

**Does attending seminars affect technical efficiency of white shrimp  
(*Litopenaeus vannamei*) aquaculture?**

ABSTRACT

Measuring technical efficiency and examining the factors affecting technical inefficiency of brackish water white shrimp aquaculture in Malaysia are the objectives of the study. This study applies a parametric approach (stochastic production function, SPF) and a non-parametric approach (data envelopment analysis, DEA) to measure technical efficiency. The estimated average technical efficiencies of shrimp farms are 54.7 % (SPF) and 43.3 % (DEA). Labour, feed and fry are the three major inputs used and are also the independent variables applied in the models. Elasticities of labour, feed and fry are found to be -1.650, 0.686 and 1.52, respectively. These data show that excessive labour was hired and that feed used and fry stocked are deficient. Stochastic inefficiency model and to bit regression are the two approaches applied to measure the factors affecting technical inefficiency. The variable of “seminar attended” is the consistent core factor, which significantly and negatively affects technical inefficiency. This means that human resource development is playing a vital role to achieve a significant measurable and sustainable impact in Malaysian shrimp aquaculture.

**Keyword:** Data envelopment analysis; Stochastic trans-log production function; Aquaculture; Technical efficiency