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Analyses of the Constraints and Technical Efficiency Differentials Among Agribusiness Firms in Nigeria.

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The paper analysed constraints and technical efficiency differentials among agribusiness firms in Nigeria. The study which aimed at providing valuable tools for the creation of policies to improve the financial performance of agribusiness sector used panel data. The data were collected from 60 agribusiness firms randomly selected in Nigeria. The data which covered 2000-2010 sub-period were analysed with the aid of stochastic frontier production function using FRONTIER 4.1 programme. Simple descriptive statistics were used to examine the major constraints militating against agribusiness effective performance in Nigeria. The result of the study indicated that the factors which influence technical efficiency differentials among agribusiness firms in Nigeria were amounts spent on labour, raw materials, and energy, depreciation of fixed assets, years of operation, access to credit, access to market and nature of ownership. The mean technical efficiency was 86% while minimum and maximum technical efficiency were 56% and 99% respectively. The perceived constraints hindering effectiveness of agribusiness firms' operation were high cost of production, finance related problems, poor performing infrastructure, macroeconomic related problems and lack of security among others. Based on these, appropriate policies and programmes that could enhance agribusiness firms operations were recommended. These include beefing up of security as well as providing enabling environment for efficient performance of agribusiness firms among others.

Keywords: Constraints, Technical Efficiency, Agribusiness firms, Nigeria.

1. Introduction

In recent years, Nigeria has faced real challenges in her economic growth but through a number of economic activities in her reform agenda efforts are being made to escape from her poor and under-developed economic system to a vibrant and leading economy in the world (Nto and Mbanasor 2009, and Nwuneli 2010). However, for this to happen, there has to emerge a general consensus that investment in agriculture should go beyond improvement in on-farm productivity and technical efficiency to cover agribusiness sub sector (ERA, 2009).

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This is not far-fetched following FAO (2009); Aedo *et al*.,(2011) and 3ADI (2010) which observed that the potential of agribusiness firms as growth engines is well known because of their forward and backward integrations and linkages. Investment in this sector produces significant multiplier effects through generating demand for agricultural products, and associated inputs and services; creating on- and off-farm employment for over 70% of Nigerian population; enhancing incomes and contributing to value addition and; increased public sector revenue, which are needed for economic growth of a country ranked 142out of 169 in economic development index by the United Nation. The sector also account for over 44% of registered companies in Nigeria (Nto 2012, Nto and Mbanasor 2011 and FAO 2009).

It is disheartening that a sector which contributed as high as 65.7% of 1957 Gross Domestic Product (GDP) has dropped to 40.84% in 2010 representing 24.7% decrease. This may have contributed to the predicted drop in growth of real GDP from 7.8% in 2011 to 7.6% in 2012 (NBS 2011). With this downturn prediction in the economy, what is the possibility of sustaining food requirement growth rate of 3.5% considering the 3.18% population growth in Nigeria (FOS 1996; Ojo 2003;Akinlo 2006 and Nto and Mbanasor 2011).

Johnson *et al*.,(1995) suggested that future challenges and prospects for the industry require that agribusiness entrepreneurs and investors must strive for more productive and technically efficient use of resources without which optimal financial performance and economic growth cannot be achieved for the sector and Nigeria in general.

Obviously, the state of development of agribusiness sector does not give the picture that it is a priority economic sector in the country (Eboh 2005) as evidenced by post harvest losses which 3ADI (2010) estimated as high as 30% for cereals, 50% for roots and tuber, and up to 70% for fruit and vegetables. These constitute serious loss to the sector and Nigerian economy in general. Therefore, there is need for a serious review of both constraints and technical efficiency differentials of agribusiness firms in Nigeria.

This has become pertinent following FAO (2009) estimated projection that by 2050 the cumulative global investment required in sub-Saharan Africa, Nigeria inclusive is US$940 billion to the agribusiness sector. This study is critical as it will provide insight to the reduction of the above losses and also spur the development of competitive, sustainable and inclusive agribusiness industries in Nigeria in particular and Africa in general as a path to increase economic growth and food security. The investment of this whopping sum to boost revenue and economic stability may not yield the desired result if a critical analysis is not carried out on the constraints and technical efficiency of agribusiness firms in Nigeria.

However, many studies have been conducted on constraints and technical efficiency levels of various enterprises of traditional agriculture. No study exists on the constraints and technical efficiency differentials among agribusiness firms in Nigeria. Though similar studies may have been carried out beyond the study area, (Nigeria) the findings of which may not be adequate for policy formulation aimed at improving technical efficiency among agribusiness firms.

Hence, the specific objectives of this study using selected agribusiness firms in Nigeria as case study are:1)To examine the major constraints militating against effective

agribusiness firms' operation and 2) to identify factors influencing the technical efficiency of agribusiness firms in Nigeria.

The essence of the study is to identify the inhibiting constraints and technical efficiency variables of agribusiness firms in Nigeria so as to make policies that will unlock them for effective operation in Nigeria. This is important considering that agribusiness firms offer the best opportunity to diversify the country's economy and reduce her over dependency on crude oil.

The paper is divided into five sections. Sections one deals with introduction, while section two, three, four and five deal with literature review,methodology, results/discussion and conclusion respectively.

2.Literature Review

Several studies and literature consulted, assembled major constraints of agribusiness under such categories as: macro level instability, impediment to market access, crime and corruption, weak institutional and legal system, business regulation and licensing, multiple taxation, financial constraints, poor performing infrastructure among others(Sunil and Ignacio 2012, Dideron 2006, Harron *et al.,* 2001, and Marchet *et al.,* 2001).

Technical efficiency which implies ability to produce maximum output from a given set of inputs and available technology has been measured by many agribusiness firms using liquidation factor (LF). The measure relates the amount of output actually produced (in monetary terms) as a percentage of the theoretical predictable or produce-able output (Alabi and Aruna 2005 and Johnson *et al.,* 1995). The computation which adopts simple ratio to measure efficiency of various inputs of production like labour, capital, feed etc may be very informative but can be quite misleading because of the following limitations: (i) the interpretation is somewhat subjective because it is not constrained between zero and one, thus, has an open upper bound. (ii) it only accounts for one of the inputs used in the production of an output at a time therefore ignoring the combination of all the inputs in the production system and, (iii) being non-parameter, no statistical inferences on the estimates can be carried out. Hence it lacks formal economic justification to examine technical efficiency of a firm (Johnson *et al*., 1995, Onyenweaku and Nwaru 2005, Nto and Mbanasor 2011 and Ajibefum and Daramola 1999).

Considering these limitation in using liquidation factor to measure technical efficiency, Aigner*et al*., (1997) and Meeusen and Van-den Broeck (1997) independently introduced stochastic frontier production function for estimating technical efficiency of a production system so as to eliminate problems associated with non parametric approaches. This method has been extensively adopted by several studies, they include:

Johnson *et al.,* (1995) in determining technical efficiency levels among Louisiana sugar cane processing firms using stochastic frontier methods observed that Louisiana sugar processing industry is characterised by a constant returns to scale Cobb-Douglas production function with high technical efficiency. The result further indicated that variables which increase technical efficiency of Louisiana sugar processing industry are sugar cane, which is the main input in the production of raw sugar and obtained the

highest output elasticity at either 0.93 or 0.94. Labour and wash water were also significant variables with low elasticity.

Aedo *et al.,* (2011) in their work on "Technical efficiency in the Chilean Agribusiness sector" revealed that raw material and labour have the largest impact on the output of agribusiness firms with production elasticity of 0.46 and 0.36 respectively. This means that if raw materials are increased by 1 percent, turnover grows by 0.46 percent. However, the two cited studies gave useful guide but may not provide reliable results for policy formulation because of non inclusion of firm specific variables (that improve technical efficiency) in their models.

3. Methodology

Nigeria is one of the largest economies in Africa. The economy can be broken down into two broad groups namely: oil and non oil sectors. The non oil sector grew with major contributions from agriculture and agribusiness sub sectors. Agribusiness firms are scattered all over the country but the formal ones are concentrated in three main industrial clusters in Nigeria: Kano, Kaduna, Jos, in the North; Lagos, Otta, Ibadan in the Southwest; and Port-Harcourt, Aba, Nnewi, Onisha in the Southeast (Nwachukwu *et al*., 2011 and Nto and Mbanasor 2011).

Data for the study consist of primary and secondary which were obtained from 60 agribusiness firms. The three industrial clusters of north, southwest and southeast were adopted as strata for data collection. A sample of at least fifteen firms per zone was selected for the study with purposive random sampling technique. The primary data which were collected with the use of survey instruments covered 2000-2010 sub period. The secondary data were collected from financial and production records of the firms, bulletin of National Bureau of Statistics, Central Bank of Nigeria statistical bulletin and Nigeria investment promotion commission data bank.

Data obtained dwelt extensively on major issues as problems of agribusiness firms; gross output of the firm; amounts spent on labour, raw material and energy; years of operation of the firm, nature of ownership, access to credit and market etc. Constraints militating against effective agribusiness firms' operation were realised with simple descriptive statistics while determinants of technical efficiency differentials among agribusiness firms in Nigeria was analysed with stochastic frontier production function.

Applying the model, stochastic frontier production function as proposed independently by Aigner*et al.,* (1997) and Meeusen and Van den Broek (1997), which was adopted by Battese and Coelli (1995); the ith firm specific stochastic output frontier production function at the time t can be written with general formula as:

$Y^* = \exp(\beta_0 + \beta X_{it} + V_{it} - U_{it})$ i = 1, 2, 3...N, t= 1, 2, 3...t..... (1)

Where: Y* is the output variable

X is the vector of input variables

β is a vector of parameters, the random variables

U_{it} is error term which follows a normal distribution with mean μ and Variance δ_u^2 with non-negative truncations.

V_{it} is distributed normally with mean zero and variance δ_v^2.U_{it} and V_{it} are assumed to be independently distributed for all i and t.

Then the technical efficiency (TE) level of firm i at time t is the ratio of the actual to the potential output (following Rana *et al*., 2010, Kumbhaker and lovell 2000, Aedo*et al.,* 2011 and Johnson *et al.,* 1995)

$$TE_{it} = \frac{\exp(\beta_0 + \beta X_{it} + V_{it} - U_{it})}{\exp(\beta_0 + \beta X_{it} + V_{it} - U_{it})^*} = \exp(-U_{it}) \quad \ldots\ldots\ldots\ldots\ldots (2)$$

Considering the above specification, the Cobb-Douglas and translog functional forms are restructured from equation 1 and 2 using ordinary least square (OLS) method to provide a simple test for the identification of the presence of technical inefficiency variables among the agribusiness firms. This is based on the assumption that if a firm is observed at a production plan (Y^0, X^0) such a plan is technically efficient if $Y^0 = F(X^0)$ and technically inefficient if $Y^0 < F(X^0)$ where $F(X^0)$ is the maximum (frontier) output associated with the level of inputs given by X^0 (Johnson *et al*., 1995).

Hence, Cobb-Douglas functional forms can be written as:

$$\ln Y_{it}^* = \beta_0 + \beta_1 \ln L_{it} + \beta_2 \ln R_{it} + \beta_3 \ln E_{it} + \beta_4 \ln O_{it} + \beta_5 \ln D_{it} + \beta_6 \ln C_{it} + \beta_7 \ln M_{it} + \beta_8 \ln M_{it} + V_{it} + U_{it} \quad \ldots\ldots\ldots\ldots\ldots (3)$$

Y_{it}^* is the gross output of firm i at time t (NGN =Nigerian Naira)
L_{it} is amount spent on labour (NGN)
R_{it} is amount spent on raw materials (NGN)
E_{it} is amount spent on energy (NGN)
D_{it} is net depreciation of fixed asset (NGN)
O_{it} is years of operation of the firm
C_{it} is Access to credit (0= Non, 1= access)
$M_{it}$is Access to market (0= Non, 1= access)
N_{it} is Nature of ownership (0= Domestic, 1= foreign)

Since the Cobb-Douglas specification is nested in the translog model and translog functional form is flexible and imposes fewer restrictions on the data, hence, translog model was also considered in this study (following Rana *et al.,* 2010) with the view of testing for model that will give the best fit.

The translog model can be written as:

$$\ln Y^* = \beta_0 + \beta_1 \ln L_{it} + \beta_2 \ln R_{it} + \beta_3 \ln E_{it} + \beta_4 \ln D_{it} + \beta_5 \ln O_{it} + \beta_6 \ln C_{it} + \beta_7 \ln M_{it} + \beta_8 \ln N_{it} + \beta_{11}(\ln L_{it})^2 \beta_{22}(\ln R_{it})^2 + \beta_{33}(\ln E_{it})^2 + \beta_{44}(\ln D_{it})^2 + \beta_{12}(\ln L_{it})(\ln R_{it}) + \beta_{13}(\ln L_{it})(\ln E_{it}) + \beta_{14}(\ln L_{it})(\ln D_{it}) + \beta_{23}(\ln R_{it})(\ln E_{it}) + \beta_{24}(\ln R_{it})(\ln D_{it}) + \beta_{34}(\ln E_{it})(\ln D_{it}) + V_{it} + U_{it} \quad \ldots\ldots\ldots\ldots\ldots (4)$$

Estimate of both Cobb-Douglas and translog functional forms of the stochastic frontier production function was done with the aid of FRONTIER Version 4.1 program. (Coelli 1996, Nto and Mbanasor 2011, Amornkitvikai and Harvie 2010).

4. Results and Discussion

Perceived Constraints Hindering Effective Operations of Agribusiness firms in Nigeria.

The perceived problems hindering the successful operation and efficient running of agribusiness firms in Nigeria are presented in Table 1. It revealed that all the sampled firms (100 percent) complained that the major constraints hindering effective operations of agribusiness firms in the study area were high cost of production, poor performing infrastructure, and finance related.

Table 1: Perceived Constraints Hindering Effectiveness of Agribusiness firms.

Perceived Problem	Frequency	Percentage	Rank
Low level technology	48	80	5
Low investment	53	88.3	4
High cost of production	60	100	1
Macroeconomic related	48	80	5
Poor performing infrastructure	60	100	1
Unpredictable government plan	45	75	7
Lack of security	42	70	8
Poor access to market	6	10	11
Finance related	60	100	1
Weak legal system	18	30	10
Poor return on investment	36	60	9

*Multiple responses were recorded. Field survey data 2011.

High cost of production can be largely attributed to huge amount spent in doing business in Nigeria. The high cost of production represents a substantial risk to earning attractive returns to investment. This emanates from costs incurred in complying with business regulatory policies and licensing, multiple taxation, and payment of bribes to various government supervisory agencies etc. Sunil and Ignacio (2012) opined that when cost of production is high, incentive to invest becomes eroded because of low returns to investors.

Poor performing infrastructure means no access to developed infrastructure. It is characterised by frequent disruption in electricity power supply, inefficient transportation system and poor means of communication. When this is the case, firms will spend higher amounts in ensuring alternative arrangements and maintenance practices thus inhibiting growth and survival of the firms. Marchet*et al.,* (2001), Manyong*et al.,* (2005) and NIPC (2008) in their related surveys observed that the biggest problems hindering the performance of agribusiness firms' operations are unstable electricity and high cost of AGO (diesel for on-factory power generation). FAO (2008) and Barodo (2009) declared that over 820 manufacturing agribusiness firms in Nigeria have closed down in the past nine years of civilian rule while many multinational firms like Michelin Plc have moved their production plant to Ghana because of poor power supply (CII 2002). Inefficient transportation system is the next infrastructural problem to electricity. This is mainly due to poor road network, inefficient rail and port system. The challenge is more for small agribusiness firms in the remote areas which constitute the greater majority of the sector (Sunil and Ignacio

2012).

Table 1 also depicts, that 100 percent of the sampled firms identified finance related problems like high interest rate, and difficulties in accessing credits (due to non availability of collateral as well as high risk level associated with sector) as major constraints to agribusiness firms' efficient operation. Anyanwu (2009) asserted that interest rates to agribusiness firms float as high as 25-40 percent. This is compounded when the credit is for long gestation agribusiness operation due to long repayment period and the associated high risk.

Also, about 88.3 percent of the firms recognised low investment as major constraint to agribusiness firms' operation. This confirms the problems of poor access to credit by agribusiness firms in the area. When a firm cannot save because of low income and also cannot borrow as a result of lack of collateral, there is the tendency for low investment thereby, slowing down growth prospect.

Table 1 further revealed that 80 percent of the sampled firms identified low level of technology and macroeconomic related problems as major constraints to effective agribusiness firms' performance. Most of agribusiness firms do not have access to improved technology because of lack of capital to import and so rely on obsolete machineries and equipment that frequently breaks down. When this is the case, technical efficiency will be impaired. Macroeconomic instability as revealed by the table relates to unstable exchange rate and high inflation rate which deter investment by making future rewards more uncertain or reduce the value of assets. Sunil and Ignacio (2012) added that macro instability also increases risk of the firm going bankrupt or suffering slower growth.

The table noted that 75 and 70 percents of the firms identified unpredictable government action and lack of security respectively as the major constraints to agribusiness firms' operation in the area. Marchet*et al.,* (2001) and Anyanwu (2009) opined that there is high degree of uncertainty about government plans and intension for the agribusiness sector. There are constant changes in tariffs and restrictions while importation of several agribusiness commodities are banned and unbanned at each point in time, thereby making predictions difficult for firm managers. Lack of security is another source of worry to agribusiness firms, because it discourages foreign investors. The government inability to provide security imposes extra cost on the firms through amount spent on hiring security guards and ransom paid for release of kidnapped staff. NIPC (2008) observed that 30-50 percent of investible funds in agribusiness firms are used in tackling security problems. From the ranking, high cost of production, poor performing infrastructure and finance related problems ranked the highest (100%) in terms of perceived problems. Low investment ranked 4th, while low level of technology and macro-economic related issues ranked 5th. Unpredictable government plan, lack of security and poor return on investment ranked 7th, 8th and 9th respectively. Weak legal system and poor access to market ranked lowest with 10th and 11th positions respectively. This follows the studies of Marchet*et al.,* (2001), Manyong*et al.,* (2005) and Anyanwu (2009) in Nigeria.

Determinants of Technical Efficiency

The maximum likelihood estimates of the Cobb-Douglas and Translog production functions for agribusiness firms in Nigeria are presented in table 2.The parameter estimates for all the production factors in the two production functions have the desired positive signs and are statistically significant at 1 percent except net depreciation of fixed asset that was not significant in the Cobb-Douglas Stochastic Production Function. The signs of the coefficients indicate a direct relationship with output; hence, increase in the quantities of these variables can lead to higher technical efficiency. This implied that as amounts spent on labour, raw material, energy, and depreciation of fixed assets increase, output of the firm increases.

Table 2: Estimated Cobb-Douglas and Translog Stochastic Frontier Production Functions for Agribusiness firms in Nigeria.

	Cobb-Douglas		Translog	
Variables	Coefficient	t-ratio	Coefficient	t-ratio
Constant	1.7736	24.9866***	-114.3288	116.3002***
L	0.5245	28.9855***	3.9337	3.5524***
R	0.1065	6.5370***	3.2293	3.9874***
E	0.0486	4.2080***	4.2529	6.7741***
D	-0.0059	-1.0587	3.5711	7.0157***
L^2	-	-	-0.4551	-3.4697***
R^2	-	-	-0.3753	-3.7034***
E^2	-	-	-0.0498	-0.6779
D^2	-	-	-0.1263	-5.3657***
L*R	-	-	0.3283	4.0479***
L*E	-	-	0.0053	0.0687
L*D	-	-	-0.0641	-3.3193***
R*E	-	-	-0.1563	-1.8557*
R*D	-	-	0.0100	0.2575
E*D	-	-	-0.0402	1.9536*
Efficiency	Factor			
Constant	0.7294	8.6879***	0.58544	16.1149***
C	-0.5425	-6.9398***	-0.2826	-11.9594***
M	-0.2857	4.3500**	-0.1904	-1.7599*
N	-0.1559	-4.3106***	-0.0812	-3.7789***
O	-0.0118	-2.1075**	-0.0103	-2.5998**
Sigma Squared	0.0299	6.4850***	0.01779	11.7539***
Gamma	0.0405	64.4843***	0.9999	552675.35***
Log likelihood Function	580.9877		619.2971	

Source: Calculated from field survey 2011

*, **, *** Means Significant at 10%, 5%, and 1% level of probability respectively.

Focusing on the second terms of translog production function, square term of amount spent on labour, square term of amount spent raw materials and square term of depreciation of fixed asset were found to be significant but negatively affecting output of agribusiness firms in Nigeria. The interaction in amount spent on labour and raw materials (In L) (In R) was positively related to output of agribusiness firms at 1 percent probability level. Also, the interactions in amount spent on labour and depreciation (In L)

(In D); interactions of amount spent on raw materials and amount spent on energy (In R) (In E) as well as interactions of amount spent on energy and depreciation (In E) (In D) are negative but significant. This is an indication of indirect relationship between the various interactions and output.

Following Onyenweaku and Okoye (2007) a statistical test was carried out to confirm that the translog production function adequately represents the production rather than the Cobb-Douglas. The decision rule has it that for production function to be Cobb-Douglas, the coefficient of all the second order terms and cross products should be zero hence the rejection of this hypothesis in the translog function is a confirmation that translog function is more suitable for the data analysis and model specification. Besides, the log likelihood function of translog function is 618.2971, greater than that of Cobb-Douglas which had 580.9877 implying that translog function provided better estimate for the analysis.

The estimated variance of the translog function (δ^2) is statistically significant at 1 percent indicating goodness of fit and correctness of the specified distribution assumptions of the composite error term. The gamma (γ) is estimated at 0.999 and is statistically significant at 1 percent. Constantin *et al.,* (2009) noted that the 0.999 (ie 99percent) obtained in the study indicates that 99 percent of total composed error variance of the production function is explained by the variance of the technical inefficiency term. In addition, if the estimate of the variance parameter (γ) is close to one (as obtained in this study), it indicates that overall residual variation ($U_{its}$and V_{its}) highly results from inefficiency components V_{its} (Amornkitvikal and Harvie 2010). This reveals the importance of incorporating technical inefficiency variables in the production function.

According to table 2, the firm specific variables which affect technical efficiency level of agribusiness firms in Nigeria are access to credit (C), access to market (M), nature of ownership (N) and years of operation of the firm. Apart from access to market which is significant at 10 percent, all the other variables were significant at 1 percent. The coefficients are all negative implying indirect relationship between the variables and technical efficiency of agribusiness firms in Nigeria. The result obtained is contrary to conventional view. It is expected that increased access to credit, access to market and number of years of operation of the firm should increase technical efficiency of agribusiness firms. The result deviates from that obtained in Nto and Mbanasor (2011), Nwachukwu *et al.*, (2011) and Obwona (2006) which opined that greater access to credit and market as well as higher years of operation of the firm will improve technical efficiency of agribusiness firms. The negative coefficient of nature of ownership which is significant at 1 percent contrasts a priori expectation since foreign ownership of firms is supposed to bring about better skilled labour, improved funding and technological know-how thus higher technical efficiency.

Table 3: Frequency Distribution of Technical Efficiency among Agribusiness Firms in Nigeria

Technical Efficiency Range	Frequency	Percentage
0.00 — 0.20	0	0.00
0.21 — 0.40	0	0.00
0.41 — 0.60	10	1.66
0.61 — 0.80	133	22.16
0.81 — 1.00	457	76.16
Total	600	100
Mean Technical Efficiency	86%	
Maximum Technical Efficiency	99%	
Minimum Technical Efficiency	56%	

Source: Calculated from field survey data 2011

The frequency distribution of technical efficiency among agribusiness firms in Nigeria is presented in table 3. According to the table the technical efficiency indices ranged from 56 to 99 percent for the agribusiness firms in the sample with mean technical efficiency being 86 percent. Following the procedures of Bravo-Ureta and Pinheiro (1997), the result means that if the average firm in the sample was to achieve the technical efficiency level of its most efficient counterpart, then the average firm could realise a 13 percent cost-savings (ie 1-86/99). This is an indication that majority of the firms in the study area are operating at a very high technical efficiency level.

5. Conclusion

The study analysed the constraints and technical efficiency among agribusiness firms in Nigeria. It used panel data obtained from 60 agribusiness firm for period of ten years (2000-2010). Maximum likelihood techniques were used to estimate the Cobb-Douglas and Translog production functions. The result indicated that the translog production frontier was most adequate for the data analysis.

The mean technical efficiency of 86 percent indicated that an average firm in the study area incurs about 24 percent (ie100-76.16) loss in output due to technical inefficiency. This suggests that low performing firms can achieve higher output hence technical efficiency by adopting existing technology and strategies of most efficient firms. Government agencies in charge of management of agribusiness firms should design programmes in order to restructure inefficient firms using the identified significant variables.

The study revealed that apart from the direct production factors, the determinants of technical efficiency are access to credit, access to market, nature of ownership and number of years of operation. Hence policy aimed at improving these variables, will significantly enhance technical efficiency level of agribusiness firms in the area.

Other policy implications drawn from the results include a review of government policies aimed at improving infrastructure, reducing cost of production through restoring subsidies on agribusiness inputs, and reducing lending rates of financial institutions.

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