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ECONOMIC AND INSTITUTIONAL EFFICIENCY OF THE NATIONAL AGRICULTURAL ADVISORY SERVICES' PROGRAMME: THE CASE OF IGANGA DISTRICT

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Abstract

This paper examines the technical and institutional efficiency of the National Agricultural Advisory Services (NAADS) programme implementation in Iganga district. The Cost Effective Analysis (CEA) and stochastic frontier analysis methods were used to examine technical efficiency while expenditure tracking and FGD methods were applied to assess institutional efficiency. The analysis demonstrates that NAADS interventions have not had a significant impact on the output, productivity and income of the farmers in Iganga district. Moreover, NAADS programme faces implementation weaknesses such as nepotism that affects the selection of beneficiaries as well as enterprises, to the extent that some farmers are apathetic about the success or failure of NAADS Programme.

Other observed weaknesses in NAADS implementation include late disbursement of funds, very low counterpart funding by the local government and the farmers, and poor monitoring and evaluation (M&E) of the programme. Based on the results, we suggest a major review of the implementation process of NAADS programme in general and Iganga district NAADS in particular.

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1.0 Introduction

Agriculture is a strategic sector in Uganda's economy, targeted for the transformation of the economy from a peasant to a modern prosperous society in 30 years (GoU 2010). Current statistics show that agriculture contributes 21 percent to the gross domestic product (GDP), 90 percent of total exports earnings, 73 percent of employment, and about 50 percent of household income (UBoS 2006; 2010). Besides, agriculture is the major source of raw materials for industry, and food for the nation.

Despite the importance of agriculture in the economy, the sector's performance has not been impressive in recent years. Agricultural sector growth declined from 7.1 percent in 2000/1 to less than one percent in 2005/6 and 2006/7 before recovering to 2.6 percent in 2008/9 (MoFPED 2010). The agricultural sector has continued to register poor performance despite various institutional reforms as well as increased funding in the sector with the view of accelerating growth. Key among the institutional reforms was the restructuring of the Ministry of Agriculture Animal Industry and Fisheries (MAAIF) in 1990s till early 2000s. This led to the establishment of various semi-autonomous institutions including for example the Dairy Development Authority, Uganda Coffee Development Authority, National Agricultural Research Organisation (NARO) and the National Agricultural Advisory Services (NAADS). In particular, in 2000, government established the Plan for Modernisation of Agriculture (PMA) as part of the broader strategy of poverty eradication – contained in the Poverty Eradication Action Plan (PEAP) of 1997.

The PMA was an ambitious multi-sectoral policy framework whose main objective was to increase the incomes of poor subsistence farmers through increased productivity and increased share of marketed output. It was intended to be a framework within which the country was to overcome obstacles to agricultural productivity. These obstacles included, low levels of application of improved technologies, poor crop and animal husbandry practices, poor access to agricultural credit, limited access to technical services, poor transport, poor communication and marketing infrastructures as well as insecure land tenure. Hence, to achieve the key objectives of the PMA, the NAADS programme was established in 2001 by an Act of Parliament, as one of the seven priority areas for agricultural transformation. Specifically, NAADS was established with the key objective of empowering farmers to access and utilise agricultural advisory services and improved technologies.

Before the advent of NAADS, agricultural extension services in Uganda were centralised, non-participatory and provided by civil servants. This approach was considered as unfocused, reached fewer farmers and hence not cost effective. Thus, NAADS was introduced as an improvement to the traditional agricultural and veterinary extension services by being farmer-centred and farmer-controlled, using the private sector mechanism to improve service delivery and to target commercialization as one of the objectives.

In the course of NAADS implementation, there have been changes in its operational guidelines. In the original guidelines, NAADS was mainly to support farmers working together in groups to access advisory services from contracted agricultural advisors; develop and multiply agricultural technologies at district and sub-county level; and access markets (MAAIF 2000). With time, the original guidelines have been revised leading to changes in the implementation. For example, at the

time of writing this paper, the latest guideline being implemented is "NAADS Implementation Guideline Volume 4 *(Draft*)" (NAADS 2009). Of significance in this regard, is that none of the revised guidelines appear to have been formally approved by MAAIF.

During the past eight years of NAADS implementation, there have been public concerns about its impact on the livelihood of the beneficiaries; its effectiveness in increasing output and incomes of the beneficiaries; and efficiency in its implementation. For example, the Auditor General's report of 2008 reveals that only 37.1 percent of the total money spent on NAADS may be considered as useful expenditure. And yet, since the inception to June 2006, it is estimated that a total of US$ 107 million has been spent on NAADS activities (Auditor General 2008). Issues of corruption and other financial irregularities in the implementation of NAADS programme are common place in the media. As such, some studies following quantitative approaches such as Benin et al. (2007), and qualitative approaches such as OPM (2005) and Scanagri (2005) have attempted to provide insights into the impact of the NAADS programme.

In particular, Benin et al. (2007) observed that though there is some positive effect of NAADS on adoption, no significant differences in yields were found between NAADS and non-NAADS farmers. While the same study attempted to examine production efficiency between two farmer groups, no attempt was directed at assessing the possible factors influencing the level of observed efficiency. There are no studies, if any, that have attempted to examine the issues of economic efficiency. Perhaps, it is only the issue of corruption in NAADS programme that government has recently focused on through the establishment of the taskforce to investigate and cause arrest of people who might be involved in the theft and misuse of NAADS funds[1]. Other related studies include a recent one on public expenditure review (PER) of MAAIF by EPRC 2009. The EPRC study indirectly hinted on the possibility of ineffectiveness of NAADS expenditures. The PER being a sector-wide study, did not however do a critical review of NAADS implementation structures as well as farm-level survey of the beneficiaries.

Agricultural extension services have been mentioned in the five-year National Development Plan (NDP) 2010/11 -2014/15 as well as in the Development Strategy and Investment Plan (DSIP) 2010/11 -2014/15 as among the interventions needed for agricultural development and transformation. The NDP and DSIP specifically mention NAADS among the key institutions to undertake actions as necessary for enhancing agricultural production and productivity, namely: (i) better delivery of advisory services and improved technology; (ii) improved farmer access to high quality inputs, planting and stocking materials; (iii) enhanced productivity of land through sustainable management of soil and water resources; (iv) promotion of labour-saving technologies and mechanisation; and (v) accelerated production of selected strategic enterprises.

From the foregoing, it is clear that NAADS implementation has and will continue to have challenges. Yet, it is still the major vehicle for delivery of advisory services and technologies to farmers in Uganda. It is, therefore, pertinent that factors that reinforce or constrain its effectiveness are identified and addressed.

[1] For more details see New Vision Newspaper of 5th October 2009.

It is against this background that this paper explores the issue of efficiency (both technical and economic) in the implementation of NAADS programme in Uganda. More specifically the paper sought to answer the following questions. Are there differences in the production efficiency between NAADS and Non-NAADS farmers? To what extent are the observed farmer's production efficiencies/inefficiencies associated with utilisation of the NAADS goods and services? What are the possible sources of observed efficiency from the institutional viewpoint of NAADS implementation, planning process, funding, programme procurement, and monitoring and evaluation processes?

This is an exploratory study of the performance of NAADS using Iganga district as a case study. The outcome of this study was intended to inform and guide the possibility of conducting a nation-wide study. Consequently, the findings reported in this paper have to be interpreted with caution. They are based on an exploratory survey, and the bulk of the analysis is based on a single financial year 2008/9.

The rest of the paper is structured as follows: The next section presents a brief background on the NAADS institutional setup at the time of writing this paper. A brief discussion of the NAADS programme in Iganga district is also presented. Section 3 discusses the methods and data sources. Section 4 presents and discusses the results. Conclusions and emerging issues are discussed in Section 5.

2.0 Overview of NAADS operations

NAADS operates within the structures of the local government (LoG) system and farmer institutions. All NAADS activities including financial administration, procurement, monitoring and evaluation and coordination are under the LoG structures. District officials directly responsible for implementation of NAADS include the district NAADS Coordinator (DNC), the Chief Administrative Officer (CAO), Chief Finance Officer Internal Auditor, District Planner/Economist/Statistician, and Subject Matter Specialists who are technical staff in the agriculture (production, veterinary, and entomology). Also, at district level there is the NAADS District Farmer Forum (DFF), which comprises the chairpersons of the sub-county Farmers Fora (FF), the Secretary of Production LC V, and the DNC.

The bulk of NAADS implementation is at the sub-county level. The key players in NAADS implementation at the sub-county are: the Sub-county NAADS Coordinator (SNC), Sub-county Chief (SC), Service Providers (Private Companies), FF, and the farmers. According to the NAADS implementation system, SNCs are usually Sub-county extension (veterinary or crop) officials who are assigned the extra duties of SNC. The SNCs are not paid a salary but various allowances. NAADS institutions at the sub-county include: Sub-county Farmer Forum (SFF) and Sub-county Procurement Committee (SPC). The Savings and Credit Cooperative organisations (SACCOS) are the other institutions, which have evolved as part of the NAADS implementation.

The SFF with a total membership of 15 persons derives membership of at least one farmer from each parish of the sub-county. Other members on the SFF include local council (LC) 3 Secretary of production and the SNC. The activities of SFF, among others, include the monitoring and reporting of the establishment, registration, physical and financial performance of the FGs, FF and service providers in the sub-county.

The SPC constitutes 5 members: three members of the SFF and the SNC and the chairperson of the SFF. The functions of the NAADS SPC among others include: issuance of bid documents, receive and evaluate bids, award contracts for provision of goods and services, and ensure contract documents are in line with the award decision.

Also, NAADS has institutions at parish level that include the Parish Coordination Committee (PCC) and Community Based Facilitator (CBF). The PCC, which comprises about 9 members, is charged with duties including: mobilization of FGs to meet their counter-funding of NAADS activities, general M&E of NAADS activities, and assist in the recovery of revolving funds. The CBFs, on the other hand, are responsible for nurturing FGs through provision of extension advice, training, and lead in participatory M&E.

The SC, who is the Senior Assistant Secretary (SAS) in the LoG structures, is the accounting officer of NAADS funds. Also, the SC has a host of other duties in relation to NAADS implementation, including: signatory to the NAADS account, the chairperson to the technical procurement committee (TPC), award of contracts to NAADS service providers, and chairperson of the Sub-county NAADS M&E committee.

In the NAADS implementation framework, Service Providers (SPs) are private companies that bid and are contracted to provide goods (agricultural inputs such as seeds) and services (such as technical

trainings) to NAADS beneficiaries. On the other hand, the FF is an assembly of the leaders of Farmers' Groups (FGs). In the NAADS implementation framework, the FF is expected on one hand to represent the farmers' demands to NAADS committee and on the other, to oversee the implementation of NAADS. Lastly, the farmers are the beneficiaries of NAADS services, including technologies, training and credit through SACCOS.

In the subsequent sections, the paper narrows the focus on Iganga District. The district is divided into 3 counties, namely, Bugweri, Luuka, and Kigulu. Kigulu county has two parliamentary constituencies Kigulu North and Kigulu South. The counties are subdivided into 19 sub-counties and 2 town councils as shown in Table 1. The sub-counties are further subdivided into 115 parishes. The NAADS programme started operation in Iganga district in a phased manner. It started with 4 sub-counties of Bukooma, Waibuga, Nawandala and Buyanga in 2002/3; scaled up to 6 sub-counties in 2003/4 and to 12 sub-counties in 2006/7 (Table 1A Appendix). In 2007/8 the programme was rolled out to 9 additional sub-counties bringing the programme implementation to all the 21 sub-counties of the district. Government has financed NAADS operations in the district to the tune of Ushs 7 billion over a period of eight years (Table A 1).

Table 1: Iganga district administrative structure

County	Sub-counties/Town councils
Bugweri	Buyanga, Ibulanku,Igombe,Makuutu, Namalemba, and Busembatia Town Council
Luuka	Bukanga, Bukooma, Bulongo, Ikumbya, Irongo, Nawampiti ,and Waibuga.
Kigulu North	Bulamagi, Namungalwe, Nakalama and Iganga Town Council
Kigulu South	Nawandala, Nabitende, Nambale,and Nakigo

Source: Iganga District administrative data, May 2010

3.0 Methods and Data

This section presents the methodological approaches employed followed by the data source and their limitations.

3.1 Methods

3.1.1 Measuring efficiency

In economic analysis, efficiency is generally defined in a number of related ways including: the use of resources in such a way as to maximize the production of goods and services; or comparison of what is actually produced or performed with what can be achieved with the same level of resources (land, capital, labour, time, etc.). Farrell (1957) pioneered the methodology to measure technical, allocative and economic efficiency. According to Farrell and other subsequent literature, a producer is efficient if the producers' behavioural objectives are met; and inefficient if they are not (cited in Fare *et al*. 1985). Hence efficiency of the producer can be measured by comparing any given situation with (or the) situation that satisfies the producers' behavioural goal (Fare et al. 1985). This kind of analysis, often regarded as the data envelope analysis (DEA) compares producer efficiency to some ideal benchmark.

Other related literature, however, simply define efficiency as the relationship between a set of inputs and output(s). Comparison of producer efficiency is conducted in terms of quantities (inputs and outputs) or values (costs, revenue and profit). As such, in agriculture, yield, which is output per land area under cultivation, is widely used as a measure of how efficiently land is used in production. In value terms, profit (gross or net) or revenue to cost ratio is used to measure efficiency. In most cases however, cost-effectiveness analysis (CEA) –which relates the resources to results and/or impact (e.g. yield) is applied (Eureval-C3E 2006).

In this paper, production/technical efficiency is represented by yield while economic efficiency by gross profit (*Gross profit*). The cost effectiveness of NAADS intervention is compared with no government intervention using the cost-effectiveness (CE) ratio as:

(1) $$CE\ Ratio = \frac{Cost_{NAADS\ farmers} - Cost_{Non-NAADS\ farmers}}{Gross\ profit_{NAADS\ farmers} - Gross\ profit_{Non-NAADS\ farmers}}$$

However, since the numerator in Eq. (1) is simply equal to the cost of NAADS inputs subsidy provided by government to selected farmers, then Eq. (1) can be expressed as in Eq. (2).

(2) $$CE\ Ratio = \frac{Cost_{NAADS\ subsidy}}{Gross\ profit_{NAADS\ farmers} - Gross\ profit_{Non-NAADS\ farmers}}$$

The CE ratio in Eq. (2) is calculated at two levels by comparing the ratios between the NAADS and non-NAADS farmers. At the first level, the ratio compares the average value of government input subsidy per crop per acre with the value of marginal yield generated; whereas at the second level, the ratio compares the value of government input subsidy per crop with the value of marginal gross profit realised. The possible results are presented in Table 2. The interpretation of the information in

this table is as follows: if the CE ratio is less than 1, when both the cost of NAADS subsidy and the marginal yield or gross profit values are positive, it implies that NAADS subsidy is cost-effective.

Table 2: Possible results of cost effectiveness analysis

NAADS Subsidy	Marginal yield/gross profit	CE ratio	interpretation
+	+	< 1	NAADS subsidy cost-effective
+	+	> 1	NAADS subsidy not cost-effective
+	-	< 1	NAADS subsidy not cost-effective

Source: Schleiniger (1999).

3.1.2 Analysis of efficiency determinants

In this section, the paper endeavour to employ a multivariate approach to measuring production efficiency of farmers in Iganga district. The magnitude and significance of the production inputs including the influence of farm/farmer characteristics on farmers' output and gross profit were examined (Bravo-Ureta and Pinheiro 1997). The paper assumed a normalised Cobb-Douglas production function as expressed in Eq. (3) - a functional form that has been widely used in farm-level analysis.

(3) $$Y_i = f\left(X_{ji}, R_{ki}; \beta\right) + \varepsilon_i \text{; } i = 1, \ldots, N$$

Where Y_i is normalised output or gross profit of farmer *i*; X_{ji} is the normalised cost of input *j* used in production by farmer *i*, R_{ki} is farmer/farm characteristic *k* of farmer *i*. Variable normalisation involves the division of the variable with output price (Ali and Flinn 1989; Hyuha et al. 2007). β is a vector of coefficients to be estimated. In this paper, maximum likelihood method was employed to estimate Eq. (3).

3.2 Data

Data used in this study was obtained from both primary and secondary sources. Details of the study area, sampling design, data sources and collection process are explained below.

Study area and sampling design

This study was undertaken in Iganga district. The choice of Iganga as the primary site for the study was motivated by the fact that there were conflicting accounts of NAADS success on one hand (Benin *et al.* 2007) and mismanagement on the other, in the district (for example, see Sunday Vision 17 May 2009). Besides, the district is one of the earliest beneficiaries of NAADS funding –for which one would expect best practices and data sets to facilitate the study.

The study was conducted in eight sub-counties -two sub-counties from each of the 4 counties in the district. Selection of the two sub-counties per county was purposive, based on the perceived

performance of the sub-counties by the DNC -in terms of level of achievement of NAADS output indicators. As such, one of the sub-counties in the sample was considered better performing than the other.

Primary data collection

At the sub-county level, the idea was for the SNC and SAS to mobilise at least 50 farmers from all the parishes in the sub-county, from whom a sample of 30 farmers comprising of 20 NAADS and 10 non-NAADS farmers would be sampled from each sub-county. The reality was different however. In some of instances, the number of NAADS farmers mobilised was more than non-NAADS farmers. In other instances, due to poor mobilisation and/or late arrival of data collectors owing poor road access, the total number of farmers present at the sub-county headquarters' for interview was lower than the anticipated number. Table 3 shows the sub-counties and the number of NAADS and non-NAADS respondents from whom data was collected. Eighty three percent or 174 respondents were NAADS farmers.

Table 3: Distribution of the sample farmers

County	Sub-county	Beneficiaries		Total
		NAADS	Non-NAADS	
Kigulu North	Bulamagi	23	4	27
	Nakalama	22	8	30
Bugweri	Buyanga	23	1	24
	Makuutu	25	5	30
Luuka	Ikumbya	9	0	9
	Irongo	18	12	30
Kigulu South	Nabitende	26	10	36
	Nawandala	28	11	39
Total		174	51	225

Source: EPRC survey data, May 2010

Apart from quantitative primary data, qualitative data was collected through focus group discussions (FGDs) with members of procurement committee and farmers' fora to establish the procurement and monitoring and evaluation practises as well as governance relationships between beneficiaries and program administrators.

Secondary data

Secondary data including funds disbursements and accountability of goods and services procurement and supply, enterprises selection and performance were collected at all levels. The sources of the data included work plans, progress reports, financial reports, payment vouchers, monitoring and evaluation reports and a database on enterprises.

4.0 Results

4.1 Descriptive statistics

Table 4 gives some the descriptive information of the respondents. Nearly two thirds of the farmers were female, eight of ten likely to be NAADS farmers, with 1.98 acres of land under cultivation.

Table 4: Farmer characteristics

	NAADS farmers (N = 174)	**Non-NAADS farmers (N =51)**
Variable	Mean (Std. Dev.)	Mean (Std. Dev.)
sex (1 = male; 0 = female)	0.6 (0.49)	0.92 (0.28)
age (years)	45.1 (10.6)	46.5 (8)
Education level (1 = no formal educ; 2 = primary; 3 =Secondary Ordinary; 4 = Secondary Advanced; 5 = Tertiary)	2.57 (0.74)	2.63 (0.88)
Cultivated area (acres)	2.1 (2.05)	2.19 (0.46)
Rented land (1 =yes; 0 = No)	0.29 (0.45)	0.29 (0.46)
SACCO loan for agriculture (1 =yes; 0 = No)	0.08	0.26
Source: EPRC survey data, May 2010		

4.2 Efficiency

The enterprises from which data were collected include maize (74), groundnuts (67), rice (21), pineapple (15), poultry (24), banana (6), cassava (6), coffee (4), tomatoes (2), sweet potato (1) and sugarcane (1), dairy (4)[2]. However, data on area under cultivation was collected on maize, groundnuts and rice. Other crops and non-crop enterprises were left out due lack of information output and hence not included in the analysis. Therefore, the analysis focuses on only 155 farmers.

Table 5 shows that there are no significant differences between NAADS and Non-NAADS farmers in terms of the area cultivated, output and yield. The only exception is groundnut enterprise where, on average, the area cultivated by NAADS farmers was slightly higher (about 2 acres) relative to their non-NAADS counterparts (1.4 acres). This result is consistent with Benin *et al*. (2007).

[2] . The figures are in the parentheses are the number of enterprises.

Table 5 further shows that when farmers are provided with inputs by NAADS (subsidy), they make some reasonable gross profit – especially farmers of groundnuts and rice. However, their gross profits are still lower than that of counterparts who do not benefit from NAADS subsidy. It is evident that there are no significant differences in gross profit from the maize enterprise between the two farmer groups. However, when the economic value of the inputs provided to NAADS farmers is imputed into costs of production, the non-NAADS farmers' gross profits tends to be significantly greater than that of NAADS farmers. In particular, results for maize showed that NAADS farmers would make loss if NAADS subsidy was to be fully refunded. The likely reason for this is the high (inflated) value imputed on NAADS inputs by NAADS administrators on one hand and the low cost of production by non-NAADS farmers due to overreliance on the use of local inputs and family labour on the other hand.

Table 5: Acreage, output, yield and gross profit of NAADS and Non-NAADS Farmers

Crop	NAADS farmers			Non-NAADS farmers			Differences in mean
	Sample	Mean		Sample	Mean		
Area cultivated (acres)							
Maize	31	2.34		37	2.32		0.02
Groundnuts	48	1.96		17	1.38		0.56*
Rice	13	1.78		8	1.33		0.45
Output (tonnes) t							
Maize	23	1.77		32	1.47		0.3
Groundnuts	43	1.54		16	1.46		0.08
Rice	12	1.49		8	1.03		0.46
Yield (t/acre)							
Maize	23	0.83		32	0.66		0.17
Groundnuts	43	0.88		16	0.83		0.05
Rice	12	1.13		8	0.88		0.25
Gross profit ('mill. Ushs) with NAADS subsidy							
Maize	22	0.165		24	0.155		0.01
Groundnuts	40	0.429		14	0.464		-0.035
Rice	12	0.464		8	1.036		-0.572*
Gross profit (mill. Ushs) when NAADS subsidy imputed into cost							
Maize	22	-0.27		24	0.155		-0.425***
Groundnuts	40	0.164		14	0.464		-0.300*
Rice	12	0.195		8	1.036		-0.841**

Note: ***, **, * imply 1, 5, and 10% level of significance respectively

Source: EPRC survey data, May 2010

The effect of NAADS interventions on farmer yield and gross profit are presented in Table 6. The non-NAADS farmers are taken as the base-case scenario. In panel A of Table 6, all the CE ratios are greater than one, implying that the cost of inputs given to NAADS farmers was higher than the increase in yield (value) they obtained as compared to non-NAADS farmers. For maize, for example, the cost of the inputs given to NAADS farmers was about 4 times greater than the increase in the yield value.

Table 6: CE ratio of NAADS subsidy on yield value and gross profit

Crop name	Average cost per acre of NAADS inputs	Difference in yield value of NAADS and Non-NAADS	Cost effectiveness ratio	Remark
A) On yield				
Maize	0.194	0.049	3.943	NAADS intervention not CE:
Groundnuts	0.143	0.024	5.876	NAADS intervention not CE:
Rice	0.176	0.17	1.038	NAADS intervention not CE:
B) Gross profit				
Maize	0.408	0.01	40.835	NAADS intervention not CE:
Groundnuts	0.245	-0.035	-7.01	NAADS intervention not CE:
Rice	0.283	-0.572	-0.495	NAADS intervention not CE:

Source: EPRC survey data, May 2010

In panel B of Table 6, the CE for maize farmers is greater than one while for groundnuts and rice farmers is less than one. This indicates generally that NAADS interventions were not cost effective. The results particularly point out the negative value of the marginal yield of NAADS groundnuts and rice farmers compared to non-NAADS farmers. Since non-NAADS crop farmers earn more or less the same income as NAADS farmers, it is not farfetched for one to conclude that NAADS programme has not significantly improved the incomes of the beneficiaries as would be expected. Also, as shown in Table 6 NAADS farmers are not productively superior compared to non-NAADS farmers.

4.3 Sources of NAADS farmer production (in)efficiency

Given that the physical and economic outcomes of NAADS farmers were indifferent or even lower than for non-NAADS farmers, Table 7 to examines the effect of NAADS inputs (seed, fertiliser, pesticide) subsidy on output (measured by revenue) and profit efficiency. The dependent variables are normalised revenue and gross profit while the explanatory variables are normalised costs of inputs. Farmer characteristics including sex, age, education level and access to SACCO credit were included in the estimation of the stochastic frontier functions.

As shown in Table 7, NAADS input subsidy of seeds, fertiliser and/or pesticide had a significantly positive effect on revenue through increase in output. The profit function estimate indicates however, that only NAADS pesticide subsidy had a positive relationship with profit. The coefficients of seed cost and fertiliser costs were negative –likely due to the high imputed cost of these inputs compared to the marginal yield value.

Table 7: Stochastic frontier estimates of NAADS farmers' revenue and gross profit functions

	Dependent variables				
	***Ln*(revenue)**			**Gross profit (*Mill. Ushs*)**	
Explanatory variables	Coef.	z		Coef.	z
Ln(land rent)	0.23**	1.95		-0.05**	-1.94
Ln(seed cost)	0.68***	8.21		-0.01	-0.45
Ln(fertiliser cost)	0.40***	4.4		-0.04**	-2.38
Ln(pesticide cost)	0.30**	2.15		0.11***	3.78
Ln(hired labour cost)	-0.42	-0.51		0.36**	2.25
Ln(harvest & other costs)	0.40***	3.49		0.04	1.58
Inefficiency model					
Ln(sigma *v* squared)	2.09***	14.22		-1.17***	-7.94
Sigma v	2.84			0.56	
Ln(sigma *u* squared)					
Ln(age)	-4.65	-0.11		-10.91	-0.72
Sex	-2.27	0.01		-44.79	-0.02
Education level	-0.38	-0.12		-6.13	-0.17
Sacco loan access	-0.67	0.05		31.95	0.01
Constant	-6.84	0.00		53.78	0.56
Number of observations	93			93	
Wald chi2(6)	477.53			28.58	
Prob > chi2	0.00			0.00	
Log likelihood	-228.93			-77.847338	

Notes: ***, **, * imply significance at 1, 5 and 10 percent level

Source: EPRC survey data, May 2010

All the coefficients of farmer characteristics including *age, sex, education level and SACCO loan access* were positive with respect to output and profit but not significant. Instead, it is the idiosyncratic error that was significant, suggesting that there may be other unknown factors that affect farmers' production efficiency not included in the model. The limited influence of NAADS

farmers' SACCO credit access to agricultural output was likely due to the fact that most farmers do not use SACCO credit for purchase of farming inputs but for starting or expanding non-farm businesses and payment for social services such as education and health (Table A 5).

4.4 Institutional Efficiency

The foregoing analysis has shown that NAADS farmers exhibit some levels of technical and economic inefficiency compared to non-NAADS farmers. It is possible that inefficiency is linked to the weaknesses in the planning and implementation of the programme. Efficiency at farm level requires that farmers are given the right quality and quantity of inputs and at the right time. Furthermore, farmers need to be properly inducted into a new programme for them to appreciate and participate fully. This section, therefore, examines the implementation process (planning, flow of funds, implementation of activities, and monitoring and evaluation) of NAADS programme and its likely effect on farmers' performance.

4.3.1 Selection of farmers

At national level, there are four categories of farmers likely to participate in the NAADS program as presented

Table **8**. Top on the group is the Nucleus farmer category, followed by Model farmer, Lead farmer, and bottom on the ladder is the Demo/Link farmer. In Iganga district, only three categories of farmers, that is Demo, Lead and Model are participating in NAADS funded activities as of 2008/9 (Table A 2). During the FDG, we noted that while there were farmers with characteristics matching those of Lead and Demo farmers suggested in Table8, none of the sampled "model farmers" we interviewed, had the characteristics closely matching those in Table 8.

Table 8: Basic characteristics of NAADS farmer categories

Category	Basic characteristics
Nucleus farmer	Fully commercialised production and market linkages Adequate and suitable bulking facilities and acts as link of other farmers to market Has facilities and/or potential for agro-processing Capacity to act as source of planting materials
Model farmer	Potential to generate at least Ushs 20 million from farming Market-oriented with successful enterprise mix Has established link to input and output markets Benefited from ISFG and fully repaid.
Lead farmer	Innovative and successfully hosted a demonstration Demonstrated improved management and obtains good yields and increased income from enterprise Evidence of living better life due to increased farm income Active member of NAADS farmer group
Demo/Link farmer	Allows use of own land to host demonstration Undertakes to manage demo site as guided by extension worker Allows other farmers to access demonstration site for learning Known to champion adoption of technologies and practices

Source: NAADS implementation guidelines, Vol. 4, 2009

In the FGD, farmers mentioned that biases including politics and favouritism play a central role in the selection of farmers to benefit from NAADS inputs, by the Sub-county selection committee. In particular, FGD participants alleged that selection -especially of Model farmers who receive high-value items such as dairy cattle, goats and poultry is highly biased towards family members of NAADS programme administrators and political leaders in the sub-county.

As shown in Table A 2, it appears that no clear or uniform criterion was followed in selection of farmers across the sub-counties. For example, it would be expected that the sub-counties such as Buyanga and Nawandala where NAADS program started first in 2002/3 would be having more farmers under the Model category than the sub-counties such as Bukanga and Namalemba that joined the implementation of NAADS activities in 2007/8.

Furthermore, FGD participants stated that NAADS programme was concentrated among few farmers who have consistently benefited from the program since it started, graduating from Demo to Lead farmers and finally to Model farmers. This led to a firm belief –particularly among non-NAADS farmers that NAADS officials use favouritism in selection of beneficiaries. They doubted the effectiveness of programme in reducing poverty in the district. Also, farmers consider the system of

upgrading beneficiaries from Demo to Lead and then Model farmers as arbitrary -as many of the farmers do not even fulfil the criteria such as repayment of 70 percent of the value of inputs received or adoption of (or continued engaged in) prior enterprises supported by NAADS.

4.3.2 Enterprise selection process

According to the NAADS implementation guidelines (NAADS 2009), the selection of enterprises is supposed to be demand driven. The process is initiated by farmers guided by Assistant Community Development Officers (ACDOs). Following this guideline, farmers, in their respective farmer groups (FGs), convene at parish level and select the enterprises considered priority by the majority of the farmers. The selected enterprises at the parish level are then forwarded to the SFF that convenes to select enterprises for the Sub-county. That is, enterprise selection process should take a participatory bottom-up approach.

Following the focus group discussion with farmers and the leaders of the FF, it was observed that in practice, the guidelines are rarely followed in the process of selection of enterprises. The process is rather centralised top-bottom approach. That is, the list of enterprises that are to be undertaken by farmers in a given parish and financial year are determined at district level. At the Sub-county level, NAADS officials implement the district directive. But even with the directive, most farmers are also not at liberty to choose what they would wish to undertake from the predetermined enterprise list. That is, to a great extent, the enterprises that farmers undertake are dictated rather than demand driven. This may be one of reasons for the limited sense of ownership and high levels neglect of enterprises by the farmers. In some cases, farmers have abandoned taking good care of the enterprises for which inputs are supplied by NAADS and in other cases they have even sold-off the inputs provided by NAADS.

The process of determining enterprises that farmers undertake was revealed to be strongly influenced by the politicians and administrators at district who have particular technologies they want to supply. For example, if district officials or their business partners have tree seedlings (e.g. mango or pine tree seedlings), then mango and pine trees cultivation is promoted as enterprises for income generation irrespective of the needs, interests and capacity of farmers. Besides, even when farmers prioritise and make work-plans for enterprises, it is not a guarantee that they will be supplied with inputs for the enterprises planned for. For example, according to the 2008/9 Iganga NAADS work plan, up to 20 percent of over 700 enterprises funded were those that were not considered as a priority by the farmers. This finding is consistent with EPRC (2009).

A detailed review of the enterprises prior regarded as non-priority but implemented shows that the majority of these enterprises are longer-term enterprises such as trees or fruits (pines, mangoes, oranges and pineapples), or non-crop enterprises such as dairy cattle, piggery and poultry (layers). Dictating or providing farmers with inputs for enterprises they do not desire has greatly affected their ownership of the programme and ultimately productivity. Farmers seem not to take NAADS supported activities as primary enterprises of their own as illustrated below. First, some farmers implement NAADS activities on an experimental basis than as an integrated part of their farming business. Furthermore, it was revealed that farmers are reluctant to take good care of the technologies (enterprises) provided to them by NAADS as they are not clear about ownership of outputs. For example, in the case of poultry enterprises, some farmers divert the feeds to give to

their local chicken, thereby starving/underfeeding chicken provided by NAADS. In the case of crops, CBF's monitoring reports show that most farmers give priority in terms of planting, weeding and harvesting to their crops before tending crops whose inputs were provided by NAADS.

Second, the adoption and diffusion rate of the NAADS supported enterprises by either benefiting farmers or non-NAADS farmers is very poor. When NAADS support to farmers, for example, for short term enterprises such as poultry cease, it is rare to find farmers continuing with the enterprise on their own initiative. Likewise, it is rare to find farmers in the neighbourhood taking on a similar activity. The only exceptional are those enterprises that happen to be traditional crop such as maize that all farmers cultivate. This suggests that the enterprises forced on to farmers are either not relevant to the farmers' socioeconomic needs or not economically profitable to attract new or additional investment by farmers.

Third, because of the low capacity (financial or technical) of some farmers in management of new enterprises such as exotic poultry, piggery and Friesian cows, there is negligence leading to high mortality of poultry and animals -as documented in monitoring reports. For example, cases are documented where many farmers underfeed poultry and animals –after the feeds provided by NAADS are over. Also there are many cases where some farmers sell-off some poultry or animals to buy feeds or sell all the poultry or animals and use money for social investments such as tuition for secondary and tertiary education of their children.

Fourth, for some unclear reasons, most farmers including Demo farmers who at the lowest rank of the farmer development hierarchy and hence receive the least funding are given more enterprises than they can optimally manage within the same financial year. Table 9 gives a sample of the most common combinations of enterprises that farmers implement in one financial year. It is not uncommon to find a NAADS Demo farmer receiving inputs or operating enterprises equivalent in value to those of a Model farmer.

Table 9: Sample of enterprise combinations implemented in Iganga district, 2008/9

Number of enterprises per farmer	Names of enterprises
4	apiary, banana, pineapple and mango
4	apiary, banana, pineapple and orange
4	banana, groundnuts, rice and coffee
4	banana groundnuts, rice and fish-farm
4	dairy, goat, groundnuts and cassava
4	piggery, banana, pineapple and orange
4	poultry, banana, pineapple and orange
3	banana, groundnuts and coffee
3	banana, groundnuts and pineapple
3	banana, groundnuts and rice

Source: NAADS administrative data, Iganga district

While provision of farmers with more than one enterprise may promote diversification and food security, it defeats the NAADS principle of specialisation and economies of scale. Tending to many enterprises (which may not even be integrated in terms of production) by one farmer certainly overstretches their capacity to be efficient. This most likely explains the high mortality for poultry and animals and as well as low yields arising from poorly tended crops, as reported in monitoring reports. Poor management of enterprises certainly has a negative impact on productivity.

4.3.3 Funding and utilisation of NAADS funds

According to the NAADS funding framework, the central government and the donors were expected to contribute 93 percent to the total budget whereas the local government (district and sub-county) and the farmers were expected to contribute 5 percent and 2 percent respectively. However, the reality is quite different as illustrated in Table 10. It is evident that the central government and donors were able to fulfil their commitment by releasing the entire amount budgeted. Yet, the local government and farmers were able to meet less than 40 percent of their counter funding.

Table 10: Iganga district: NAADS budget, receipts and utilisation, 2008/9

Funds Source	Level of commitment		Receipts	Proportion of Receipts to Budget (Percent)
	Amount, Ushs	%		
Cancelled cheque			1,772,192	
From Treasury, MoFPED	1,663,454,000	93.6	1,663,445,360	100.0
District Contribution	7,270,421	0.4	2,800,000	38.5
Sub County Contributions	76,265,850	4.3	7,206,999	9.4
Farmer Contributions	30,506,340	1.7	10,458,075	34.3
Sub Total (a)	1,777,496,611	100	1,685,682,626	94.8
Opening balance -Funds still held at the district/Sub-county (b)			581,972,900	
Funds available *(a+b)*	1,777,496,611	100	2,267,655,526	127.6

Source: NAADS administrative data, Iganga district

The low contribution of the LoG and farmers notwithstanding, the performance during the period might be indicative of: low interest and dedication from the beneficiaries to full-scale implementation of NAADS; lack of effort on the part of the implementing personnel to adhere to and enforce the principles of the programme; possibility of scaling down of the planned activities; and compromise in the quality of the goods and services delivered. But considering that a large amount of funds, Ushs 581 million (Table 10, second last column) was available from 2007/8; lack of sufficient funds for NAADS implementation in 2008/9 would be easily dismissed. However, this is not

the case, as with every new financial year, NAADS starts a new cycle of planning bringing on-board a new category of farmers with new enterprises and new funding. Therefore, the balance of funds carried forward from the previous financial year is used to finance activities planned for but not settled in the previous financial year. Hence, farmers in the new financial year are catered for within their own budget as the funds become available.

4.3.4 Flow of funds

Table 13 indicates that time taken for NAADS funds to be transferred from MoFPED to the district, sub-county and eventually to the beneficiaries in terms of goods and services. It is evident from Table 11 that it takes about one month for the district to transfer funds received from MoFPED to the respective sub-county NAADS accounts. It is also evident that sub-counties receive funds usually at about 1-4 weeks to the end of the quarter.

Table 11: Iganga district: Timeline of flows of funds from MoFPED to NAADS, 2008/9

	Flow of funds		
Period of funds Utilisation, quarter	**Receipt date at District from MoFPED**	**Receipt date at Sub-county from District**	**Number of weeks to end of Quarter**
July -September, 2008	-	17-Sep-08	3
October –December, 2008	20-Oct-08	27-Nov-08	4
January –March, 2009	6-Mar-09	23-Mar-09	1
April –June, 2009	29-May-09	11-Jun-09	2

Source: NAADS administrative data, Iganga district

Sub-county records for procurement and disbursement of goods and services show that, on average, farmers receive inputs about one month after NAADS funds reach the sub-county. However, in some cases where the procurement process is flawed most likely due to rent-seeking, it may take less than 1 week for farmers to receive inputs when NAADS funds reach the sub-county.

The delay in the disbursement of fund to the sub-county and eventually the goods and services to reach the farmers has a significant impact on the overall performance of NAADS. It compromises the whole arithmetic and approach to implementation of NAADS activities by officials, services providers as well as farmers. Consequently, officials modify budgets and work plans partly to reflect the reality of the delay in the release funds but also to suit their own interests. When funds reach the sub-county one month or less to absorb the huge sums of money: first, the officials overlook the implementation procedures; second, the quantity, quality of the goods and services provided service providers to the beneficiaries are compromised; third, inputs especially seeds are usually given to farmers, way-past the optimal planting (rainy) season. To illustrate this last point, in 2008/9 farmers in various sub-counties of the district were supplied with inputs such maize seed, upland rice, mango

seedlings, coffee seedling and cassava cuttings, around September and October 2008 when the dry season was about to set-in. The farmers' responses were mixed. Some farmers opted to keep the inputs to plant at an appropriate time; others planted the seeds considering that they do not bear the primary risk from loss; or sell off the inputs.

Thus, the delay in transfer and utilisation of NAADS monies at the sub-county level is one of the major causes of the low levels of efficiency observed among NAADS farmers. There are high incidences of crop failure due to cultivation towards the dry season -as reported by the sub-county monitoring teams. For example, some of the farmers who received and planted coffee seedlings around September and October 2008 in Nabitende Sub-county lost the entire seedlings due to drought. Those who plant mango and orange seedlings also lost most of the seedlings to drought and maize farmers reported very low harvests.

4.3.5 Absorption of funds

Table 12 indicates the quarterly and annual level of absorption of NAADS funds at district and sub-county levels in 2008/09. It is evident that about Ushs 859 million, which was 38 percent of available NAADS funds in Iganga district, was not utilised in 2008/9. **Table 12** further reveals that the lowest levels of absorption were experienced at sub-county level in quarter 1 (July-September) and quarter 4 (April-June), which collaborates with information about the late releases as discussed above. The level of absorption of NAADS funds points to the proportion of planned activities accomplished within reporting period with the associated implication on productivity.

Table 12: Iganga district: Absorption of NAADS funds, 20089

NAADS Office	Quarter 1	Quarter 2/3	Quarter 4	Total
i) District level:				
Funds Available	34,571,035	60,685,927	73,180,385	168,437,347
Expenditure	17,657,300	60,429,142	53,780,500	131,866,942
Closing Balance	16,913,735	256,785	19,399,885	36,570,405
Proportion of funds utilised (%)	51	100	73	78
ii) Sub-county level:				
Funds Available	375,504,397	1,000,174,377	722,868,350	2,098,547,124
Expenditure	147,970,720	681,660,877	446,389,929	1,276,021,526
Closing Balance	227,533,677	318,513,500	276,478,421	822,525,598
Proportion of funds utilised (%)	39	68	62	61
iii) Overall district absorption:				
Funds Available	410,075,432	1,060,860,304	796,048,735	2,266,984,471
Expenditure	165,628,020	742,090,019	500,170,429	1,407,888,468
Closing Balance	244,447,412	318,770,285	295,878,306	859,096,003
Proportion of funds utilised (%)	40	70	63	62

Source: NAADS administrative data, Iganga district

4.3.6 Procurement process of inputs

According to the revised NAADS implementation guidelines of 2009, the procurement cycle has about 8 stages that start with the procurement plan, advertisement/expression of interest leading to evaluation of bids and award of contract. The contract including the Local Purchase Order (LPO) which is issued by the Sub-county Chief, stipulate among issues the quantity and quality of goods and services to supply, and payment modalities. After receiving the LPO, the contracted service provider supplies the goods, which are verified for quantity and quality before distributed to the beneficiaries and before the supplier is paid. A review of the procurement process especially at the sub-county revealed a lot of weaknesses as pointed out below.

i) Evaluation of bids

While it is ideal to have more than one company to bid for supply of goods/services, it was found that in most of the cases in all the sub-counties reviewed; only one company would submit the bid, be qualified by the technical committee and approved by the procurement committee to supply the goods. Also, it was found that in the case where more than one company bid to supply, the two companies were at times owned by the same bidder and moreover the sub-county NAADS officials were aware of disguise. In the FGDs with procurement committees and also the review of the minutes of the procurement committees, it was observed that in some instances, the technical committee basically determines who to supply the inputs, overlooking the stipulated guidelines. For example, some companies such as the Rural Enterprises Development Consults Limited and Ntinda Multi-Enterprises Association were awarded tenders to supply Nabitende and Nakalama sub-counties respectively when at times they did not submit bids. This defeats the very purpose of establishment of sub-county procurement systems to ensure competitiveness and value for money.

ii) Supply of goods and payment of contractors

The company that wins the bid is awarded the contract to supply the goods. When the company supplies the goods, a verification committee of five officials comprising of the district auditor, knowledge specialist, FF chairperson, SCC, and SNC is supposed to check the goods to see if they meet the bid specifications before the goods are distributed to farmers and payment authorised. A review of the process from the time of tender award to time goods were received and the supplier paid, revealed some institutional weakness as discussed below:

In many instances, the tender award conditions are not fulfilled and yet payment was effected in breach of NAADS implementation guidelines. To illustrate this point further, Table 13 presents an example of three companies that were awarded tenders to supply goods in Nakalama sub-county. It is evident that the companies supply goods that were less the amount of the tender. And payments were effected two days after the date of tender award.

Table 13: Iganga district: NAADS tendering process in Nakalama sub-county

Reference	Tender award date	Tender Amount	Value supplied	Date of delivery of goods and payment
NAK05/9	21/9/2009	23,625,900	10,496,900	23/9/2009
NAK07/9	21/9/2009	16,902,099	7,427,680	23/9/2009
NAK08/9	21/9/2009	26,198,000	8,550,000	23/9/2009

Source: NAADS administrative data, Iganga district

Table 13 further reveals that the duration between tender award, supply and payment took only three days. Such a short duration implies that the procedures of verification of the goods to ascertain standards conformity were overlooked. A review of the documents indicated that actually all the goods delivered on the date in Table 13 were received by one individual –which is contrary to procurement guidelines. Considering that all deliveries as presented in Table 13 were very delicate,

(about 2000 day old chicks) and very bulky (over 20 tonnes of chicken feeds and cassava cuttings), and made on the same day, it raises concerns on where the these goods were delivered.

The price of the inputs is generally inflated (see Table 14). The price of inputs provided by private companies to NAADS farmers were inflated by at least 50 percent. The issue of inflated prices for inputs is particularly common in the supply of relatively new technologies, such as fertiliser or exotic poultry and animals, where there is scanty information on price and quality attributes.

Table 14: Iganga district: Comparison of open market prices to NAADS price of inputs, (Shs)

Maize enterprise	**Open market**	**NAADS**	**Difference (%)**
Variety (longe 2H)	3,500	4,000	14.3
Urea	1,400	2,500	78.6
Diamonium Phosphate (DAP)	1,600	4,000	150.0

Source: EPRC survey data 2010 & and NAADS administrative data, Iganga district

4.3.7 NAADS Monitoring and Evaluation System

The M&E is one of the critical components of good project design and implementation. The system provides management information that is vital for reviewing the performance of the project and/or steering the implementation of the project to desired direction. The NAADS has an elaborate M&E manual (NAADS 2004) illustrating the holistic process from planning to implementation of M&E both at district and sub-county level. The manual clearly spells out the composition of the M&E team and the key indicators to monitor on quarterly, semi-annually and annual basis. It also provides sample forms to be used in data collection at the different levels. Also, in the NAADS implementation budget, M&E activities are reasonably budgeted for each financial year. For instance, in 2006/7 expenditure data indicates that at the district level and in most sub-counties except Nambale, expenditure closely matched the budget. However, a review of the NAADS M&E system revealed major shortfalls discussed below.

First, the manual appears to suggest the establishment of a results-monitoring system rather than the implementation-monitoring approach done by NAADS in the district. Table 15 gives the similarities and differences between the two systems.

Second, NAADS monitoring appears to be ad-hoc rather than systematic due to lack of personnel at all levels designated and accountable for M&E. At the district level, NAADS M&E team is supposed to constitute eight members including the Chairperson, CAO (or designated person), District Planning Officer, District Production officer, District Information Officer, Community Development Officer (CDO), two other technical officers. Yet, in practise the team hardly conducts any M&E work. At the sub-county, there is supposed to be an M&E team of about five people including the SCC, CDO, SNC, one member of the FF, and one SMS. During the FGD with members of the sub-county M&E team,

there was scanty information to show what the team was doing. In the case where a quarterly report was provided, it was mainly narrative.

Table 15: Iganga district: Implementation, monitoring and results-monitoring system in NAADS

Elements of implementation monitoring	Status	Elements of results monitoring	Status
Description of the problem or situation before the intervention	√	Baseline data to describe the problem or situation before the intervention	X
Benchmark of activities and immediate outputs	X	Indicators for outcomes	X
Data collection on inputs, activities, and immediate outputs	√	Data collection on outputs and how they and whether they contribute toward achievement of outcomes	X
Systematic reporting on provision of inputs	√	Timeliness expressed such as at mid-term and end-term	X
Systematic reporting on production of outputs	X	More focus on perceptions of change among stakeholders	X
Directly linked to a discrete intervention (or series of interventions)	X	Systematic reporting with more qualitative and quantitative information on progress toward outcomes	X
Designed to provide information on administrative, implementation, and management issues as opposed to broader development effectiveness issues	X	Captures information on success and failure of partnership strategy in achieving the desired outcomes	X
		Done in conjunction with strategic partners	X

Notes: Explanation for the status column √ means that the M&E aspect was carried out; and X implies that the activity was not carried out by NAADS officials.

Source: Rajalahti et al (2005)

Apart from the sub-county M&E team, the FF executives also do some monitoring. But, this is also qualitative and of limited nature to support evaluation. Community Based Facilitators (CBF) who are based at parish level, have been provided with a reporting form that is fairly detailed on which they give a monthly report of their work with farmer groups at parish level. The form, which was designed to capture FG - level data, is not appropriate for capturing farm-level data. But, even as CBFs appear to report monthly on activities of FGs, this information is not properly archived. The CBF report is mainly used as a basis for request for a monthly CBF allowance and accountability.

For all the years of NAADS implementation in the district, there was no evidence availed to the research team to confirm internal evaluation of the programme. For the various technologies that have been given to the farmers since 2002/3, there is no data at all levels including at the NAADS secretariat on the outcome in terms of: level of adoption and diffusion, output, yield, incomes, and impact on poverty of NAADS. The NAADS officials at the sub-county capture data on the quantity and value of the inputs given to the farmers. However, there is scanty or no record on the output and productivity in both quantity and value. Also, new technologies have been given to the farmers in form of inputs but records of the rate of technology adoption and diffusion are non-existent. Besides, farmers rarely keep records that can facilitate any form of M&E.

Thus, the very concept and importance of M&E seems not to be well understood and appreciated by NAADS implementers. NAADS M&E attracts high expenditures (about 5 percent of the total expenditure) but there are scanty or no records M&E work. Where some records exist, they are of limited relevancy in achieving the objective of an M&E. Overall, the M&E function seem to be a waste of resources, as it does not function as originally intended. Consequently, the system has limited effect in improving the performance of NAADS at all levels.

5.0 Conclusions and Emerging issues

This study was undertaken in Iganga district as a preliminary review of the technical and institutional efficiency of NAADS implementation in Uganda. The CEA and SFA methods were used to examine technical efficiency while expenditure tracking and FGD methods were applied to assess institutional efficiency. The findings do provide some useful insights to improve future implementation of the programme.

The analysis demonstrates that NAADS interventions have not had a major impact on the output, productivity and income of the farmers in Iganga district. The results are consistent with previous studies including Benin et al (2007). In particular, this study shows that the high imputed cost of inputs provided by NAADS to farmers makes the intervention less cost effective. Moreover, NAADS programme faces implementation weaknesses such as nepotism that affects the selection of beneficiaries. Nepotism too has affected enterprise selection process, to the extent that some farmers are apathetic about the success or failure of NAADS Programme. But perhaps the major weaknesses in implementation of NAADS programme in Iganga district is the late disbursement of funds, very low counterpart funding by the LoG and the farmers, and overall weakness in M&E of the programme, this study reveals.

What emerges from this study is the need for NAADS secretariat to simplify and make the process of farmer selection as well as enterprise selection more transparent and farmer-driven through the farmer groups rather than NAADS administrators. NAADS should consider using a voucher system and work with reputable input traders -where farmers redeem input subsidy vouchers for inputs rather than the present lengthy and corruption prone process of getting farmers inputs through NAADS coordinators. Or else, farmers should be given inputs as crop finance at concessionary interest rates through the SACCOS. That way, on one hand farmers will be obliged to choose and take good care of enterprises they consider profitable in order to repay back the credit while on the other hand the SACCO will take on the crop finance administration and recovery role. Finally, there is need to urgently revise the current NAADS M&E procedure to make it effective. We suggest that NAADS secretariat should be more involved in programme M&E at the district and sub-county level to make the implementers more accountable.

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Table A 1: Summary of government funding of NAADS Activities in Iganga district, ('000 Ushs)

Sub-Counties	2002/3	2003/4	2004/5	2005/6	2006/7	2007/8	2008/9	2009/10	Totals
Bukooma	52,400	58,105	44,500	47,105	42,460	76,861	75,543	102,670	499,644
Waibuga	52,400	58,105	44,500	47,105	89,470	76,861	75,543	102,670	546,654
Nawandala	52,400	58,105	44,500	84,230	56,563	76,861	75,543	102,670	550,872
Buyanga	52,400	58,105	44,500	47,105	89,470	76,861	75,543	102,670	546,654
Irongo		58,105	44,500	84,230	56,563	76,861	75,543	102,670	498,472
Nambale		58,105	44,500	47,105	42,460	76,861	75,543	102,670	447,244
Ikumbya				47,105	89,470	76,861	75,543	102,670	391,649
Bulamagi				47,105	42,460	85,330	75,543	102,670	353,108
Bulongo					45,250	76,861	75,543	102,670	300,324
Nakigo					45,250	76,861	75,543	102,670	300,324
Nabitende					45,250	76,861	75,543	102,670	300,324
Nakalama					45,250	76,861	75,543	102,670	230,613
Ibulanku						52,400	75,543	102,670	230,613
Namalemba						52,400	75,543	102,670	230,613
Igombe						52,400	75,543	102,670	230,613
Makuutu						52,400	75,543	102,670	230,613
Bukanga						52,400	75,543	102,670	230,613
Namungalwe						52,400	75,543	102,670	230,613
Nawampiiti						52,400	75,543	102,670	230,613
Iganga T/C						52,400	45,000	82,111	179,511
Busembatia						52,400	45,000	82,111	179,511
TOTAL	209,600	348,629	267,000	451,090	689,916	1,402,401	1,525,317	2,114,952	7,008,905

Source: NAADS administrative data, Iganga district

Table A 2: Iganga NAADS farmers by category, 2008/9

Sub-county	Demo farmers	Lead farmers	Model farmers	Total
Bukanga	11	16	11	38
Bukooma	5	13	12	30
Bulamagi	17	19	12	48
Bulongo	13	17	12	42
Busembatia	26	0	0	26
Buyanga	9	22	7	38
IGOMBE	9	15	8	32
Ibulanku	17	23	8	48
Iganga T/C	25	4	1	30
Ikumbya	0	20	9	29
Irongo	5	21	11	37
Makutu	8	7	8	23
Nabitende	7	21	11	39
Nakalama	13	15	12	40
Nakigo	10	19	10	39
Namalemba	9	11	10	30
Nambale	4	17	11	32
Namungalwe	16	16	9	41
Nawampiti	2	20	6	28
Nawandala	12	21	11	44
Waibuga	13	21	10	44
Total	231	338	189	758

Source: NAADS administrative data, Iganga District

Table A 3: Average of inputs provided by category of farmers in Iganga district, 2008/9

Farmer category	Obs	Mean	Std. Dev.	Min	Max
Model	176	1,510,030	586,428	67,500	2,650,000
Lead	302	518,378	254,691	37,500	2,000,000
Demo	175	351,110	234,986	20,000	2,675,000

Source: NAADS administrative data, Iganga District

Table A 4: Monitoring and evaluation budget and expenditure, 2006/7 ('000 Shs)

			Expenditures				
	Level	**Annual budget**	**Quarter 1**	**Quarter 2**	**Quarter 3**	**Quarter 4**	**Cumulative Expenditure**
	Sub-county						
1	Bulongo	2,046			500	740	1,240
2	Nakalama	2,046		60	713	1,973	2,746
3	Nabitende	2,046			645	1,110	1,755
4	Nakigo	2,046				2,085	2,085
5	Bukooma	3,534				3,179	3,179
6	Nambale	3,534					
7	Bulamagi	3,534		710	550	1,660	2,920
8	Buyanga	3,534		209	760	1,000	1,969
9	Ikumbya	3,534			640	2,875	3,515
10	Waibuga	3,534		670	990	2,068	3,728
11	Irongo	3,900		375	473	1,591	2,439
12	Nawandala	3,534	640	300		1,753	2,693
	Sub-total	36,822	640	2,324	5,271	20,034	28,269
	District level	12,736		10,178	2,270		12,448
	Overall total	49,558	640	12,502	7,541	20,034	40,717

Source: NAADS administrative data, Iganga District

Table A5: Loan access and utilisation by farmers in Iganga District

Membership in SACCO	**Freq.**	**Percent**
No	115	51.1
Yes	110	48.9
Total	225	100
Loan request and access	***Freq.***	***Percent***
No	70	63.6
Yes	40	36.4
Total	110	100
Purpose of loan	***Freq.***	***Percent***
Agricultural inputs	17	44.7
Setting up or expansion of non-crop enterprise	5	13.2
Educations	6	15.8
Household consumer goods and services	1	2.6
Other .e.g. purchase of motorcycle	9	23.7
Total	38	100

Source: EPRC survey data 2010

Table A 6: Range of amount received (Ushs)

Range of amount received (Ushs)	**Frequency(n=39)**
<=50,000	2
50,001 - 100,000	7
100,001 - 200,000	11
200,001 - 500,000	14
500,001 - 1,000,000	4
1000,001 - 2,000,000	0
2000,001 - 3,000,000	1

Table A7: loan Term -duration

Payment period	**Frequency(n=39)**	**Percentage**
Three months	10	25.6
Six months	10	25.6
Twelve months	3	7.7
Other(4 and 10 months)	16	41.1

Note: In the FGDs, the farmers observed that the default rates if any on the SACCO loans are few.