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Impact Of Micro-Finance Enterprises On The Efficiency Of Micro-Enterprises In Cape Coast.

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**IMPACT OF MICRO-FINANCE ENTERPRISES ON THE
EFFICIENCY OF MICRO-ENTERPRISES IN CAPE COAST.**

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Abstract: It has been observed that the NBSSI has been performing very well as far as the training services are concerned. As far as the provision of credit is concerned, NBSSI has not performed well according to the expectations of hairdressers, dressmakers and wood-processors because of lack of funds. It has been observed that the informal sector caters for the needs of these micro-enterprises and they generally take loans from their friends/relatives and suppliers/clients. There exist many variations in the efficiency of hairdressers, dressmakers and wood-processors within each group and across these groups, which indicates that there is ample scope for raising the level of efficiency in these micro-enterprises. The most significant determinants of technical efficiencies of hairdressers, dressmakers and wood-processors are the age of operator, business experience, level of education, training programmes, credit, and contact with the lender.

JEL Classification Numbers:

Keywords: NBSSI, training programmes, credit services, PAMSCAD, Revolving Fund, stochastic frontier production function, technical efficiency, hairdressers, dressmakers, wood-processors, micro-enterprises.

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Executive Summary

Output growth could result from technological progress, increase in technical efficiency and increase in input usage. The credit constraint and high cost of capital facing micro-enterprises in Ghana in general, and Cape Coast in particular, limit output growth through different technological regimes and increases in input usage. The challenge to policy makers is how to improve technical efficiency so that large gains in output can be attained given current level of technology. This can only be done when we know the factors that influence the technical efficiencies of the micro-enterprises.

It is argued that technical efficiency is determined by individual characteristics of the entrepreneurs. Factors influencing such characteristics may be divided into two groups -human capital variables that dominate the decision -making process of the entrepreneurs, and institutional and socio-economic variables that could influence an entrepreneur's capacity to apply his/her decisions at the enterprise level without any constraints. The human capital variables are: age of operator, level of education, and business experience; institutional variables are training programs, training experience, and access to credit and socio-economic variables are interest on loan, contact with the lender. The objective of the study is to find out which ones are the most significant determinants of technical efficiency of hairdressers, dressmakers and wood-processors.

The empirical literature on the measurement of technical and allocative efficiency in the agricultural, manufacturing and services sectors of sub-Saharan African countries is very limited. Njikam (1998) has examined the impact of trade liberalisation on the technical efficiency of electrical industry of Cameroon and found a positive effect of trade policy liberalisation on this technical efficiency. Ajibefun and Daramola (1999) have shown that the significant determinants of technical efficiency of block-makers and saw-millers in Nigeria are age of operator, level of education, business experience, and number of employees and level of investment. The significant determinants of technical efficiency of metal fabricators in Nigeria are age of business, level of education, business experience and number of employees. Obwona (2000) has shown that the significant determinants of tobacco growers in Uganda are the family size, level of education, health status, hired workforce, and credit accessibility, fragmentation of land and extension services.

Many surveys of enterprise finance in Africa indicate that start-ups of micro-businesses in most countries are primarily funded by landlords, neighbours, friends and relations (RPED, 1993). Moreover, Hyuha et al. (1993) have noted that informal finance through friends and relations in Tanzania was a significant source of agricultural financing. Atieno (1998) has observed in a survey done in Kenya that about 70% of the respondents got their initial capital from family friends and relatives, while 81% got their operating capital from the same source. In both Ghana and Nigeria, steady growth in the flow of loan applications to informal lenders has been observed, and has been matched by steady increases in the numbers of loans granted by various informal lenders (Aryeetey, 1994; Soyibo, 1994). In Africa, it has been established that the informal finance is more important than the formal finance (Chipeta and Mkandawire (1991) for Malawi; Aryeetey and Gockel (1991) for Ghana; and Hyuha et. el. (1993) for Tanzania). Aryeetey (1992) in Ghana and Soyibo (1994) in Nigeria have observed that informal finance is rarely used for

the expansion of micro-businesses. The other objectives of the study are to examine the role of micro-finance enterprises and evaluate the performance of NBSSI with regard to the provision of training services and credit services.

Aryeetey (1992) in Ghana and Soyibo (1994) in Nigeria have observed that informal finance is rarely used for the expansion of micro-businesses. The finding that hairdressers have used different sources of informal finance for the expansion of their businesses stands in contrast with their findings. Our finding that majority of Hairdressers, Dressmakers, and Wood-processors took loans from their friends/relatives and suppliers/clients is in conformity with the findings of RPED (1993), Hyuha et al (1993), and Atieno (1998). Our finding that it is only the informal sector that caters for the needs of hairdressers, dressmakers, and wood-processors in Cape Coast is in conformity with the findings of Aryeetey (1994), Soyibo (1994), Chipeta and Mkandawire (1991), Aryeetey and Gockel (1991), and Hyuha et. el. (1993). Respondents indicated that the most important reasons for borrowing are favourable terms of lending, easier formalities and no collateral required. Respondents also indicated that they face credit interruption, get persistent request for repayment and rescheduling whenever they are unable to pay back the loans.

The estimated technical efficiencies of hairdressers lie between 39.3% and 94.4%, with mean technical efficiency of 75.7%. The estimated technical efficiencies of dressmakers lie between 41.9% and 99.0%, with mean technical efficiency of 83.4%. The estimated technical efficiencies of wood processors lie between 69.7% and 100.0%, with mean technical efficiency of 89.1%. Thus, we have noticed variations of technical efficiencies within each group and across the three groups. There is ample scope for the improvement of technical efficiencies of hairdressers, dressmakers and wood-processors in Cape Coast. Our findings for technical efficiencies are very similar to the findings of Njikam (1998), Ajibefun and Daramola (1999) and Obwona (2000). For example, Njikam (1998) observed that the technical efficiency of electrical firms in Cameroon varied from 50.98% to 94.39% with a mean efficiency level of 81.91% before trade liberalisation. It remained between 38.85% and 95.76% with a mean efficiency level of 76.87% after trade liberalisation. Ajibefun and Daramola (1999) have observed that the technical efficiency of block makers in Nigeria varied between 19.0% and 85.0% with a mean efficiency level of 72.0%. The technical efficiency of metal fabricators in Nigeria was found to lie between 27.0% and 92.0% with a mean technical efficiency of 80.0%. The technical efficiency of saw millers in Nigeria varied between 30.0% and 90.0% with mean technical efficiency of 78.0%. Obwona (2000) has observed that the technical efficiency of tobacco growers in Uganda varied between 44.8% and 97.3% with mean technical efficiency level of 76.2%. In hairdressing, the significant variables that influence the technical efficiency are age of operator, business experience, credit and the contact with the lender. In dressmaking, the significant variables that influence the technical efficiency are age of operator, education and credit. In wood processing, the significant variables that influence the technical efficiency are age of operator, business experience, training programmes, credit and the contact with the lender.

Our findings with regard to the determinants of technical efficiency are in conformity with some of the findings of Ajibefun and Daramola (1999) and Obwona (2000).

Based on the findings of our study, we recommend that the efforts should be made to increase the access to credit through the informal and formal financial institutions. Group lending should be encouraged so that the default risk is reduced and the rate of loan recovery could be increased. The government should try to implement policies through which cordial relations can be established in the society. The government of Ghana should establish more vocational training centres. The NBSSI should organise more training programs for the wood processors. The government of Ghana should design policies that will sustain employment in hairdressing and wood processing.

The NBSSI has been performing very well as far as the training services are concerned. As far as the provision of credit is concerned, NBSSI has not come upto the expectations of hairdressers, dressmakers and wood-processors because of lack of funds. Hairdressers have used different sources of informal finance for the expansion of their businesses. The major sources of loans are friends/relatives and suppliers/clients. The informal sector caters for the needs of the selected micro-enterprises in Cape Coast. The most important reasons for borrowing are favourable terms of lending, easier formalities and no collateral required. The owners face credit interruption, get persistent request for repayment and rescheduling whenever they are unable to repay the loans.

On the front of efficiency measurement, we observed that the stochastic frontier production functions are preferred to average production functions in all the three micro-enterprises. We observed many variations in the efficiency of hairdressers, dressmakers and wood-processors within each group and across these groups, which indicates that there is ample scope for raising the level of efficiency in these micro-enterprises. The most significant determinants of technical efficiencies of these micro-enterprises were identified as age of operator, business experience, level of education, training programmes, credit and the contact with the lender.

One of the shortcomings of this study is that the efficiency model that we estimated is static one. Secondly, we have not examined credit rationing, moral hazard and adverse selection problems. Thirdly, the efficiency model could not be estimated in simultaneous equation form because of the non-availability of the software. Fourthly, the model could have also been estimated by using the DEA (Data Envelope Analysis) software to verify the differences in results. We suggest that similar studies be conducted for other micro-enterprises in Cape Coast and other areas of Ghana.

1.0 INTRODUCTION

1.1. BACKGROUND

Studies on industrial development of different countries have shown that small and micro-enterprises constitute an integral part of the over-all industrial sector and play an active and significant role in the growth and development of these countries. These enterprises contribute significantly to employment generation and output growth of different countries of which Ghana is not an exception. When launching a new financial package titled “Smile” in 1997, Dr. K. Duffuor, the governor of Bank of Ghana stated, *“As long as we neglect the small business sector we will always have problem of unemployment as well as underdeveloped non-traditional sector and we shall always remain a dependent economy and vision 2020 will remain a dream”*. Over the years, various governments of Ghana have recognised the need to develop the small and micro enterprises.

The generation of self-employment in the small and micro-enterprises requires investment in working capital. However, at low levels of income, the accumulation of such capital may be difficult. Under such circumstances, loans, by increasing family income, can help the poor to accumulate capital and investment in employment generating activities (Hossain, 1988). Commercial banks and other formal financial institutions, however, fail to cater for the credit needs of self-employed persons mainly due to their lending terms and conditions. They require collateral, which the poor find difficult to provide. The financial institutions prefer handling large loans than the small ones needed by the poor, and their loan application procedures are

too cumbersome for the poor. It is mainly such rules and regulations of the formal financial institutions, which have created the myth that the poor are not bank-able, and since they cannot afford the required collateral, they are not considered credit-worthy (Adera ,1995).

Although informal credit institutions have proved relatively successful in meeting the credit needs of small and micro-enterprises in some countries, their limited resources limit the extent to which they can effectively and sustainably satisfy the credit needs of these entrepreneurs (Nappon and Huddleston, 1993). This is because as micro-enterprises expand in size, the characteristics of loans they require become increasingly difficult for the informal credit sources to satisfy, yet they remain too small for the formal lenders (Aryeetey, 1996a).

Access to financial services by self-employed persons in small and micro-enterprises is normally seen as one of the constraints limiting their benefits from credit facilities. However, in most cases the access problem is one created by the institutions mainly through their lending policies. This is displayed in the form of prescribed minimum loan amounts, complicated application procedures and restricting credit for specific purposes (Schmidt and Kropp, 1987). For small and micro-enterprises, reliable access to short-term credit and small amounts of credit is more valuable, and emphasising it may be more appropriate in credit programmes aimed at such enterprises (Adams and Von Pischke, 1992).

Accordingly, various efforts have been made by the government of Ghana to address the institutional, financial and technological needs of this sector. Some of the measures taken in this direction are the revision of the investment code, adoption of trade liberalisation policy, restructuring of the financial sector and the upgrading of traditional technologies. An example of an effort made by the government of Ghana to meet the institutional and financial needs of

this sector was the establishment of National Board for small scale Industries (NBSSI) in 1981 by Act 434 as apex body for the promotion and development of micro and small enterprises.¹

1. In Ghana, NBSSI defines small-scale industries as production units that are engaged primarily in manufacturing outside the residence, with an investment and tools of not less than ₵10 million and which engage less than nine people. In the present study, we are defining micro-enterprises engaged in manufacturing and services' sectors whose investment is less than ₵ 7 million.

In 1991, the Ghanaian Enterprises Development Commission was merged with NBSSI. This brought in the financial assistance to the Micro and Small Scale industries. In 1994, the Cottage Industries Section of the Department of Rural Housing & Cottage Industries was also merged with the Board. The main objectives of the Board were: to make policy recommendations and develop strategies towards the promotion of small and micro enterprises; to promote the formation of sectors associations and develop existing ones; to mobilise funding for the development of the small business sector; to develop the entrepreneurial, technical and managerial capabilities of small business people; and to implement programmes and action plans in collaboration with governmental and non-governmental organisations whose activities have some impact on the promotion and development of small businesses.

The Friedrich Ebert Foundation in collaboration with NBSSI opened a Business Advisory Centre in Cape Coast in 1991. The Business Advisory Centre (BAC) of the NBSSI provides training, counselling and advisory services. The credit department of NBSSI has been providing access to credit through the administration of the two very active credit schemes such as PAMSCAD Credit-line scheme and the Revolving Fund scheme.

1.2. PROBLEM STATEMENT

Output growth could result from technological progress, increase in technical efficiency and increase in input usage.² The credit constraint and high cost of capital facing micro-enterprises

in Ghana in general, and Cape Coast in particular, limit output growth through different technological regimes and increases in input usage.

2. The notion of how close the individual production plans are to the maximum levels as defined by the production frontier, given input levels, is the measure of technical efficiency.

The challenge to policy makers is how to improve technical efficiency so that large gains in output can be attained given current level of technology. This can only be done when we know the factors that influence the technical efficiencies of the micro-enterprises.

A few studies have examined the effect of financial liberalisation on the distribution of credit among firms of varying degrees of efficiency. Such studies use firm-level data to estimate stochastic frontier production functions, and then measure each firm's technical efficiency and relate it to the distribution of credit. Studies of this type, cited in King and Levine (1993), found that financial liberalisation tended to redirect credit to the more efficient firms. On the other hand, it could be possible that firms that have better access to credit are more efficient. Thus, we want to examine which form of this bi-directional causality between credit and technical efficiency holds true for the three micro-enterprises, i.e. hairdressers, dressmakers and wood-processors located in the Cape Coast municipality.

It is argued that technical efficiency is determined by individual characteristics of the entrepreneurs. Factors influencing such characteristics may be divided into two groups -human capital variables that dominate the decision -making process of the entrepreneurs, and institutional and socio-economic variables that could influence an entrepreneur's capacity to apply his/her decisions at the enterprise level without any constraints. The human capital variables are: age of operator, level of education, and business experience; institutional

variables are training programs, training experience, and access to credit and socio-economic variables are interest on loan, contact with the lender.

This research, therefore, seeks to investigate the relationship between access to credit and technical efficiency and point out the other relevant factors that determine the level of technical efficiency in the Hairdressing, Dressmaking, and Wood processing micro-enterprises. Moreover, we also evaluate the performance of NBSSI with regard to the provision of training services and the performance of micro-finance enterprises with regard to the provision of credit services.

1.3 OBJECTIVES OF THE STUDY

The present study tried to answer the following questions with regard to the above mentioned selected micro-enterprises: What is the current level of technical efficiency? Is there any scope in the improvement of technical efficiency? Can we identify the factors that influence this current level of technical efficiency? Can we identify the factors that make these micro-enterprises technically inefficient? Can the amount of credit provided by the micro-finance enterprises and training services provided by NBSSI be considered as significant factors that make these micro-enterprises technically inefficient?

1.4 ORGANISATION OF THE STUDY

Section 1 deals with introduction, problem statement, objectives of the study, and organisation of the study. Section 2 presents the literature review. This section is further sub-divided into two sub-sections. Section 2.1 deals with theoretical literature on technical efficiency, informal finance and NBSSI. Section 2.2 deals with the empirical literature. In Section 3, we present the analytical framework. Section 4 discusses the sampling procedure. The performance of

NBSSI is discussed in Section 5. In Section 6, we present the descriptive data analysis. Section 7 presents the estimated results. This section is further sub-divided into three sections. Section 7.1 presents the maximum likelihood estimates of frontier production functions. Section 7.2 presents estimates for the technical efficiency. Section 7.3 analyses the determinants of technical efficiency. The last section deals with conclusions and policy recommendations.

2.0 LITERATURE REVIEW

2.1. THE THEORETICAL LITERATURE:

TECHNICAL EFFICIENCY AND ALLOCATIVE EFFICIENCY

The existing literature emphasises two broad approaches to the estimation of stochastic production frontier and stochastic cost frontier and these are: (a) The non-parametric programming approach and (b) The Statistical approach. The estimation of stochastic production frontier provides estimates for the technical efficiency and the estimation of stochastic cost frontier provides estimates for the allocative efficiency. Technical efficiency reflects the ability of a firm to obtain maximal output for a given set of inputs. Allocative efficiency reflects the ability of a firm to use the inputs in optimal proportions, given their respective prices. In the case of a stochastic production frontier, the value of technical efficiency lies between zero and one, while the value of allocative efficiency lies between one and infinity in the stochastic cost function case. If the firm operates below the stochastic production frontier then it is considered as technically inefficient (the value of technical efficiency is less than one). On the other hand, if the firm operates above the stochastic cost frontier then it is considered as allocatively inefficient (the value of allocative efficiency is more than one).

The non-parametric programming approach requires one to construct a free disposal convex hull in the input-output space from a given sample of observations of inputs and outputs. This approach can be used where a firm produces multiple outputs. In this approach, estimates can be obtained for technical, allocative and scale efficiencies (Farrell, 1957; Afriat 1972; Hanoch and Rothchild, 1972; Diewert and Parkan, 1983).

A major criticism of this approach is that the convex hull, representing the maximum possible output, is derived using only marginal data and not utilising all the observations in the sample. Thus the production efficiency measures are susceptible to outliers and measurement errors (Forsund et.al.,1980). Secondly, the method has very demanding data needs. Finally, this being a non-parametric approach, no statistical inferences from the estimates can be derived.

The statistical approach can be sub-divided into the neutral-shift frontiers and the non-neutral shift frontiers. The former approach provides estimates for the technical and allocative efficiencies by specifying composed error formulations to the conventional production and cost functions (Aigner et. al., 1977; Meeusen and van den Broeck, 1977, Schmidt and Lovell 1979). The latter approach uses a varying coefficients production function formulation (Kalirajan and Obwona, 1994; Obwona, 1995). A major criticism of the statistical approach is that it cannot provide estimates for the technical and allocative efficiencies for those firms that produce multiple outputs.

INFORMAL FINANCE

A large part of financial transactions in Africa occur within the formal and informal financial sectors. Informal finance has been defined to refer to all transactions, loans, and deposits occurring outside the regulations of a central monetary authority. In Africa, it has been defined as the operations of savings and credit associations, professional money lenders, part-time

money lenders like traders, grain millers, small holder farmers, employers, relatives and friends, as well as co-operative societies (Aryeetey et. al., 1997; Aryeetey and Udry, 1997). Three types of informal units in Africa have been identified: savings mobilisation units with little or no lending; lending units that do not engage in any savings; and those units that combine deposit mobilisation and lending (Aryeetey and Udry, 1997). Studies on informal finance in Africa have demonstrated that both in the urban and rural areas, the informal sector has been a veritable source of credit for production and consumption purposes (Tapsoba, 1981; Seibel, 1986; Hyuha et. al., 1993, Aredo, 1993). In spite of the low transaction costs of the informal financial sector (Aryeetey, 1996b); the small and micro-enterprises have limited access to institutional financing because they are considered as too risky (Steel, 1977); have insurance arrangements which are only partial (Aryeetey, 1996b) or totally absent (Aryeetey and Udry, 1997); unable to provide collateral security for the loans (Ray and Hutchinson, 1983; Besley, 1994); and the resources of the lending institutions are too small (Aryeetey, 1996b). In Africa, it has been established that the informal finance is more important than the formal finance (Chipeta and Mkandawire (1991) for Malawi; Aryeetey and Gockel (1991) for Ghana; and Hyuha et. el. (1993) for Tanzania). The NBSSI can be considered as a micro-finance enterprise belonging to the informal financial sector and category two mentioned above (lending units that do not engage in any savings).

NBSSI

The potential economic and social benefits of the small and micro-enterprises are that these enterprises create jobs at relatively low capital cost. They contribute significantly to the economy in terms of output of goods and services. These enterprises provide opportunity for the development of an appropriate technology. They offer an excellent breeding ground for

entrepreneurial and managerial talents. These enterprises also develop a pool of skilled and semi-skilled workers.

In Ghana, the NBSSI was established to provide financial assistance to small-scale industries. The Business Advisory Centre (BAC) that operates under the NBSSI was also established to facilitate access to formal and non-formal sources of credit to small – scale industries. The BAC promotes access to credit by assisting entrepreneurs to form associations; assisting associations to start mutual guarantee schemes; assisting individual association members to guarantee for bank lending; disseminating knowledge on bank facilities, procedures and requirements; orienting banking officials with a view to make them conversant with the potentials and practices of small-scale industrial entrepreneurs; and assisting in the preparations of business plans of enterprises for funding. Moreover, the NBSSI is also running its own credit facilities and has its own loan appraisal, approval and monitoring mechanism that is administered by BAC/NBSSI staff, simultaneously.

Training in entrepreneurship is now generally seen as a strategy to speed the pace of industrial development in Ghana. Providing entrepreneurship training for micro-enterprises is one of the major activities of the BAC. The training workshops organised by the BAC include awareness seminars, entrepreneurship development programs, working capital management workshops, customer relation seminars, record management workshops, marketing seminars, technical training workshops, industrial visits and book-keeping workshops. The methods used in these training programmes include interactive lectures, discussions, case studies, group work, role-plays and practical exercises.

Various non-governmental organisations (NGOs) have been involved in financing the micro-enterprises all over Ghana. In Cape Coast, Friedrich Ebert Foundation (NGO) is helping the

Business Advisory Centre (BAC) to provide non-financial assistance for the micro and small enterprises. Most of the NGOs have, however, not been able to provide substantial amounts of credit to the micro-enterprises. Their inexperience in financial services has limited their potential. There is little co-ordination among the NGOs resulting in duplication of resources. Most of them have high credit costs, are donor based and sponsored, lack adequate funding, and are limited in their geographical coverage.

2.2. THE EMPIRICAL LITERATURE

The empirical literature on the measurement of technical and allocative efficiency in the agricultural, manufacturing and services' sectors of sub-Saharan African countries is very limited. Njikam (1998) has examined the impact of trade liberalisation on the technical efficiency of electrical industry of Cameroon and found a positive effect of trade policy liberalisation on this technical efficiency. It has been established by Ajibefun and Daramola (1999) for the Block Making, Metal Fabricating and Sawmill industries of Nigeria that the age of operator, level of education and the level of investment are the most significant determinants of both technical and allocative efficiency. In another study Obwona (2000) has shown for the Tobacco growers of Uganda that the most significant determinants of technical efficiency are the family size, level of education, health status, hired workforce, credit accessibility, fragmentation of land and extension services.

The literature on the theory of credit markets with incomplete markets and imperfect information is voluminous and largely relevant for the functioning of informal credit markets. There have been some empirical studies in Ghana, which bring forth the importance of small-scale industries and examine the credit performance of the informal financial sector.

Steel (1977) conducted a survey, which covered a wide range of activities located in Accra, Aburi and Nsawam. He asserted that the small-scale sector had the potential for promoting

economic growth and for absorbing the surplus labour. Thomi and Yankson (1985) in their study identified the main constraints facing the small-scale industries in Ghana to be inadequate credit, input supply, and depressed domestic demand for their products and services. They also observed that most of the small-scale firms in Ghana do not offer much scope for permanent wage employment but they play a very crucial role in training future entrepreneurs, and in providing opportunities for self-employment. Sowa et. al. (1992) noted that the number of workers employed in most of the small firms did not increase over the years. The increased employment in the sub-sector was achieved through an increase in the number of firms. The firms relying on specialised agencies such as the Ghanaian Enterprises Development Commission (GEDC) appeared to have performed slightly better than those relying on the traditional banks. Abaka and Mayer (1994) in their report on small-scale enterprises observed that the small enterprises are major creators of employment due to their labour-intensive technologies. They are the seedbeds for new entrepreneurs, the vehicles to bring development to the rural areas, and use technologies, which are generally more, appropriate for them.

Looking at the role of informal and formal financial sectors in Ghana, Aryeetey and Gockel (1991) examined the various factors which influence the demand for formal savings and lending facilities and observed that incomes, bank formalities, and banks' preference for large transactions are the major factors. Travel costs and time are considered important factors that determine transaction costs to the entrepreneurs. They also estimated that almost half of all demand deposits held by banks were informally mobilised. According to Aryeetey et. al. (1997), credit markets in Africa are characterised by problems of information asymmetry, agency problems, poor contract enforcement mechanisms, and fragmentation. These problems lead to credit rationing in credit markets, adverse selection and moral hazard (Stiglitz and Weiss, 1981; Besley, 1994; Udry, 1994; Aryeetey et. al., 1997; Elhiraika and Ahmed ,1998).

There are virtually no empirical studies in Ghana, which examine the role of micro-finance enterprises in providing the credit services and NBSSI in providing the training services to micro-enterprises and at the same time linking it to the measurement of technical efficiency.

3.0 ANALYTICAL FRAMEWORK

In this study, we intend to use the stochastic frontier, also called “Composed error” model of Aigner et al (1977) and Meeusen and van den Broeck (1977). Consider a firm using k inputs (x_1, x_2, \dots, x_k) to produce a single output Y . Efficient transformation of inputs into output is characterised by the production function, which shows the maximum output obtainable from various input vectors. The stochastic production function is defined as

$$Y_i = \mathbf{x}_i \boldsymbol{\beta} + (V_i - U_i), i = 1, 2, \dots, N \quad (1)^3$$

where Y_i is the production (or the logarithm of the production) of the i -th firm;

\mathbf{x}_i is a $k \times 1$ vector of input quantities of the i -th firm;

$\boldsymbol{\beta}$ is a vector of unknown parameters;

V_i are random variables; and

U_i are non-negative random variables, which are assumed to account for

technical inefficiency in production.

The random errors, V_i , are assumed to be independently and identically distributed as $N(0, \sigma_v^2)$ independent of U_i 's. The U 's are also assumed to be independently and identically distributed as, for example, exponential (Meeusen and van den Broeck, 1977) and half normal

(Aigner et. al., 1977). In the present study, we assume that U 's follow half normal distribution and use mixed chi-square distribution (Likelihood Ratio Test) to test for the one-sided error.

3. The Stochastic production function assumes the presence of technical inefficiency of production. The term N represents the size of sample (number of firms).

Technical efficiency (TE) of an individual firm in the context of the stochastic frontier production function (1) is defined as

$$TE_i = E(Y_i^* / U_i, x_i) / E(Y_i^* / U_i = 0, x_i) \quad (2)$$

where Y_i^* is the production of the i -th firm, which will be equal to Y_i when the dependent variable is in original units and will be equal to $\exp(Y_i)$ when the dependent variable is in logs. We use the log version of equation (1) for the Hairdressers and the technical efficiency is defined as $\exp(-U_i)$. For the Dressmakers and Wood processors we use the non-log version of equation (1) and the technical efficiency is defined as $(x_i \beta - U_i) / (x_i \beta)$.

The maximum likelihood estimates for the parameters of the Stochastic frontier production functions and the predicted technical efficiency have been obtained by using the Computer program, FRONTIER 4.1 (Coelli, 1994), in which the variance parameters are expressed in terms of

$$\sigma^2 = (\sigma_U^2 + \sigma_V^2), \text{ and}$$

$$\gamma = \sigma_U^2 / (\sigma_U^2 + \sigma_V^2) \quad (3)$$

We have also estimated the technical inefficiency model by regressing the predicted technical efficiency on a vector of human capital variables (age of operator, level of education, and business experience), institutional variables (training programmes, training experience, and

access to credit) and socio-economic variables (interest on loan, contact with the lender). The technical inefficiency model can be specified as

$$TE_i = \delta_0 + \sum_{j=1}^m \delta_j H_{ij} + \varepsilon_i \quad (4)$$

where H is a vector of exogenous variables and the parameters of this equation will be estimated by OLS. The statistical significance of δ 's will help us in identifying the variables which are causing technical inefficiency in the selected micro-enterprises. Thereafter, we have re-estimated the preferred model by deleting the insignificant policy variables. The two-stage estimation procedure has been long recognised as one that is inconsistent in its assumptions regarding the independence of the inefficiency effects in the two estimation stages. The two-stage estimation procedure is unlikely to provide estimates that are as efficient as those that could be obtained using a single-stage estimation procedure (Reifschneider and Stevenson, 1991).

Since the Hairdressers, Dressmakers and Wood-processors produce differentiated products within each group, we have decided to use the value of output instead of physical output as a dependent variable in the empirical estimation of production functions. The inputs that are included in the production functions are the expenditure on equipment, expenditure on electricity and the man-hours worked.

4.0 SAMPLING PROCEDURE

The data collection process required preliminary surveys in order to construct the sampling frames and draw various samples. Three pilot surveys were therefore conducted for this

purpose. Populations of Hairdressers, Dressmakers and Wood-processors located within the municipality of Cape Coast were identified. In the second stage, populations of Hairdressers, Dressmakers, and Wood-processors who had benefited from either loan and/or training programmes were identified. Fifty respondents were randomly selected from these populations using a random start for each group. Thus, purposive random sampling technique was used in selecting our respondents.

Research assistants who were very proficient at Fante were selected and trained for one week so that they could interpret the questionnaires to the entrepreneurs most of whom have only primary education. Before the final questionnaires were administered, pilot surveys were again conducted on five respondents from each group. The surveys revealed some weaknesses in the structure of some of the questions in original questionnaire. The questionnaire was therefore modified accordingly and was administered by the research assistants. Information was collected on value of output, physical quantities of inputs, human capital variables, institutional variables and socio-economic variables. There was a follow up to confirm some of the responses provided by the respondents.

5.0 PERFORMANCE OF NBSSI IN CAPE COAST

The NBSSI in Cape Coast provides training and financial services to entrepreneurs. In the first sub-section of this section, we discuss the performance of NBSSI with regard to the training services and the second sub-section provides information on credit services of NBSSI.

5.1. TRAINING SERVICES

In this section, we present brief information on the types of training programmes organised by the NBSSI in Cape Coast and the participation rate. Within the year 1997, the NBSSI organised forty- seven training programmes and seven follow ups, excluding daily counselling and advisory services to small-scale entrepreneurs. The total number of participants in all the

programmes was one thousand six hundred and fifty seven. This number was made up of seven hundred and ninety seven women and eight hundred and sixty men. The programmes included one entrepreneurship awareness seminar, eleven management appreciation workshops/seminars; seven improve your business seminars, eight technical management workshops, three internships and seventeen leadership workshops.

In 1998, the NBSSI organised twenty-three training programmes. The summary statistics of this is given in Table 1. It could be inferred that twenty-three seminars were organised within the year 1998. These included two information seminars, two entrepreneurship awareness seminars, twelve management appreciation seminars, five technical seminars, and two management development seminars. Furthermore, within the year, twelve leadership meetings were organised with Forum of Small-Scale Business Associations (FOSSBA) members, which were attended by 446 people made up of 166 females and 284 males.

During the year 1999, the NBSSI organised seventeen training programmes for the business community of Cape Coast. These Programmes included Technical workshops, Information seminars and management development workshops. Seven hundred and nine people participated in the various workshops, out of which three hundred and seventy were men and three hundred and thirty-nine were women.

Table 1. Training Programmes

Type of Programme	No. of Programmes	No. of Participants		
		M	F	T
Information Seminar	2	47	276	323
Entrepreneurship Awareness Seminar	2	64	19	83
Management Appreciation Seminar	12	183	164	347
Technical Seminar	5	65	80	145
Management Development Seminar	2	1	47	48

TOTAL	23	360	586	946
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Source: NBSSI, Annual Report, 1998.

5.2. CREDIT SERVICES

There are three schemes of credit facilities supervised by NBSSI. They are PAMSCAD, Revolving Fund and RBAF. Table 2 below gives the data on the loans granted to some sectors in 1997 under the PAMSCAD and REVOLVING FUND schemes. A total amount of ₪10.4 million was granted to twenty-eight entrepreneurs under the PAMSCAD credit line scheme. Out of this amount twelve entrepreneurs in the services sector received an amount of ₪4.5 million. In the allocation of funds under the PAMSCAD credit line scheme, female entrepreneurs were given priority. The rate of loan recovery under the PAMSCAD credit line scheme was 93% in 1997. During the same year, two entrepreneurs benefited from the Revolving fund scheme with an amount of ₪3.0 million. One out of the two entrepreneurs who benefited from the revolving fund scheme came from the services sector. The rate of recovery under the revolving fund scheme was 43%.

Table 2. Loans to various sectors under PAMSCAD and REVOLVING FUND

Sector	PAMSCAD		REVOLVING FUND	
	No.	Loans (₪'m)	NO.	Loans (₪'m)
Manufacturing	8	2.7	-	-
Service	12	4.5	1	1.5
Fish Smoking	6	2.2	-	-
Poultry	2	1.0	1	1.5
Total	28	10.4	2	3.0

Source: NBSSI, Annual Report, 1997.

Information on credit to entrepreneurs during the year 1998 was available only for the third quarter. During this quarter eleven entrepreneurs were given total amount of ₵1.5 million under the PAMSCAD credit line scheme. The breakdown of loans given to various sectors is provided in Table 3.

Table 3. Sectoral allocation of loans

Sector	No.	Amount (₵M)
Manufacturing	3	1.1
Service	7	3.5
Agriculture (Poultry)	1	0.5
Total	11	5.1

Source: NBSSI, Third Quarter Report, 1998.

Seven entrepreneurs in the services sector were given total loans amounting to ₵3.5million. Females were given priority in the allocation of loans under PAMSCAD credit line scheme in the third quarter of 1998. The rate of recovery under the PAMSCAD scheme was 93%. One entrepreneur applied for loan under the revolving fund scheme. The application was further sent to Accra for final approval. The rate of recovery under the revolving fund scheme was 48%.

In 1999, ₵5.0 million was disbursed to eleven entrepreneurs under PAMSCAD Credit line scheme. Eight entrepreneurs in the services sector out of eleven successful applicants received loans under this scheme. Females were given priority in the allocation of loans. One entrepreneur applied for loan under the revolving fund scheme and the application was partially approved and sent to Accra for final approval.

6.0 DESCRIPTIVE DATA ANALYSIS

The questionnaires were hand-delivered and carefully read out to the hairdressers, dressmakers and wood-processors. The response rate was 100% and all the hairdressers and dressmakers were females, whereas all the wood-processors were males. Common pieces of equipment used

by the hairdressers were dryers, rollers, mirrors, towels, pins, washing basins, chairs, combs, hair brushes, towel racks, heaters, scissors, gloves, ear protectors, needles, cups/glasses and pegs. In addition to these, thirty-two hairdressers used curling irons or tonguing machines, two had manicure machines, fifteen had fridge, two had television sets, twenty-seven had tape recorders, five had heaters, and thirty-five had fans. Common consumables used by the respondents included water, cream, shampoo, conditioner, lotion, pomade, spray, spirit, oil, treatment cream, dye, gel, hair mousse, powder, artificial hair and thread.

The common pieces of equipment used by the dressmakers were sewing machines, pressing iron, scissors, needles, measuring tapes and wooden tables. Special equipments owned by some of the dressmakers were knitting machines, press button machines, industrial machines, embroidering machines, chain stitching machines and machine motors. The common consumables were thread, pins, buttons, chalk, and polyester. Other consumables included chords, posters, textiles, lace, foam, and machine oil.

The common tools used by the wood-processors included plane, saw, chisel, hammer, pincer, claw bar, mortise, pliers, and measuring tape. In addition to these tools, only two respondents' used moulding machine and one used plough. Materials (consumables) commonly used by the wood-processors were boards, nails, polish, glue, sandpaper, and plywood. Four wood-processors used foam in addition to the stated consumables, one used putting, two used upholstery materials and one used stuffing material.

The summary statistics for the types of training programmes and the participation rate of respondents are provided in Table 4. It is clear from Table 4 that majority of the hairdressers took part in the awareness seminars, customer relation workshops, record management workshops, and technical training workshops. Most of the dressmakers participated in the awareness seminars and technical training workshops. The awareness seminar was the most

highly patronised with the participation of twenty-eight wood processors. This was followed by technical training workshops, which were attended by eighteen wood processors. The next was industrial visits in which fifteen wood processors took part.

Table 4. Participation in Training Programmes

PROGRAMME	Hairdressers	Dressmakers	Wood processors
Awareness Seminar	48	40	28
Entrepreneurship Development Program	32	1	10
Working capital Management Workshop	42	2	10
Customer Relation Seminar	50	3	6
Record Management Workshop	47	8	3
Marketing Seminar	24	3	3
Technical training workshop	49	36	18
Industrial Visits	24	4	15
Book Keeping	0	3	0

Source: Authors survey

Note: The sum of the number of people who participated in the seminars is more than fifty because some entrepreneurs participated in more than one.

The purposes of the loans applied for and the corresponding number of the respondents for each micro-enterprise are given in Table 5. It is evident from Table 5 that majority of the hairdressers applied for loans to expand their businesses and to increase their working capital. The majority of the dressmakers applied for loans to increase their working capital. This indicates that a significant number of the dressmakers in Cape Coast do not have sufficient working capital. Eleven dressmakers took the loan to expand their businesses. Majority of the wood-processors applied for the loan to settle outstanding loans, among other purposes. Twenty-seven wood-processors indicated that the loan, among other things, was to be used for the purchase of materials. Fifteen wood-processors indicated that the loan was meant to

increase working capital. Eight wood processors stated that the loans were supposed to be used for the expansion of business. Aryeetey (1992) in Ghana and Soyibo (1994) in Nigeria have observed that informal finance is rarely used for the expansion of micro-businesses. The finding that hairdressers have used different sources of informal finance (as shown in Table 6) for the expansion of their businesses stands in contrast with the findings of Aryeetey (1992) and Soyibo (1994).

Table 5. Purpose of Loan

PURPOSE OF LOAN	Hairdressers	Dressmakers	Wood processors
Working capital	26	30	15
Expansion of business	38	11	8
Payment of Outstanding loan	1	2	31
Materials	0	4	27

Source: Authors Survey

Note: Some respondents needed the loan for more than one purpose hence the sum of the number of respondents is greater than fifty.

The classification of respondents according to the sources of loans across different micro-enterprises is given in Table 6. It is evident from Table 6 that majority of the hairdressers had loans from relatives/friends and suppliers. None of the hairdressers interviewed received loan from the NBSSI. The majority of the dressmakers took loans from relatives and friends. Only four persons took advantage of the credit facilities of the NBSSI. None of the dressmakers was given loan by the Banks. Majority of the wood processors took loans from relatives/friends and their clients. One wood-processor had the loan from workers. Many surveys of enterprise finance in Africa indicate that start-ups of micro-businesses in most countries are primarily funded by landlords, neighbours, friends and relations (RPED, 1993). Moreover, Hyuha et al. (1993) have noted that informal finance through friends and relations in Tanzania was a significant source of agricultural financing. Atieno (1998) has observed in a survey done in Kenya that about 70% of the respondents got their initial capital from family friends and relatives, while 81% got their operating capital from the same source. Our finding that majority

of Hairdressers, Dressmakers, and Wood-processors took loans from their friends/relatives and suppliers/clients is in conformity with the above mentioned findings. In both Ghana and Nigeria, steady growth in the flow of loan applications to informal lenders has been observed, and has been matched by steady increases in the numbers of loans granted by various informal lenders (Aryeetey, 1994; Soyibo, 1994). Our finding that it is only the informal sector that caters for the needs of hairdressers, dressmakers, and wood-processors in Cape Coast is in conformity with the findings of Aryeetey (1994) and Soyibo (1994).

Table 6. Sources of Loans

SOURCE OF LOAN	Hairdressers	Dressmakers	Wood processors
Banks	4	0	3
NBSSI	0	1	1
Relatives/Friends	28	30	21
Money lenders	3	3	1
Co-operatives	1	3	0
Suppliers	36	8	5
Clients	1	3	20
Workers	1	3	1

Source: Authors survey

Note: The sum of the number of people who took loans is more than fifty because some took loans from more than one source.

Respondents were asked to indicate the reasons for borrowing from the various sources and these are shown in Table 7. It is evident from Table 7 that majority of hairdressers took loans from relatives/friends and suppliers because of more favourable terms of lending and no complicated formalities were required. Majority of dressmakers took loans from relatives/friends because of more favourable terms of lending and no collateral was required. Majority of the wood-processors took loans from relatives/ friends and clients because of more favourable terms of lending and no complicated formalities were required. However, majority of the respondents from each of the three micro-enterprises indicated that the loans they received were not sufficient.

Table 7: Reasons for Borrowing from Various Sources

REASONS	HAIRDRESSERS	DRESSMAKERS	WOOD PROCESSORS
More Favourable terms	30	34	45

Easier Formalities	22	16	30
No Collateral Required	11	36	21
Flexible Payback	8	12	10
Easier To Get A Loan	7	10	5
Others	4	4	4

Source: Authors survey

Note: The sum of the number of people who took loans is more than fifty because some took loans from more than one source.

Respondents were asked to indicate what happens if they are unable to pay back the loan and these responses are indicated in Table 8. It is clear from this table that majority of hairdressers and dressmakers face credit interruption and get persistent request for repayment whenever

Table 8. Action on Defaulters

PENALTY	HAIRDRESSERS	DRESSMAKERS	WOOD PROCESSORS
Interest Penalty	6	2	0
Interruption Of Credit	22	26	23
Rescheduling	0	15	29
Reduction Of Interest Charges	0	0	0
Debt Forgiveness	0	3	5
Strong Arm Enforcement	2	3	1
Persistent Request For Payment	34	16	15
Others	0	5	9

Source: Authors survey

Note: The sum of the number of people who took loans is more than fifty because some took loans from more than one source.

they are unable to pay back the loans. On the other hand, majority of wood-processors indicated that they face rescheduling and interruption of credit whenever they are unable to pay back the loans.

7.0 ANALYSIS OF ESTIMATED RESULTS

7.1. Maximum Likelihood Estimates of Frontier Production Functions

The maximum likelihood estimates of preferred frontier production functions are indicated in Table 9. First of all it is important to note that the Likelihood Ratio test statistics for all the three enterprises are statistically significant at the 5% level of significance, which imply that the frontier production function fits the data better than an average production function.⁴ This

point is also buttressed by very significant Variance Ratios for all the three enterprises. It is evident from the estimated Cobb-Douglas frontier production function for the hairdressers that

4. The average production function assumes only one error term that is normally distributed.

it is only electricity and man-hours worked which were found to be the significant determinants of value of output, with elasticity coefficients of 0.30 and 0.11, respectively. Since the sum of the elasticities of output with respect to the various inputs is less than one, which either suggests decreasing returns to scale or perhaps some missing explanatory variables (rent on land/shops and water).⁵ The non-log versions of frontier production functions were found to be

Table 9: Maximum Likelihood Estimates of Production Functions

Enterprise Variables	Hairdressers (Log Version)	Dressmakers (Non-log Version)	Wood Processors (Non-log Version)
Intercept ⁶	8.6847* (1.4537)	71.696* (19.381)	-42.0433* (8.4908)
Equipment	0.0404 (0.0807)	0.0759* (0.0124)	0.5609* (0.0422)
Electricity	0.3013* (0.1041)	-	0.1341* (0.0503)
Man-hours	0.1081* (0.0602)	3.3503* (0.1913)	0.4563* (0.0277)
Variance Ratio (γ)	0.8565* (0.0932)	0.9297* (0.0386)	0.9999* (0.00003)
Total Variance(σ^2)	0.1779* (0.0506)	14247.0* (1.1552)	1900.2* (311.64)
Log-Likelihood Function	-6.5997	-285.21	-226.48
Likelihood Ratio Test	5.15*	10.73*	15.12*

Notes: 1. The figures in the parentheses are the standard errors.

2. * indicates that the statistics is significant at 5% level of significance.

5. The inclusion of rent on land/shops and water as inputs besides equipment, electricity and man-hours in the production function yielded inconsistent estimates and that is why these two inputs were excluded from the production function.
6. The intercept takes care of the omitted variables in each equation.

more suitable for dressmakers and wood-processors.⁷ The estimated frontier production function for dressmakers indicates that equipment and man-hours worked are the two significant variables.⁸ The marginal effects of expenditure on equipment and man-hours worked on the value of output of dressmakers were found to be 0.08 and 3.35, respectively. The estimated frontier production function for wood-processors indicates that the coefficients of equipment, electricity, and man-hours worked are statistically significant.⁹ The marginal effects of expenditure on equipment, expenditure on electricity, and man-hours worked on the value of output of wood-processors were found to be 0.56, 0.13, and 0.45, respectively.

7.2. Technical Efficiency Estimates

The distributions of technical efficiencies of hairdressers, dressmakers and wood-processors are given in Table 10. The mean technical efficiency of the hairdressers was found to be 75.7%, which was relatively lower than the mean technical efficiency observed for dressmakers' (83.4%) and wood-processors (89.1%). Only one hairdresser (2%) was found to be operating at efficiency level of 39.3%, while twenty-three hairdressers (46%) were operating at the technical efficiency level that was more than 80%, with the maximum efficiency being 94.4%. Only two dressmakers (4%) were at most 50% technically efficient and 70% of them were operating above 80% technical efficiency level. The least efficient and the most efficient dressmakers were operating at 41.9% and 99.0% efficiency levels, respectively. Most of the wood processors were operating at efficiency levels above 69%, with the least efficient wood-processor operating at an

7. The log version of frontier production functions for dressmakers and wood-processors yielded inconsistent estimates for the parameters of the production functions.
8. The inclusion of rent on land/shops and fabrics besides equipment, electricity, and man-hours in the production function yielded inconsistent estimates and that is why rent on land/shops, fabrics and electricity were excluded from the production function.
9. The inclusion of rent on land/shops and wood besides equipment, electricity, and manhours in the production function yielded inconsistent estimates and that is why rent on land/shops and wood were excluded from the production function.

efficiency level of 69.7% and the most efficient wood-processor operating at an efficiency level of 100%. It is also worth noting that forty three wood processors (86%) were operating at the efficiency levels that were found to be above 80%. Thus, we have noticed variations of technical efficiencies within each group and across the three groups. There is ample scope for the improvement of technical efficiencies of hairdressers, dressmakers and wood-processors in Cape Coast.

TABLE 10: DISTRIBUTIONS OF TECHNICAL EFFECIENCIES

EFFICIENCY	HAIRDRESSERS		DRESSMAKERS		WOOD PROCESSORS	
	NO. OF FIRMS	%	NO. OF FIRMS	%	NO. OF FIRMS	%
31- 40	1	2	0	0	0	0
41 – 50	4	8	2	4	0	0
51 – 60	1	2	4	8	0	0
61 – 70	7	14	8	16	1	2
71 – 80	14	28	1	2	6	12
81 – 90	20	40	6	12	19	38
91 – 100	3	6	29	58	24	48
TOTAL	50	100	50	100	50	100
	MEAN	75.7%	MEAN	83.4%	MEAN	89.1%
	S.D	13.4	S.D	16.5	S.D	8.3
	MIN	39.3%	MIN	41.9%	MIN	69.7%
	MAX	94.4%	MAX	99%	MAX	100%

Our findings for technical efficiencies are very similar to the findings of Njikam (1998), Ajibefun and Daramola (1999) and Obwona (2000). For example, Njikam (1998) observed that the technical efficiency of electrical firms in Cameroon varied from 50.98% to 94.39% with a mean efficiency level of 81.91% before trade liberalisation. It remained between 38.85% and 95.76% with a mean efficiency level of 76.87% after trade liberalisation. Ajibefun and Daramola (1999) have observed that the technical efficiency of block makers in Nigeria varied between 19.0% and 85.0% with a mean efficiency level of 72.0%. The technical efficiency of metal fabricators in Nigeria was found to lie between 27.0% and 92.0% with a mean technical efficiency of 80.0%. The technical efficiency of saw millers in Nigeria varied between 30.0% and 90.0% with mean technical efficiency of 78.0%. Obwona (2000) has observed that the

technical efficiency of tobacco growers in Uganda varied between 44.8% and 97.3% with mean technical efficiency level of 76.2%.

7.3. Determinants of Technical Efficiency

Given a technology to transform physical inputs into outputs, some hairdressers, dressmakers and wood-processors are able to achieve maximum efficiency unto 100% while the others are technically inefficient. This discrepancy could be because the latter group does not have adequate technical knowledge compared to first group. On the other hand, this discrepancy may exist because of human-capital, institutional and socio-economic variables (Shapiro and Muller, 1977; Kalirajan and Shand, 1989). The computed technical efficiencies were modelled to depend on certain policy variables. We expected to observe a negative relationship between the technical efficiency and age of operator and interest paid on loans (cost of borrowing). All other policy variables (business experience, level of education, training programmes, training experience, access to credit, contact with the lender) were expected to be positively related with the technical efficiency. The estimated coefficients of the general model for the hairdressers, dressmakers and wood-processors are presented in Appendix 1. The estimates for the preferred model are given in Table 11. In hairdressing, the significant variables were age of operator, business experience, credit and the contact with the lender. While interpreting the results, we should keep in mind that only one policy variable changes and other variables are kept constant. As expected, age had a negative impact on efficiency of hairdressers. This is because the older hairdressers are expected to be less efficient in comparison to the younger ones. Moreover, the later groups of operators are likely to be more agile and aggressive in business drive than the former groups of operators. The government should encourage younger people to go into vocational training, especially unemployed youths since this will bring forth desired increases in the level of hairdressers'

TABLE 11: Determinants of Technical Efficiencies.

Enterprise Variables	Hairdressers	Dressmakers	Wood Processors
Intercept	0.5806* (0.1328)	0.9015* (0.1154)	0.6983* (0.0523)
Age of Operator	-0.0066* (0.0021)	-0.0094* (0.0020)	-0.0047* (0.0010)
Business Experience	0.0316* (0.0122)	-	0.0157* (0.0048)
Level of Education	-	0.0074*** (0.0039)	-
Training Programmes	-	-	0.0146* (0.0043)
Credit ¹⁰	0.0000004** (0.0000002)	0.0000003* (0.0000001)	0.0000002** (0.0000001)
Contact with Lender	0.0043*** (0.0022)	-	0.0083* (0.0021)
R ²	0.89	0.98	0.82
F-Statistics	89.10*	740.314*	39.68*

Notes: 1. The figures in the parentheses are the standard errors.

2. * indicates that the statistics are significant at 1% level of significance.

3. ** indicates that the statistics are significant at 5% level of significance

4. *** indicates that the statistics are significant at 10% level of significance.

efficiency. The business experiences, credit and contact with the lender are positively related with the level of hairdresser's efficiency. The business experience certainly enhances the efficiency. Those hairdressers who have better access to credit are relatively more efficient. Since the amount of credit obtained from the informal sector matters for the efficiency of hairdressers, the government should try to increase the flow of funds through the various suppliers of informal and formal credit institutions. The contact with the lender makes it easier for the borrower to obtain loans from the known sources, e.g. friends/relatives and suppliers, and

10. The value of the coefficient of credit is low because the credit is expressed in millions of Cedis.

ultimately raise the level of efficiency through access to credit. The value of R^2 indicates that about 89% of the variability in the efficiency of hairdressers is being explained by the relevant policy variables. The significant value of F indicates that the estimated regression is a good fit.

In dressmaking, the significant variables were age of operator, education and access to credit. As expected, age had a negative impact on efficiency of dressmakers. This is because the older dressmakers are expected to be less efficient in comparison to the younger ones. Education was found to be positively related to the efficiency of dressmakers. This is because education enhances the stock of human knowledge and this consequently increases their efficiency. The access to credit was again found to be positively related with the level of dressmakers' efficiency. The value of R^2 indicates that about 98% of the variability in the efficiency of dressmakers is being explained by the relevant policy variables. The significant value of F indicates that the estimated regression for dressmakers is a good fit.

In wood processing, the significant variables were age of operator, business experience, training programmes, credit and the contact with the lender. As expected, age had a negative impact on efficiency of wood-processors too. This is because the older wood-processors are expected to be less efficient in comparison to the younger ones. Business experience has positive impact on the efficiency of wood processors because they become more experienced while doing their business. The training programmes, access to credit and contact with the lender are positively related with the level of wood-processor's efficiency. Participation in the training programmes will certainly enhance the efficiency of wood-processors. The government should encourage the NBSSI to organise more training programmes for the wood-processors so that their efficiency could be raised. The access to credit and the level of efficiency of wood-processors are positively related as expected. The contact with the lender makes it easier for the borrower to obtain loans from the known sources, e.g. friends/relatives and clients, and ultimately raise the level of

efficiency through credit. The government should try to implement policies through which co-ordial relations can be established in the society. The value of R^2 indicates that about 82% of the variability in the efficiency of wood-processors is being explained by the relevant policy variables. The significant value of F indicates that the estimated regression for wood-processors is a good fit.

Our findings with regard to the determinants of technical efficiency are in conformity with some of the findings of Ajibefun and Daramola (1999) and Obwona (2000). For example, Ajibefun and Daramola (1999) have shown that the significant determinants of technical efficiency of block-makers and saw-millers in Nigeria are age of operator, level of education, business experience, and number of employees and level of investment. The significant determinants of technical efficiency of metal fabricators in Nigeria are age of business, level of education, business experience and number of employees. Obwona (2000) has shown that the significant determinants of tobacco growers in Uganda are the family size, level of education, health status, hired workforce, and credit accessibility, fragmentation of land and extension services.

8.0 CONCLUSIONS AND POLICY RECOMMENDATIONS

In the present study, we have evaluated the performance of the micro-finance enterprises with regard to the provision of credit services and the performance of NBSSI with regard to the provision of training services to the hairdressers, dressmakers and wood-processors. The NBSSI has been performing very well as far as the training services are concerned. As far as the provision of credit is concerned, NBSSI has not performed well according to the expectations of hairdressers, dressmakers and wood-processors because of lack of funds.¹¹

11. An interview with the manageress of the NBSSI in Cape Coast revealed that the Board has limited funds available for Micro-Enterprises in Cape Coast. She also mentioned high default rate as an impediment to the expansion of their activities.

However, group lending should be encouraged so that the default risk is reduced and the rate of loan recovery could be increased.

During the descriptive analysis, we have observed that hairdressers have used different sources of informal finance for the expansion of their businesses and this finding stands in contrast with the findings of Aryeetey (1992) and Soyibo (1994). Our finding that majority of Hairdressers, Dressmakers, and Wood-processors took loans from their friends/relatives and suppliers/clients is in conformity with the findings of RPED (1993), Hyuha et al. (1993) and Atieno (1998). Our finding that it is only the informal sector that caters for the needs of hairdressers, dressmakers, and wood-processors in Cape Coast is in conformity with the findings of Aryeetey (1994) and Soyibo (1994). Respondents were asked to indicate the reasons for borrowing from the various sources and they indicated that the most important reasons are favourable terms of lending, easier formalities and no collateral required. Respondents were asked to indicate what happens if they are unable to pay back the loan and they indicated that they face credit interruption, get persistent request for repayment and rescheduling.

On the front of efficiency measurement, we observed that the stochastic frontier production functions are preferred to average production functions in all the three micro-enterprises. The most relevant inputs for the estimation of these frontiers are equipment, electricity and man-hours worked. We observed many variations in the efficiency of hairdressers, dressmakers and wood-processors within each group and across these groups, which indicates that there is ample scope for raising the level of efficiency in these micro-enterprises. Our findings for the estimates of technical efficiencies are very similar to the findings of Njikam (1998), Ajibefun and Daramola (1999) and Obwona (2000). The most significant determinants of technical efficiencies of hairdressers, dressmakers and wood-processors were identified as age of operator, business experience, level of education, training programmes, access to credit, and the contact

with the lender. Our findings with regard to the determinants of technical efficiency are in conformity with some of the findings of King and Levine (1993), Ajibefun and Daramola (1999) and Obwona (2000).

The following recommendations are suggested:

- Group lending should be encouraged so that the default risk is reduced and the rate of loan recovery could be increased.
- The Government of Ghana should try to implement policies through which cordial relations can be established in the society.
- Efforts should be made to increase the access to credit through informal and formal financial institutions.
- The Government of Ghana should establish more vocational training centres.
- The NBSSI should organise more training programs for the wood processors.
- The Government of Ghana should design policies that will sustain employment in hairdressing and wood processing.

APPENDIX 1.

TABLE 11: Determinants of Technical Efficiencies.

Enterprise Variables	Hairdressers	Dressmakers	Wood Processors
Intercept	0.5384* (0.1495)	0.8965* (0.1218)	0.6652* (0.0610)
Age of Operator	-0.0063* (0.0023)	-0.0091* (0.0021)	-0.0037* (0.0010)
Business Experience	0.0303* (0.0126)	0.0005 (0.0031)	0.0077 (0.0056)
Level of Education	0.0026 (0.0032)	0.0056 (0.0043)	0.0054 (0.0036)
Training Programmes	0.0010 (0.0062)	0.0047 (0.0060)	0.0090* (0.0043)
Training Experience	0.0015 (0.0039)	0.0022 (0.0025)	0.0005 (0.0049)
Credit	0.0000004* (0.0000002)	0.0000002** (0.0000001)	0.0000004* (0.0000001)
Interest on Loan	-0.0000002 (0.0000002)	-0.00000008 (0.00000007)	-0.0000002 (0.0000003)
Contact with Lender	0.0046** (0.0024)	0.0002 (0.0025)	0.0059* (0.0028)
R ²	0.89	0.98	0.85
F-Statistics	42.86*	247.4*	29.54*

Notes: 1. The figures in the parentheses are the standard errors.

2. * indicates that the statistics is significant at 5% level of significance.

3. ** indicates that the statistics is significant at 10% level of significance

APPENDIX 2.

QUESTIONNAIRE ON THE IMPACT OF NBSSI'S ACTIVITIES ON THE EFFICIENCY OF MICRO-ENTERPRISES.

Please answer the following questions either by ticking (√) or by providing appropriate answer.

(A) GENERAL/BACKGROUND INFORMATION

1. Name of business :
2. Location address : Telephone No.
3. Type of business :
 - (i) Dressmaking
 - (ii) Hair-dressing
 - (iii) Wood and Furniture Processing
4. Year of starting Business
5. Sex: Male [] Female []
6. Age of Business operator :
7. Level of Education of owner/operator of business
 - (i) Primary school Number of years
 - (ii) Secondary school Number of years
 - (iii) College/Polytechnic Number of years
 - (iv) University Number of years
 - (v) Adult Education Number of years
 - (vi) No schooling
8. How did you acquire the skill?
 - (i) Formal education
 - (ii) Apprenticeship scheme
 - (iii) Others (specify)
9. Are you the owner or an employee?
10. How many years have you been involved in this business?
11. Please state the number of workers involved in your business
 - (i) Number of workers employed
 - (ii) Number of workers under apprenticeship scheme.
12. Please state the average number of working hours per day you normally work.
13. How many days in a week do you work?
14. State the average monthly expenses on the following:
 - (i) Electricity (iv) Salaries
 - (ii) Rent on land/shops (v) Interest on loan
 - (iii) Water (vi) Materials
 - (vii) Others (specify)

(B) BUSINESS

1. Please provide information on types of materials used per month in your production activity.

Materials	Quantities	Unit cost	Total cost
-----------	------------	-----------	------------

2. Please provide information on the equipment you use in your production activity.

Equipment	Quantity	Year of Purchase	Unit Price
-----------	----------	------------------	------------

3. How much on the average do you earn per month?

(C) TRAINING SERVICES OF NBSSI AND OTHER INSTITUTIONS

1. Are you a member of any association? Yes [] No []
2. If Yes, which association.
3. Are you a registered member of NBSSI? Yes [] No []
4. Have you benefited from NBSSI? Yes [] No []
5. Indicate the type of benefit(s).
Training [] Credit [] Others []
6. Have you attended any training programs of NBSSI or other institution?
Yes [] No []
7. Please indicate which of the programs given below you have participated in the last three years:
 - a) Awareness seminar
 - b) Entrepreneurship Development Program
 - c) Working capital management workshop
 - d) Customer relation seminar
 - e) Record Management workshop
 - f) Marketing seminar
 - g) Technical training workshops
 - h) Industrial visits
 - i) Any other (specify)
8. How long have you been on training and counseling programs?

(D) CREDIT SERVICES OF NBSSI AND OTHER INSTITUTIONS

1. Did you apply to any formal and informal institution for a loan in the last three years? Yes [] No []
2. If yes, what was the purpose of the loan?
 - (i) Working capital
 - (ii) Expansion of business
 - (iii) Payment of outstanding loan
 - (iv) Others (Specify)

3. Give information on the amount of loan and interest rate charged

Type of Institution	Year One		Year Two		Year Three	
	<u>Amount</u>	<u>Interest rate</u>	<u>Amount</u>	<u>Interest rate</u>	<u>Amount</u>	<u>Interest rate</u>
Banks						
NBSSI						
Relatives/Friends						
Money lenders						
Co-operatives						
Suppliers						
Clients						
Others (Specify)						

4. You decided to borrow from the above-mentioned sources because of

- A – More favorable terms
- B – Easier formalities
- C – No collateral required
- D – Flexible payback
- E – Easier to get a loan
- F – Others (Specify)

Please tick (✓) wherever it is appropriate

Type of Institution	Terms and conditions	A	B	C	D	E	F
	01						
	02						
	03						
	04						
	05						
	06						
	07						
	08						

5. Are the loans given to you by these institutions enough? Yes [] No []

6. If no, suggest a range for loan.

7. Which of the following happens if you are not able to repay the loan taken from these Institutions?

- (i) Interest penalties
- (ii) Interruption of credit
- (iii) Rescheduling
- (iv) Reduction of interest charges
- (v) Debt forgiveness

- (vi) Strong arm enforcement
- (vii) Persistent request for repayment
- (viii) Other (Specify)

8. For how long have you known the lender?
Years Months

- 01 Banks
- 02 NBSSI
- 03 Relatives/Friends
- 04 Money lenders
- 05 Co-operatives
- 06 Suppliers
- 07 Clients
- Others (Specify)

(E) PROBLEMS FACED BY OWNERS

1 Do you face any problems with regard to

- | | | |
|---------------|---------|--------|
| (a) Materials | Yes [] | No [] |
| (b) Credit | Yes [] | No [] |
| (c) Marketing | Yes [] | No [] |
| (d) Training | Yes [] | No [] |

2. List some of the problems:

3. What are your suggestions?

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