each of the fishing site making a total of 120 farmers. The selected fishing sites are Alakotomeji, Yevoyan and Aivoji.

Model Specification

The stochastic frontier model adopted in this study is the variant of that of Khumbhakar and Heshmatic, 1995; Yao and Liu, 1998; and Ogundele, 2003. The model specified output (Y) as a function of input (X_i) and a disturbance term (ε)

$$Y_i = f(X_i, \beta) + \varepsilon_i \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots(1)$$

Where Y_i is output by farmer i, X_i is input variables and β is a vector of parameters.

The disturbance term consist of two components,

$\varepsilon_i = V_i - U_i$ where $V_i \sim N(O, \sigma_v^2)$ and U_i is a one – sided error term. The two errors, V_i and U_i are assumed to be independently distributed. The term V_i is symmetric, allows random variation of the production function across farms, and capture the effects of statistical noise, measurement error, and exogenous shocks beyond the control of the producing unit. The one – sided term, U_i represents technical inefficiency (TI) relative to the stochastic frontier. If $U_i = 0$, production lies on the stochastic frontier and production is technically efficient; If $U_i > 0$, production lies below the frontier and is inefficient.

The error term Ui is usually assumed to follow one of three possible distributions (Lee 1983; Schmidt and Lin, 1984 and Bauer, 1990); (a) half – normal i.e $\left| N(O, \sigma_u^2) \right|$; (b) Exponential Exp ($U_u$, σ_u^2); and (c) truncated normal at zero $N(U_u, \sigma_u^2)$. Because the estimates of technical efficiency ar

In = the natural logarithm (i.e. to base e)
$B_0 – B_4$ = parameters to be estimated.

Inefficiency Effects and Socio – Economic Model
Average level of technical inefficiency measured by

has a negative coefficient and statistically significant ($p<0.01$) implying that the more the frequency of fishing the more the technical efficiency.

The estimated sigma – squared (σ^2) is significantly different from zero ($p<0.01$). This indicates a good fit and the correctness of the specified distributional assumptions of the composite error term. The estimated value of gamma parameter is 0.11, which means that 11% of the total variation in the total output is due to technical inefficiency.

Technical Efficiency (TE)

Jinadu, O. O., (1996). Small – Scale fisheries in Lagos State: Nigerian Economic Sustainable Yield Determination. International Fisheries Institute, Oregun, Nigeria. www.Oregonstate.edu/dept/iifet Accessed on 16/5/2009.

Jondrow, J., Lovell, C. A. K., Materov, I. S. and Schmidt, P., (1982). On the estimation of technical inefficiency in the stochastic frontier production function model. *Journal of Econometric*, 19: 233 – 238.

Khumbhakar, S. C. and Heshmatic, A., (1995). Efficiency measurement in Swedish dairy farms: an Application of rotating panel data 1976 – 1988. *American Journal of Agricultural Economics*, 77(3): 660 – 674.

Lee, L. F., (1983). A test for distributional assumption for the stochastic frontier functions. *Journal of Econometrics*, 22, 245 – 268.

Leibenstein, H., (1966). Allocative efficiency vs. X-efficiency. *American Economic Review, 56(3): 392-415.*

Mahendra Reddy, (2008). Efficiency and sustainability implications of artisanal fisheries activities:

Table1: Summary statistics of Variables of Artisanal fisheries

Variables	Mean	Standard deviation