, \* P < 0.10

how a given variable affects the likelihood of access to credit. The result of the first hurdle (probit model) indicates that the co-efficient of enterprise Age (AGE at 10%) and social capital (SOC at 1%) are positive and statistically significant with respect to the decision or probability to access informal credit by small scale agro-based enterprises in the study area. The result implies that as Enterprise Age and relationship with lender increases for informal credit borrower enterprise, the chance to have access to credit increases too. Result is in line with a priori expectations as increase in enterprise age implies increase in experience and growth. Also, increase in the social capital, will enhance relationship and hence will bring about confidence and trust in business between the lender and the entrepreneur. The result for Enterprise Age as reported corroborates the research findings of Atieno (2001) and Mwangi and Oumar (2012) in Kenya. The result for Social Capital is in consonance with findings of Togba (2009) in Cote d’ivoir. On the other hand, coefficient of Gender (GEN at 1%) is negatively signed and statistically significant with respect to decision to access credit by the small scale agro-based enterprises in the study area. The result reveals that the probability of accessing informal credit decreases among male small scale agro-based entrepreneurs in the study area. This result could be attributed to the fact that men engage in large scale entrepreneurial activities compared to

women hence informal credit may not be adequate enough for investment.

The marginal effect of the Probit model show changes in the probability of access to credit for additional unit increase in the decision variables. The probability of access increases by 0.7% and by 67% for every unit increase in Enterprise Age and Social Capital, while 10% reduction in the chance to access informal credit occurs for every unit increase in male respondents. However, based on the magnitude of the slope co-efficient in the estimated model, Social Capital and Gender appear to be the most important policy variables that impact on the decision of small scale agro-based enterprises to have access to informal credit in the study area.

**Informal credit amount received by small scale agro based enterprises (Second Hurdle)**

The second hurdle indicates how a decision variable influences informal credit amount received by small scale agro based enterprises.

The maximum likelihood estimates of the Truncated Tobit model are presented in table 3. The estimated truncated Tobit regression model reveals a normal distributed regression residual

The result of the Tobit model reveals that co-efficient of Gender is significant at 5% level and negatively related to the amount of Informal credit received by small scale agro-based enterprises in the study area. The result implies that increase in number of male entrepreneurs will

Table 3: Estimated determinants of informal credit amount received (Second Hurdle).

	<b>Coefficient</b>	<b>Std. Error</b>	<b>Z</b>	<b>p-value</b>
<b>Const</b>	70627.9	189919	0.3719	0.70998
<b>GEN</b>	-175070	85407.5	-2.0498	0.04038**
<b>EDU</b>	-848.123	8435.06	-0.1005	0.91991
<b>AGE</b>	-5078.49	9499.96	-0.5346	0.59294
<b>SIZ</b>	0.0195456	0.006454	3.0283	0.00039***
<b>INC</b>	-0.000692011	0.0001709	-4.0476	0.000202***
<b>INT</b>	-0.0544053	0.0607931	-0.8949	0.37083
<b>GUA</b>	62183.5	24359.89	2.5527	0.004045**
<b>SOC</b>	422993	117559	3.5981	0.00032***
<b>Chi-square(8)</b>	<b>19.43569</b>	<b>p-value</b>	<b>0.012695</b>	
<b>Log-likelihood</b>	<b>-3325.222</b>	<b>Akaike criterion</b>	<b>6670.444</b>	

Source: Estimated From Field Survey Data, 2012  
 \*\*\* P < 0.01, \*\* P < 0.05 , \* P < 0.10



lead to a decrease in the amount of credit received from informal credit sources in the area. This result could be attributed to the fact that women borrow smaller amounts for businesses unlike men, hence they tend to patronize the informal credit markets more. This result is substantiated by the findings of [Kimuyu and Omiti \(2000\)](#) that a greater proportion of female entrepreneurs borrow from NGOs and Non-bank financial Institutions hence credit –source-related differences partly account for the gender disparities in the amounts borrowed.

Further, the co-efficient of enterprise size is positively signed and significant at 1%. This is in consonance with a priori expectation. The result implies that increase in size of enterprise will lead to increase in amount of informal credit received by small scale agro-based enterprises in the study area. Informal credit suppliers will disburse funds based on information on value of assets owned by the respondents' assets as a form of security for their loans. Informal credit suppliers have informational advantage over any other lending source type as they are found among the people.

Furthermore, the result of the Truncated Torbit model reveals that the coefficients of income of the firm is significant at 1% level and negatively related to the amount of informal credit supplied to small scale agro-based enterprises in the study area. The result implies that there is an indirect relationship between income and amount of informal credit received; therefore, as firm's income increases informal credit amount received decreases. Firms who have increased income, will tend to borrow less because the increase will be reinvested into the business. The result reflects the pecking order theory which postulates that firms first prefer internal financing, and then debt, lastly raising equity as a "last resort. Findings agree with the empirical research reports of [Kedir et al. \(2009\)](#) in Uruguay, and [Nwaru et al. \(2004\)](#) in Nigeria.

The Social Capital co-efficient is positively signed and significant at 1% level. This is in line with a priori expectation. A direct relationship, implying that increase in social capital will lead to increase in informal credit amount supplied. Informal credit suppliers are usually within and around the neighborhood and the borrowers ac-

quaintance with the lender goes a long way to enabling him have access to credit. The result of this study is substantiated by the findings of [Mwangi and Ouma \(2012\)](#) in Kenya.

#### **Access to formal credit by small scale agro based enterprises (First Hurdle)**

The table 4 presents the maximum likelihood estimates of the first part of the Heckman model. Again, the result is similar to that obtained for formal credit access in the first objective. The estimated Probit regression model gave the Mac Fadden R-Squared of about 0.87 which implies that all the explanatory variables included in the model were able to explain 87% of the probability of the decision of small scale agro-based enterprises to access credit from formal credit institutions.

The coefficient of the first hurdle shows how a given variable affects the likelihood to access formal credit. Those in the second hurdle indicate how a decision variable influences the amount of formal credit received by the respondent entrepreneur. The result of the first hurdle (Probit model) indicates that coefficient of Gender (GEN at 10%), Education (EDU at 5%), Enterprise age (Age at 5%), Enterprise Size (SIZ at 10%), Collateral (COL at 5%) are all positive and statistically significant with respect to the decision or probability to access formal credit by small scale agro-based enterprises in the study area. The implication of the result is that, as Gender, Education, Enterprise Age, Enterprise Size, and value of Collateral increases, the greater the chances to access formal credit. Further, there is greater chance for male entrepreneurs to access credit than female entrepreneurs. This result is in line with a priori expectations because increase in Enterprise Age implies Experience in business; Firm size is a concession to stimulate greater investment, hence greater access to investible funds. Further, the pecking order theory best explains the positive relationship between increased income and credit access; a firm's debt ratio will therefore reflect its cumulative requirements for external financing. The result for firm size, firm income and age of firm corroborates the research findings of [Lawal et al. \(2002\)](#) in Osun State, Nigeria and [Fatoski](#) while that of Gender is consistent with [Ajagbe et al.](#)

Table 4: Estimated determinants of access to formal credit by small scale Agro-based enterprises (First Hurdle).

	Coefficient	Std. Error	Z	Slope*	p-value
<b>Const</b>	-24.6353	10.8426	-2.2721		
<b>GEN</b>	1.16775	0.841978	1.3869	0.136854	0.16547*
<b>EDU</b>	0.174152	0.0921485	1.8899	0.0159772	0.05877**
<b>AGE</b>	1.17937	0.545003	2.1640	0.108199	0.03047**
<b>SIZ</b>	8.42606e-07	3.26089e-07	2.5840	7.7302e-08	0.00977*
<b>INC</b>	5.63213e-08	2.97144e-07	0.1895	5.1670e-09	0.84967
<b>INT</b>	2.67719e-07	5.06448e-07	0.5286	2.4561e-08	0.59707
<b>COL</b>	16.4717	7.81895	2.1066	1	0.03515**
<b>SOC</b>	0.0594197	0.0490305	1.2119	0.0054513	0.2255
<b>McFadden R-squared</b>	<b>0.875574</b>		<b>Adjusted R-squared</b>	<b>0.732665</b>	
<b>Log-likelihood</b>	<b>-7.835945</b>		<b>Akaike criterion</b>	<b>33.67189</b>	

Source: Estimated From Field Survey Data, 2012

\*\*\* P < 0.01, \*\* P < 0.05, \* P < 0.10

(2012) in Osun.

The table 5 presents the maximum likelihood estimates of the second part of the Heckman model. The estimated Tobit regression model gave the Mac Fadden R-Squared of about 0.89 which implies that all the explanatory variables included in the model were able to explain 89% of Credit amount received from formal credit institutions.

The coefficient of age of enterprise is positive and significant at 10% level. This is a direct relationship with formal credit amount received by the enterprises in the region. It implies that enterprises in the region tend to receive more credit as their age increases. Number of years in business is usually perceived as an incentive to loan access. It is a form of security for the lender for the loan amount he is giving out as trust increases with years of business dealings.

Further, the co-efficient of enterprise size is positively signed and significant at 5%. This is in consonance with a priori expectation. The result implies that increase in size of enterprise will lead to increase in amount of formal credit received by small scale agro-based enterprises in the study area. Formal credit suppliers will disburse funds based on information on value of assets owned by the respondents. This is because as size of the enterprises increases, the stock of inventory will increase, hence increase in assets of the enterprises. If these assets are liquidated,

they can be used to repay loans incurred of any eventuality. Therefore enterprise size will attract more credit amount all things being equal.

Further, the result of the truncated Tobit model reveals that the coefficients of income of the firm is significant at 1% level and negatively related to the amount of formal credit received by small scale agro-based enterprises in the study area. The result implies that there is an indirect relationship between income and amount of formal credit received; therefore, as firm's income increases formal credit amount received decreases. Firms who have increased income, will tend to borrow less because the increase will be reinvested into the business. Also, start-up businesses may not necessarily go for credit abnition, irrespective of increased income. The result reflects the pecking order theory which postulates that firms first prefer internal financing, and then debt, lastly raising equity as a "last resort. Findings agree with the empirical research reports of *Kedir et al. (2009)* in Uruguay, and *Nwaru et al. (2004)* in Nigeria.

Collateral is a prerequisite for credits in the formal sector. It enhances easy access to funds. The coefficient of collateral is positive at 1% level. This implies that the more the availability of adequate security for loan, the more the amount of formal credit the enterprise will be able to access. Collateral therefore is a great incentive to formal credit amount supplied. This is consistent, de-

Table 5: Estimated determinants of formal credit amount received

	Coefficient	Std. Error	Z	p-value
<b>Const</b>	1.97263e+06	666081	-2.9615	0.00306***
<b>GEN</b>	205785	333579	0.6169	0.53730
<b>EDU</b>	3295.75	31285.2	0.1053	0.91610
<b>AGE</b>	57680.5	30835.5	1.8706	0.06140*
<b>SIZ</b>	0.095229	0.039657	2.4013	0.03671**
<b>INC</b>	-0.0179366	0.004246	-4.2235	0.00313***
<b>INT</b>	-0.017621	0.131784	-0.1337	0.89363
<b>GUA</b>	1.95356e+06	494901	3.9474	0.00008***
<b>SOC</b>	30044.9	15976.2	1.8806	0.06003*
Chi-square(8)	38.03476		p-value	7.42e-06
Log-likelihood	-1009.351		Akaike criterion	2038.702
McFadden R-squared	0.89543			

Source: Estimated From Field Survey Data, 2012

\*\*\* P < 0.01, \*\* P < 0.05, \* P < 0.10

sirable and in line with a priori expectation.

The Social Capital co-efficient is positively signed and significant at 10% level. This is in consonant with a priori expectation. It is desirable and consistent. Formal credit institutions would usually want to loan money to groups rather than individuals for business. Therefore as more small scale enterprises form themselves into cooperative groups, they will be able to access more funds from the formal credit market. The result of this study is substantiated by the findings of [Mwangi and Ouma \(2012\)](#) in Kenya.

#### Performance of enterprises in the region

The ability of small scale agro based enterprises to cope with turbulence, and to provide an entrepreneurial engine of job creation and innovation in the region is heavily dependent upon their financial position. Instability in the Niger Delta made clear that the financial position of firms in the region, particularly small firms, was less adequate than it might have been. Ratio analysis is commonly used to interpret the adequacy of financial performance. The current ratio gives current assets relative to current liabilities. A ratio of less than 1.00 indicates that current liabilities exceed current assets, and thus the liquidity of the firm is poor.

Table 6 and 7 therefore represent the current ratio for small scale agro-based enterprises that received credit from formal and informal credit

sources in the region.

The table reveals that 29.55% of enterprises that received credit from the informal credit market and 25% of the enterprises that received from the formal credit market in the study area, had a current ratio of less than one. This implies that these groups of enterprises cannot meet up their current obligations. More than 60% of the enterprises in the region can meet up their current obligations. From these, a greater number (51.04%) of the enterprises that received credit from formal credit sources with current ratio > 5.99 are well able to meet up current obligations compared to the smaller percentage (45.45%) of enterprises who received from the informal credit sources with similar current ratio. Further, the implication of this is that majority of enterprises who received credit from formal credit sources perform better than those small scale enterprises who received credit from the informal credit sources. This result is expected, desirable and in line with a priori expectation. This is because formal credit is always larger than informal credit and useful for meaningful production. If well employed, large size credit amount which is characteristic of formal loans should enhance performance through economies of scale occasioned by larger credit amount, ceteris paribus the result of this work corroborates the research findings of [Majumder and Rahman \(2011\)](#) in Bangladesh.

Table 6: Current ratio for formal credit borrower enterprise

Category	Frequency	Percentage
0.00-0.99	24	25
1.00-1.99	4	4.16
2.00-2.99	9	9.37
3.00-3.99	5	5.20
4.00-4.99	2	2.08
5.00-5.99	3	3.12
>5.99	49	51.04
<b>Total</b>	<b>96</b>	

Source: Estimated From Field Survey Data, 2012.

Table 7: Current ratio for informal credit borrower enterprises

Category	Frequency	Percentage
0.00-0.99	78	29.545
1.00-1.99	41	15.530
2.00-2.99	6	2.272
3.00-3.99	5	1.893
4.00-4.99	8	3.636
5.00-5.99	6	2.27
>5.99	120	45.454
<b>Total</b>	<b>264</b>	

Source: Estimated From Field Survey Data, 2012.

### Difference in means of current ratio

There is no significant difference between mean current ratio by the two groups of enterprises, that is, enterprises that borrowed from the informal credit market and enterprises that borrowed from the formal credit market. The t-cal is insignificant (.579), implying that there is no difference in performance between enterprises that borrowed from formal credit market and enterprises that accessed funds from the informal credit market. That is, even though majority of enterprises that borrowed from formal credit market were able to meet up current obligations compared to a lesser percentage of enterprises that borrowed from the informal credit market, their performance do not actually vary.

Table 8: Return on capital employed for Informal credit borrower enterprise.

Category	Frequency	Percentage
0.00-0.10	52	19.696
0.11-0.20	17	6.439
0.21-0.30	2	0.75
0.31-0.40	11	6.875
0.41-0.50	2	6.489
0.51-0.60	3	1.136
0.61-0.70	9	3.409
0.71-0.80	3	1.136
0.81-0.90	3	1.136
0.91-1.00	2	0.75
>1.00	160	60.606
<b>Total</b>	<b>264</b>	

Source: Estimated From Field Survey Data, 2012.

### Return on capital employed by small agro based enterprises

Further, tables 8 and 9 represent the return on capital employed for small scale agro-based enterprises that received credit from informal and formal credit sources in the study area. The most independent ratio for assessment of profitability is the return on capital employed. Lower ratios suggest that management is not efficient in the use of funds. It reflects the overall efficiency with which capital is used.

Table reveals that 19.69% of informal credit borrower enterprise and 12.5% of formal credit borrower enterprise have a return on capital ratio of 0.10 and below while 60% of the enterprises that received from the informal credit source and 72% of enterprises that received from the formal

Table 9: Return on capital employed for formal credit borrower enterprise.

Category	Frequency	Percentage
0.00-0.10	12	12.5
0.11-0.20	3	3.125
0.21-0.30	2	2.083
0.31-0.40	3	3.125
0.41-0.50	-	-
0.51-0.60	-	-
0.61-0.70	-	-
0.71-0.80	3	3.125
0.81-0.90	2	2.083
0.91-1.00	1	1.041
>1.00	70	72.916
<b>Total</b>	<b>96</b>	

Source: Estimated From Field Survey Data, 2012.

credit source have a return on capital of 0.100 and above. In theory, the return on capital employed (ROCE) should be above borrowing rate. The current commercial bank borrowing rate in the country is fixed at about 12.5%, however, this is not obtainable in the banks as bank lending rate are observed to be as high as 25%. Against this backdrop, the result implies that majority of the enterprises from both group have an ROCE below the lending rate for the formal credit borrower, hence there is inefficient use of resources among small scale agro based enterprises in the study area. More enterprises that received credit from the formal credit market however are more efficient in use of capital than those that received from the informal market. Again the result of this work corroborates that of [Majumder and Rahman \(2011\)](#) in Bangladesh.

#### **Difference between means of return on capital employed**

There is a significant difference in the mean return on capital employed by the two groups of enterprises, that is, enterprises that borrowed from the formal credit market and enterprises that borrowed from the informal credit market. The T-cal is -3.57. This is significant at 1% level at 1% level, implying that enterprises that depended on formal credit sources performed more efficiently than enterprises that accessed funds from the informal credit sources. This result may be due to consistent and efficient monitoring of loan-use by financial institutions in the area. The result corroborates that of [Majumder and Rahman \(2011\)](#) in Bangladesh.

#### **CONCLUSION**

The study was conducted to identify factors influencing small scale agro based enterprises access to credit, actual credit amount accessed and the performance of the enterprises in Niger Delta Nigeria. The study uses the Heckman model to analyze the two stage decision of credit access and acquisition by small scale agro based enterprises in the study area. The Probit model regression analysis reveals that enterprise age, social capital and gender are statistically significant decision variables influencing the probability of accessing Informal credit by small scale agro based enter-

prises in the study area, whereas enterprise size, income of the enterprise, guarantor and social capital significantly influenced the actual informal credit amount received by these enterprises.

Similarly, gender, age, enterprise size, income and social capital significantly influences formal credit access by those groups of enterprises that had access to formal credit sources, whereas age, gender, enterprise size, income and collateral were variables that significantly influenced actual formal credit amount received by the enterprises in the region. It was however observed that apart from the age of the enterprise which influence formal credit amount accessed, similar factors affect credit amount obtained from formal and informal credit sources. It was therefore recommended that operators of formal credit institutions should endeavour to review their lending policies in other to favour start-up businesses; this will enhance performance in the sector.

1- To improve small scale agro based enterprises access to credit, the study recommended that entrepreneurs in the study area should form cooperative societies as this will ensure appropriate information sharing, risk reduction and increase awareness on matters relating to credit.

2- Operators of credit institutions should endeavor to locate some of the lending institutions or outfits nearer to these entrepreneurs.

3- Adult education programe should be implemented for agro based entrepreneurs as this would affect their access to credit positively.

4- To increase credit amount received by entrepreneurs in the study area, the study advocated for the re-assessment of the collateral needs of the lending agents and the duration of credit to the entrepreneurs.

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