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APPLICATION OF PROBIT ANALYSIS TO FACTORS AFFECTING SMALL SCALE ENTERPRISES' DECISION TO TAKE CREDIT: A CASE STUDY OF OYO STATE, NIGERIA

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ABSTRACT

The study assessed the application of porbit analysis to factors affecting small scale enterprises' decision to take credit: case study of Oyo State, Nigeria. Both questionnaire and interviewed techniques were used for data collection from 35o respondents chosen through stratified sampling techniques. In analyzing the data probit regression was employed in addition to conventional descriptive statistics such as tables, frequency distribution and percentages.

The results showed that demand for credit is strongly influenced by gender, age, education, location, value of assets owned and other dwelling characteristics at 1%, 5% and 10% level of significant. The percentage of correct predications which are choice of explanatory variable correctly predicted the household's demand decisions are good at 70%, 72% and 99% for personal savings, Relatives/ friends and bank. While money lender and multiple sources were insignificant. A comparison of households and enterprise characteristics between those who had used credit and those who had not, as well as between those who used formal sources and those who used informal sources, showed that the differences were not significant in both cases.
It is against this background that this recommendation was made that, the credit policy for rural and small-scale lending terms and conditions need to be formulated in order to mobilize savings and maximize the availability of credit to the population in rural and urban areas of Oyo State.

Key Words: Probit analysis, small scale enterprises, Decision, Credit, Nigeria.

INTRODUCTION

The need for small scale business enterprises in Nigeria cannot be over-emphasized; this is as a result of its indispensable role towards the economic growth and social development of the nation. Small scale enterprises whether set up by an individual, group of people or society has economic contributions which include; the mobilization of idle or untapped financial resources, conservation

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of foreign exchange, utilization of local resources inputs, as well as avenues for economic integration. Others are transformation of the traditional sector into modern form, creation of employment opportunity, providing training ground for managerial skill acquisition and affording a source of livehood for the majority of low income earners nationwide(Owualah, 1999).

Finance has been identified in many business surveys as one of the most important factors determining the survival and growth of small scale enterprises (SSEs) in both developing and developed countries. Access to finance allows small-scale enterprises to undertake productive investments, expand their business and acquire the latest technologies, thus ensuring their competitiveness and that of the nation in general. Nevertheless, informal credit institutions have proved relatively successful in meeting the credit need of small scale enterprise (SSE) in some countries, their limited resources restrict the extent to which they can effectively and substantially satisfy the credit needs of entrepreneurs (Nappon and Haddlestone, 1993). The reason behind this is that as micro-enterprises grow in size, the nature of loan require become increasingly difficult for informal credit sources to satisfy, yet they still remain too small for the formal lenders, who consider them as uncredit-worthy. In view of inadequate capital persistence and the co-existence of formal and informal credit source in Oyo State, it is therefore, pertinent to analysis factors affecting small scale enterprises decision to take Credit.

Akampumuza (2007) noted that one of the most difficult problems facing the Nigerian SMEs is lack of good advice, lack of education, high illiteracy levels, high incidence of poverty, disease, inadequate information, poor decision making, shortage of skill, lack of efficiency, lack of lending policies, poor record keeping as well as the amount to be borrowed. This explains why it is dangerous for the small scale enterprises to borrow from the formal credit market.

Adera (1995) remarked that commercial banks and other formal credit institutions have failed to provide the necessary credit needed by the small holders because of their lending terms and conditions. This is because the law requires a collateral security which cannot be offered by the poor and they are thus regarded uncredit-worthy. Hence, despite efforts to overcome the wide spread lack of financial services, especially among small holders in developing countries, and the expansion of credit in rural areas of these countries, majority still have only limited access to bank services to support their private initiative.

Owualah, (1999) remarked that an entrepreneur in a small scale business in a bid to achieve the organizational objective is therefore confronted with bundles of problems such as, inadequate capital and lack of access to financial services, due to terms and conditions of financial institutions (lack of collateral). Poor financial management, owner's personal habits, lack of training, inadequate infrastructures, marketing problems, employment and over reliance on relations among others.

MATERIAL AND METHODS

The study was carried out in Oyo state, Nigeria, and the population of small scale enterprises in agricultural and non-agricultural activities constitutes the population of the study. Both questionnaire and interviewed techniques were used for data collection from 350 respondents chosen through stratified sampling techniques. In analyzing the data probit regression was employed in addition to conventional descriptive statistics such as tables, frequency distribution and percentages.

For the probit models, we assume an individual is faced with two alternatives, to take credit from available provide or not. This is expressed as (Nagler 1994)

We assume Y can be specified as follows:

$Y= \beta_0+\beta_1 X_{1i}+\beta_2X_{2i}+\ldots\ldots\ldots\ldots\ldots\ldots..+ \beta_{ki}X_{ki}+U_I$

And that:

$Y_i=1$ if $Y>0$

$Y_i=0$

Otherwise,

Where X_1, $X_2\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots X_n$ represent vector of random variables, β represent a vector of unknown parameters and U represent a random disturbance terms(Nagler, 1994)

MODEL SPECIFICATION

The probit model specified in this study to analyze entrepreneurs decision about whether or not to use credit can be expressed as follows:

$Yi=\beta_0+\beta_1X_1+\beta_2X_2+\beta_3X_3+\beta_4X_4+\beta_5X_5+\beta_6X_6+\beta_7X_7+\beta_8X_8+\beta_9X_9+\beta_{10}X_{10}+\beta_{11}X_{11}+U_i$

Where

Y_i=Demand for Credit

X_1=Age (Years)

X_2=Education (Formal (1) Informal (0))

X_3=Gender (Dummy Variable, Male(1) Female(0))

X_4=Ownership (Sole proprietor(1) Otherwise (0))

X_5=Past and Current Credit use (Naira)

X_6=Income (Naira)

X_7=Application Period (Month)

X_8= Type of Account (Savings (1) Otherwise (0))

X_9=Type of Loan (Short term (1) Otherwise (0))

X_{10}= Interest rate (Naira)

X_{11}=Location (Rural (1) Others (0))

U_i=Error term

U_I is the residual error, which is normally distributed with the expected mean value of zero and variance (r^2x). This study examines this model by the measurement of all the variables and estimation of their parameters.

RESULTS AND DISCUSSION

A summary of Socio-economic characteristics of the respondents are summarized in Table 1. About 64.9% of the respondents were male while 35.1% were female. This shows that female entrepreneurs were generally less likely to be founders of new small scale business than male while males had significantly higher entrepreneurial intension than females. This coincides with the findings in Mazzarol *et al.,* (1999). The Table 1 also revealed that the population sampled was predominantly middle aged. These age-groups are known to be entrepreneurial and economically active to exploring avenue for business opportunities (Ajagbe *et al.*, 2007).
In respect of education, the distribution clearly revealed that, all the respondents (100%) had acquired one level of education or the other. This presupposed that they were generally able to appreciate the need to make use of both formal and informal credit institutions as well as to evaluate information for business improvement and productivity (Ajagbe *et al,*. 2007).

The result of marital status, about 71.7% were married while 28.3% were single. This implies that, the married were more likely to be relatively stable, making financial institutions to view them as more reliable and makes them more likely to demand for credit compared to the unmarried. Reynolds (1999) and Headol (2003) cited in Adegbite (2006) established a posture relationship between marital status and business performance.
Table 2 results show that all the main activities of business (100%) had access to formal and informal credit institutions. These results revealed that, to grow and prosper, businesses of all sizes around the world need access to financial services. (Kathartine, 2004).

The table 3, showed that majority of the respondents 58.2% applied for credit above five hundred thousand naira (₦500,000) but only 1.6% of them were approved. While more than half of the respondents (75.8%) received two hundred and one thousand naira (N201,000). This revealed that entrepreneur's credit demand is higher than the supply. The rationalization in credit demand can be attributed to loan default by the respondents. Oboh (1982) stated that a lot of loans have been granted into sectors that would normally not have been favoured.

Result of Probit Regression Analysis

The results of logit regression analysis on factors affecting small scale enterprises decision to take credit from credit institutions are shown in table 4. The result revealed that personal savings has coefficient of 5 variables that were statistically significant at 1%, 5% and 10% probability levels. Education,(-2.05), past and current credit used (-4.22),and interest rate (-6.92) were negatively significant. These Results revealed that variables with negative signs indicate that the chances of the SSEs in accessing credit decrease with education, past and current credit used and interest rate. Ownership (2.63) and type of account (3.52) indicate that their higher values increase the chance that the SSEs have to access Credit. Interms of Relative/friends the results show that education

(2.27) is positively significant at 5% level of significant. It is expected that the educated are likely to have income and savings and more likely to have assets that can act as collateral, we would expect that the demand for credit from relative and friends increases with the level of education (Mpuga, 2008). Ownership (-2.34) of a business enterprise has negative relation at 5% level of significant with willingness to secure loan from relatives/friends, this shows that no businessman or woman will like to use the business as collateral security to secure loans from relatives/friends for fear of losing the business and right of ownership to relatives/friends. Income (-2.51) is negatively correlated with relatives/friend at 5% level. This confirms our observation that increase in income of the households that have limited investment opportunities in business tends to reduce the households demand for relative/friends loans.

With the bank, past and current credit used (2.23) affected demand for credit negatively and significant at 5% level. This revealed that experienced will determined the willingness of every individual to secure new loans. If the experiences had been better, the people will find it easy to readily pursue new loans from the bank. While the positive co-efficient income (1.73) is another variable, when income is low, the households has limited resources to save and less demand for credit than at higher levels of income. Application period (-2.44) is negative and significant at 1% level. This implies that the shorter the application period the higher the desire of individual to secure loan from the bank. Type of account (-1.82) is negatively correlated with bank and significant at 5% level. This implies that the type of account being operated will determine whether an individual can benefit from bank loan or not. For instance, an individual operating savings account cannot benefit from commercial bank loan. For location, it has a negative relationship with bank loan and significant at 1% level. The results showed that rural individual will demand for credit from informal source (personal savings and Relatives/friends) because commercial banks consider individuals in the rural areas to be risky to lend to and that they demand for small loan, making it expensive for them to bear.

CONCLUSIONS

The results showed in this study revealed that demand for credit is strongly influenced by gender, age, education, location and value of assets. That women should be encouraged to seek credit facilities from both credit sources (formal and informal) for growth and development of their business. Loan rationing in the informal credit market is attributed to the limited resources base, while for the formal sector, it due to the lending terms and conditions. A Comparison of household and enterprise characteristic between those who had used credit and those who had not, as well as between those who used formal sources and those who used informal sources, showed that the differences were not significant in both cases.

It is against this background that these recommendations were made that, the credit policy for rural and small-scale lending terms and conditions need to be formulated in order to mobilize saving and maximize the availability of credit to the population in rural and urban areas of Oyo state. This is because although informal finance provided easier access to credit the results of the study show that informal credit is confirm to specific activities and at lower levels of income, this limiting its use. This tends to confirm the argument that nature of credit market in African is such that the lending units are unable to meet the needs of borrowers interested in certain types of credit. The result is that a credit gap is created that captures those borrowers who cannot get what they want from the informal market, yet they cannot gain access to the formal sources because of restrictive lending practices.

REFERENCES

Adera, A., (19951) "Instituting effective linkages between formal and informal financial sector in Africa,: A proposal Saving and Development, 1/1995 pp. 5-22

.**Adegbite, S. A.,(2006**) Effect of Technical Entrepreneurial characteristics on the performance of small scale manufacturing industries in Oyo State. An unpublished M.SC Dissertation in the Department of Technology Management, Obafemi Awolowo University, Ile-Ife.

Ajagbe, F. A., Adewoye, J. O., and Ajetomobi, J. O., (2007) an evaluation of financial performance of community Banks in Ogbomoso Area of Oyo State, Nigeria. International Business Management, Vol.1, No.4, pp.65-69, ISSN: 1993 – 5250, Medwell Journals, 2007.

Akampumuza, J., (2007) "The Management of Uganda's Privation Since 1982" London: University of London, Unpublished Ph.D thesis.

Katharin, M., (2004) Finance Development: Banking on Micro Enterprise. Distributed by the Bureau of International Information Programs, U.S. Department of state Washington.

Mazzarol, T. Volery, T. Doss, N. and Thein, V. (1999) Factors influencing small business start – ups. A comparison with previous Research, International Journal of Entrepreneurial Behaviour and Research, Vol.5, No.2, pp.48-63.

Mpuga, M. (2008) Constraints in Access to and Demand for rural credit "Evidence from Uganda. A paper for presentation during the African Economic conference (AEC) 12-14 November 2008, Tunis, Tunisia. **Nappon, D. and Huddle Stone, B., (1993)** "Rural infrasture Priorities for food security and sustainable development. The case of Central Africa". In Thimnand, U; and Hahn, H; eds. Regional for security and Rural Infrasture, Vol. 11, Lit verlag Munster-Hanbug.

Nagler, j. (1994) interpreting probit analysis. New York university: webpage: http: llwww.nyu.edu\classes\nagler\quantz\notes\probit1.pdf.

Oboh, D. O., (1982) Problems of loan repayment under the Agricultural Credit Scheme, CBN, P.180.

Owualah, S.I., (1999) Entrepreneurship in Small Business firm G- MAG Investment Ltd. Ikeja, Lagos. PP. 67.

Table-1. Frequency and Percentage Distribution of Respondents by their socio-economic characteristics

Socio-Economic characteristics	Frequency	Percentage %	Cumulative
Gender			
Male	227	64.9	64.9
Female	123	35.1	100.0
Age			
Less than 30	1	0.3	0.3
31-40	99	28.3	28.6
41-50	142	40.6	69.2
51-60	61	17.4	86.6
61 above	47	13.4	100.0
Educational Status			
Primary	70	20.0	20.0
Post primary	197	56.3	76.3
Vocational/Technical	61	17.5	93.7
Tertiary	22	6.3	100.0
Marital status			
Single	99	28.3	28.3
Married	251	71.7	100.0

Source: Field Survey, 2010

Table-2. Distribution of main activities of summers of the Respondents by the used of credits from formal and informal credits institutions

Enterprise	Frequency	%	cumulative
Agriculture	29	8.3	8.3
Industry	10	2.9	11.1
Business	240	68.6	79.7
Transport	50	14.3	94.0
Administration	21	6.0	100.0

Source: Field survey, 2010

Table-3. Distribution of Respondents According to the Amount Applied for, Amount Approved and Received

Size of Loan (₦)	Amount Applied for frequency	%	Amount Approve Frequency	%	Amount Received Frequency	%
≤ 100, 000	5	1.6	90	28.3	90	28.3
101,000-200,000	10	3.2	140	47.5	140	47.5
201,000-300,000	20	12.7	10	3.2	10	3.2
301,000-400,000	15	9.5	2	0.6	2	0.6
401,000-500,000	42	14.8	60	18.8	60	18.8
>500.000	225	58.2	5	1.6	5	1.6
	317	**100.0**	**317**	**100.0**	**317**	**100.0**

Source: Field survey, 2010

Table-4. Marginal Effects after logit for Entrepreneurial Choice of Credit from various sources

Dependable variable Access to credit

Explanatory variable	Personal Savings	Relatives/friends	Money Lender	Bank Loan	Multiple Sources
Ln (age)	0.543 (1,57)	-0.020 (-1.41)	-0.002	0.000 (0.11)	0.000(0.47)
Ln (yeard of	-0.083 (-2.05)*	0.038 (2.27)**	(-0.87)	-0.001	-0.000
education)	-0.006 (-0.08)	0.020 (0.75)	-0.000	(0.2.8)	(-0.42)
Dummy:	0.215 (2.63)**	-0.126 (-2.34)**	(-0.28)	0.006 (1.12)	0.000
gender	-0.163	-0.021 (-1.30)	-0.002	-0.00 (-0.18)	(0.26)
*	(-4.22)***	--0.322 (-2.51)**	(-0.51)	0.008	0.000
Dummy:	0.005 (0.18)	--	-0.016	(2.23)**	(0.45)
ownership	-0.053 (-0.25)	-0.001 (0.03)	(-1.02)	0.004	0.001
*	0.048 (1.12)	-0.001(-0.032)	-0.002	(1.73)*	(0.49)
Past and	0.243(3.52)***	0.067(2.10)**	(-0.78)	0.036 (0.84)	-0.000
rent credit use	-0.105(-1.37)	-0.001 (-0.36)	0.001	-0.008	(-0.42)
Income	-0.036	-0.010 (-0.25)	(0.75)	(2.44)**	0.000
Collateral	(-6.92)***	-0.004 (-1.10)	0.002	-0.009	(0.06)
	0.280 (0.26)	-0.084 (-3.35)***	(0.47)	(1.82)**	-0.000
Application	0.054 (0.49)	0.7216156	-0.004	-0.003 (0.43)	(-0.38)
period	-0.021 (-0.17)		(-1.04)	0.000 (1.49)	-0.006
Type of	0.70231108		0.003	-0.941	(-0.71)
account			(0.73)	(38.03)***	-0.000
*			0.003	-1.000	(-0.35)
Type of loan			(0.73)	(3057.78)**	-0.000
*			0.001	-0.999	(-0.52)
Interest rate			(1.06)	(138.51)***	-0.0 00
Ibadan			-0.001	0.990259774	(-0.24)
*			(-0.14)		0.000
Ogbomoso			--		(0.20)
*			0.007		0.001
Oyo			(0.61)		(0.27)
*			0.00259774		0.00009643
Fraction of					
correct					
Predictions					

Source: Field Survey, 2010.

(*) dy/dx is for discrete change of dummy variable from 0 to 1

* Significant at 10%

** Significant at 5%

*** Significant at 1%