The Social Sciences 1(4): 264-269, 2006

Impact of the Micro Credit and Training on Efficiency of Small-Scale Entrepreneurs: Evidence from National Directorate of Employment (NDE) Loan/training Programmes in Nigeria

M.M.Fasoranti, O.O. Akinrinola and I.A. Ajibefun
Department of Economics, Adekunle Ajasin University, Akungba-Akoko, Ondo State, Nigeria
Department of Agricultural Economics and Extension, Federal University of Technology, P.M.B. 704, Akure, Nigeria

Abstract: This study was conducted to analyse the impact of micro-credit and training on efficiency of small-scale entrepreneurs, using the National Directorate of Employment (NDE) programme as a case study. National Directorate of Employment (NDE) has been found to be functioning effectively in its training services. However, it has been found to be inefficient in the area of credit provision and utilisation. In order to evaluate the link between the loan/training programmes of the Directorate with the level of efficiency of micro-entrepreneurs in the state, we estimate technical efficiencies and identify significant policy variables influencing efficiency of selected micro enterprises, using the stochastic frontier production function. Results indicate that there are intra and inter group variations in the efficiency of bakers, furniture makers and burnt-brick makers, showing that there is possibility of improving the level efficiency of these entrepreneurs. The most significant determinants of technical efficiencies of bakers, furniture makers and burnt-brick makers are the level of education, business experience, age of operators, credit access, training experience and level of working capital and initial capital outlay.

Key words: Micro credit, small scale, enterpreneurs, employment, loan

INTRODUCTION

The dynamic role of small and micro enterprises as an engine for industrial growth and development of any nation cannot be over stressed. These enterprises create employments and contribute significantly to output growth of any nation of the world, of which Nigeria is a part. Any nation that neglects the small/micro enterprise sector will always have unemployment problem, together with its attendant vices and remain a dependent economy. It is in recognition of this that successive governments have evolved policies, programmes to develop the small and micro enterprises.

Employment generation in the small/micro-business is hinged on adequacy of investment outlay and working capital. Such capital is difficult to raise in a low-level income and poverty stricken society. Hence loan advancement in such circumstance can assist micro entrepreneur to invest in income and employment generating activities[1].

The formal credit institutions have not been supportive in meeting credit need of self-employed persons due to their stringent loan terms and conditions, cum cumbersome loan application procedures. These formal institutional arrangements have constituted a major barrier to the growth of small-scale and since they cannot meet the knife-edge conditions, they are often considered not credit-worthy[2]. Cooperative societies have helped in meeting the credit need of the small/micro business owner in Nigeria, but the extent of their support cannot satisfy the credit demand of the small-scale entrepreneur due to their limited resources[3,4]. This is because as small-scale/micro-enterprises grow, their credit requirement become increasing large for this indigenous credit source to meet, yet too small for the commercial banks[5].

Consequently, successive Nigeria governments have evolved strategies to address the diverse needs of this sector. Such efforts culminated into policies and programmes like establishment National Directorate of employment, restructuring of National Industrial

Corresponding Author: M.M. Fasoranti, Department of Economics, Adekunle Ajasin University, Akungba-Akoko, Ondo State, Nigeria

Development bank to Bank of Commerce and Industry. The National Directorate of Employment was saddled with the responsibility of offering training programme to develop the entrepreneurial, technical and management capabilities of small-scale business people and provides both start-up and working capital for them. The small-scale enterprise Development Department of the Directorate has provided credit to over 2,000 beneficiaries in Ondo State since inception with a total loan package of #26,000,000, until 2002 when the restructuring policy of the present administration streamlined the Directorate's mandate to training only.

Problem statement/justification: Increase productivity of small-scale business in terms of output growth could emanate from improvement in technical and allocative efficiency, use of adaptable improve technology and increase in input consumption. This is condition on availability of adequate credit to effect their demand of input and adoption of relevant technologies and tailor-made training scheme to keep small-scale business people abreast of relevant technical and managerial skills. The credit constraint and high cost of capital confronting small-scale enterprises in Nigeria in general and Ondo state in particular, constrict output growth. With the restructuring policies of the present administration, which make provision of credit and entrepreneurial training a priority, one of the challenges to policy makers is how to improve technical efficiency of these small-scale business people so that increased productivity (large gains in output) can be attained. This can only be done when we know the critical factors influencing efficiencies of the small-scale enterprises.

Vijay and Wisdom[6] posited that technical efficiency is influenced by human capital variables, which control the decision-making process of the entrepreneurs, and socio-economic and institutional variables that could influence an entrepreneurs' capacity to apply his/her decisions at the enterprise level without any constraints. The human capital variables include level of education, business experience and age; social economic and institutional variables are loan-interest, loan size, contact with lender, and training programmes, training experience, respectively).

Pertinent to determining the technical efficiency of micro-business enterprise are certain questions, such as:- are small-scale business enterprises technically efficient or inefficient? What are the factor contributing to their efficiency or otherwise? Can the level of their technical efficiency be improved upon? What is the contribution of micro-finance and training services provided by NDE to the technical efficiency or otherwise of these micro-enterprises?

This study, therefore is premised on determining the link between credit access, training and technical efficiency and highlight other significant factors influencing the level of l efficiency in the baking, furniture making and burnt-brick making micro-enterprises.

Literature is replete with studies on the measurement of technical and allocative efficiency in the primary, manufacturing and service sectors of sub-saharan African countries. Ajibefun and Daramola[7] have shown that the significant determinants of technical efficiency of block-makers, metal fabrication and saw-millers in Nigeria are age of operator, level of education business experience and number of employed and level of investment. The significant determinant of technical efficiency of Tobacco growers in Uganda have been estimated by Obwona[8] to be family size, level of education health status, hired labour, credit accessibility, fragmentation of land and extension services. Njikam[9] examined the impact of trade liberalisation on the technical efficiency of electrical industry of Cameroon and found a positive effect of the trade policy on the level of efficiency in the industry.

MATERIALS AND METHODS

This study was carried out in Akure South Local Government Area (LGA) of Ondo State, Nigeria. The LGA happen to be the state capital with relative infrastructure advantage suitable for micro-enterprise. Like any other state capital, most government programmes on small-scale enterprises are better implemented in the LG owing to its competitive advantages in terms of infrastructure, population and market.

The NDE headquarters is situated in the LG where it carries out its credit and training activities. The small-scale enterprise department handles the Directorate's Entrepreneurship Training/credit service. The department organises entrepreneurship awareness seminars, management development workshop, working capital management, record keeping and management and improve-your-own business seminars at the state capital and in go other seventeen internal country over cash seminars, local government headquarters in the state. In 2004, the NDE organised three hundred and twenty-eight training programmes. These included seventy entrepreneur seminars, forty-seven management development workshop, twenty-five record keeping and management, one hundred and three feasibility report

preparatory seminars, fifty-seven working capital management and twenty-six seminars on internal control over cash. During the period a total loan package of ninety-six million (#96,000,000) naira was advanced to three thousand eight hundred and forty small-scale entrepreneurs who engaged in manufacturing, service, agriculture and trading[10]

Data collection and sampling procedure: Data used for this study consist of age, business experiences, level of education, and respondents. Training programmes and training experience, credit intervention by NDE, value of output, and physical quantity of input, equipment, and man-hrs. These data were generated through structured questionnaire administered by trained enumerated after correction for validity and reliability test.

Collection process involves purposive and random sampling techniques. The list of loan beneficiaries who are bakers, burnt-brick makers and furniture manufactures was obtained from the NDE and sixty-five respondents were randomly selected from each group.

Analytical technique: The study used the stochastic frontier also called the composed error model of Aigner[11] and Meeusen and Van den Broeck[12]. Conceptually, a firm producing a single output Q using 2 inputs efficiently transforms such inputs into output through a production function. This shows the functional relationship between output obtainable form input vectors.

The stochastic production function is given as:

$$Qi = zi\,\beta + (Vi-Ui),\ i = 1, 2, \ldots\ldots\ldots\ldots N \quad (1)$$

where Qi is the production of the i-th firm zi is a mx1 vector of input quantities of the i-th firm.

β is a vector of unknown parameter

Vis are random variables; and Uis are non-negative random variable which are presumed to account for technical inefficiency in production.

The random errors Vi's are said to be independently and identically distributed ~ N (0, δv^2) independent of Ui's. The U'is are assumed to be independently and identically distributed as, for instance, exponential[12] and half normal[11]. In this study Ui's are assumed to follow half normal distribution, and a mixed chi-square distribution (Likelihood Ratio Test) to test for one-sided error.

The stochastic frontier production function's technical efficiency measure for an individual firm declined in equation is given as:

$$TEi = E(Q^*/Ui, Zi)/E(Qi^*/Ui = 0, Zi) \quad (2)$$

where Q* is the output of the i-th firm, which will be equal to Qi when the dependent variable is expressed in original units and will be equal to exp (Qi) when the regressor is in logs. The non-log version of equation was used for all the selected micro-enterprises, the technical efficiency is given as ($zi\beta$-Ui)/$zi\beta$). The computer programme, Frontier 4.1 Coelli[13], was used to obtain the maximum likelihood estimate for the parameters of the stochastic frontier production functions and the predicted technical efficiency. The variance parameters are expressed in terms of

$$\delta^2 = (\delta u^2 + \delta v^2), \text{ and}$$
$$\gamma = \delta u^2/(\delta u^2 + \delta v^2) \quad (3)$$

In order to estimate the technical inefficiency model, the predicted technical efficiency was regressed on a vector of socio-economic variables and, human capital variables (age of entrepreneur, educational level, and business experience), and institutional variables (training programmes, training experiences and credit access). The technical inefficiency model is given as μ, where:

$$\mu = \delta o + \sum_{j=1}^{n} \delta jKij, + ei \quad (4)$$

Where Ku is a vector of independent variables. The parameters of the above equation was estimated by OLS. The statistical significance of δ's help to identify variables causing technical inefficiencies in the chosen micro-enterprises. As a result of product differential associated with the selected micro-enterprise, value of output was used instead of physical output as a depend variable in the empirical estimation of production functions. The inputs used in the production functions are expenditure on equipment, man-hour worked and raw materials values.

RESULTS AND DISCUSSION

Estimates from the maximum likelihood production function frontier are presented in Table 1.

Results of the Cobb-Douglas frontier for Bakers showed that capital outlay and man-hour were significant factors influencing the value of output with elasticity coefficient of 0.20 and 0.23 respectively among bakers. The Return To Scale (RTS) is less than 1, signifying a decreasing return to scale. The estimated production function frontier for furniture makers indicates that capital outlay, man-day worked, and equipment in that order were statistically significant determinant of value of output. The elasticity of expenditure on capital outlay labour,

Table 1: Maximum likelihood estimates of production functions

Enterprise Variable	Bakers	Furniture makers	Burnt-brick makers
Capital outlay	0.2009*	0.3691*	0.2179**
	(0.0494)	(0.1143)	(0.0974)
Labour	0.2311*	0.2098*	0.8485**
	(0.0321)	(0.0795)	(0.4012)
Equipment	0.1757	0.3455**	0.2179
	(0.2751)	(0.1345)	(0.1556)
Intercept	5.3432*	23.543*	-28.1342*
	(2.0532)	(4.2412)	(7.0052)
Gamma (γ)	0.3724*	0.4042*	0.4348*
	(0.0545)	(0.1678)	(0.1321)
Total variance (δ^2)	0.0773	123.032	85.345
	(0.0343)	(23.053)	(21.9072)
Log-likelihood function	-2.8694	-27.52	31.75
Likelihood ratio test	1.75*	9.34*	11.34*

Source: Data analysis, *Statistical significance at 1%, **statistical significance at 5% level

equipment and on the furniture makers' output was found to be 0.37, 0.36 and 0.21, respectively. In the burnt-brick firms, production function frontier estimate indicates that capital outlay and labour were important factors affecting the value output. The marginal effect of expenditure on capital outlay and labour on the value of output of burnt-brick makers were found to be 0.22 and 0.84, respectively.

Estimates of technical efficiency: Table 2 presents the technical efficiency distribution of bakers, furniture makers and burnt-brick makers. The average technical efficiency for bakers was found to be 62.3%, this was on the lower side when compared with the mean technical efficiency obtained for furniture makers (78.2%) and burnt-brick makers (73.42%). Forty-three bakers (66%) were operating at technical efficiency over 60%, maximum efficiency being 86.28%, while only 3% (2 bakers) were found to be operating at below 40%. Only 3 furniture makers (5%) were operating at efficiency level not more than 40 and 89% of them were at most 80% technically efficient. The two extreme levels of technical efficiency of furniture maker were 32.3 and 88.34% efficiency level.

Majority of the burnt-brick makers were operating at efficiency level greater than 50%, while the least and most efficient burnt-brick makers were operating at 62.25 and 87.13%, respectively. Implicit in the fore goings is that there exist some level of inter and intra group variations of technical efficiencies. This signals that there is room for improvement of technical efficiencies of bakers, furniture makers and burnt-brick makers in Ondo state.

The findings of this study conform to similar findings for technical efficiencies of Ajibefun and Daramola[6-9] have found that the technical efficiency of block makers varied between 19.5 and 85% with a mean efficiency of 72%. They also observed that the technical efficiency of metal fabricators and saw millers in Nigeria lie between 2.7, 92, 30 and 90% with mean technical efficiency of 80 and 78%, respectively. Obwona[8] has observed that tobacco growers' technical efficiency in Uganda varied between 44.8 and 97.3% with mean technical efficiency level of 76.2%. Vijay and Wisdom[6] has observed that the technical efficiency of wood processors, dressmakers and hairdressers varied from 39.3 to 94.4, 41.9 to 99 and 69.7 to 100% with mean technical efficiency of 75.7, 83.4 and 89.1%, respectively. Also the technical efficiency of electrical firms in Cameroon was observed to vary from 50.9 to 94.39% with a mean efficiency level of 81.9% before trade libralisation and remained between 38.85 and 95.76% with mean efficiency level of 72% after trade libralisation[9].

Estimate of technical efficiency determinants: The computed technical efficiencies for the selected enterprises were modelled on certain policy variables (age, level of education, training experience/training programmes, business experience; credit access and working capital and investment outlay) to determine their influence on the efficiency of these small-scale entrepreneurs. Age is expected to negatively affect technical efficiency, while all other policy variables listed above were expected to positively influence the technical efficiency of these small-scale business operators[6] Estimated coefficients for selected enterprises are presented in Table 3.

Among the baking firms, the significant policy variables were business experience, credit access, age, level of education and training experience. Experienced, educated, young bakers with credit access were relatively more efficient. The significance of credit at 1% level might not be unconnected with its enhancement of adequacy of initial capital outlay and working capital. Thus increase inflow of fund through both formal and informal credit institutions may probably improve efficiency of these micro-entrepreneurs.

Age had a negative impact on efficiency of bakers, exposing unemployed youths to vocational training has the prospect of bringing forth the desired improvement in the bakers' efficiency. The R^2 shows that 79.3% of the total variability in the efficiency of bakers is jointly explained by the relevant policy variable.

In furniture making, the significant variables were education, credit access initial capital investment, adequate working capital and training experience.

The significance of education and training is hinged on the fact that they enhance the stock of human knowledge, and management skills. This consequently improves efficiencies. Furniture makers who have accessed NDE loan (both in kind and cash) showed

Table 2: Distribution of technical efficiencies

	Bakers		Furniture makers		Burnt-brick makers	
Efficiency	No of firms	(%)	No of firms	(%)	No of firms	(%)
21-30	2	3	1	2	-	
31-40	5	8	2	3	10	15
41-50	7	11	15	23	10	15
51-60	8	12	19	29	15	23
61-70	11	17	13	20	17	26
71-80	24	37	11	17	13	20
81-90	8	12	3	5	8	12
91-100	-		1	2	-	
Total	65	100	65	100	65	100
	Mean	62.37%	Mean	78.2%	Mean	73.23%
	S.D	10.25	S.D	14.11	S.D	9.24%
	Min	23.45%	Min	2.18%	Min	44.15%
	Max	86.28%	Max	88.34%	Max	87.45%

Source: Surveyed data

Table 3: Determinants of technical efficiencies

Enterprise Variables	Bakers	Furniture makers	Burnt-brick makers
Age of operator	-0.1123*	-0.3215*	-0.2114*
	(0.0351)	(0.0542)	(0.0475)
Level of education	0.2846*	0.1111*	0.0159*
	(0.1124)	(0.0296)	(0.0045)
Training experience	0.0312	0.3769**	0.4012*
	(0.1712)	(0.1896)	(0.1996)
Business experience	0.5816*	0.4215	0.0115
	(0.1326)	(0.5896)	(0.1150)
Credit access	0.0528*	0.0746*	0.0356*
	(0.0199)	(0.0245)	(0.0102)
Working capital	0.4872**	0.6734**	0.1678**
	(0.2369)	(0.3383)	(0.2130)
Investment outlay	0.0077***	0.0162***	0.1884
	(0.0041)	(0.0091)	(0.2848)
Intercept	0.7723	0.5539	0.4972
	(0.2467)	(0.2356)	(0.1896)
R^2	79.3%	82.3%	69.4%
F-Statistics	83.31*	77.5*	25.7*

Notes: a. The figures in parentheses are the standard errors, b.* means that statistic are significant at 1% level of significance, c.**means that statistic are significance at 5% level of significance, d.***means that statistic are significance at 10% level of significance

greater efficiency, as this guaranteed adequacy of working capital and initial investment outlay. Since credit access cum adequate working capital and initial capital outlay matter for efficiency of furniture makers, provision of adequate credit at favourable terms will ultimately raises the level of efficiency of this category of entrepreneurs. The R^2 value implies that about 82.3% of total variability in the efficiency of furniture maker is jointly explained by the policy variables.

In burnt-brick making the significant variables were ages of operator, level of education, credit access, working capital and training experience. In line with expectation, age had negative impact on efficiency of burnt-brick makers. The old burnt-brick are expected to be less efficient in comparison to the young ones. Training programmes, working capital and credit access are positively related with the level of efficiency of burnt-brick makers. With best practice, training programmes for the burnt-brick makers, their efficiencies can be significantly improved.

CONCLUSION

In the study, we have estimated the technical efficiency and significant policy variables influencing the technical efficiencies of bakers, furniture makers and burnt-brick makers in Ondo state. Our findings show that there exist some level of inter and intra group variations of technical efficiencies. This signals that there is room for improvement of technical efficiencies of bakers, furniture makers and burnt-brick makers in Ondo state. The significant determinants of technical efficiencies of bakers, furniture makers and burnt-brick makers were identified as age of operator, business experience, level of education, training experience, credit access, working capital and initial capital outlay. Implicit in these findings is that well structured entrepreneurship training programmes complemented with easy credit access can facilitate the desired improvement in the efficiencies of small-scale business people in the state.

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