

## **Technical efficiency analysis for Penang trawl fishery, Malaysia: Applying DEA approach.**

### **ABSTRACT**

Abundant fishery resources in Malaysia can be discovered along The Strait of Malacca. Penang is located in the north of Peninsular Malaysia, or, in the upper part of the Strait of Malacca. However, in the past seventeen years, annual landings of Penang trawl fishery had declined almost 23% and fishing effort had also dropped almost 70%. This research examined the score of technical efficiency and the factors causing inefficiency of sampled trawl vessels in Penang. The information of each vessel on landing per trip, number of workers, fishing effort, diesel consumption, vessels capacity and engine horsepower were collected through survey. Data envelopment analysis (DEA) was applied to examine trawl vessels efficiency. Results obtained based on sixty-nine selected vessels showed that the score of technical efficiency among vessels varied between 0.123 and 1. The average technical efficiency of the sampled vessels was estimated to be 56.6%. The to bit model used to identify factors causing inefficiency showed that echo sounder was the only factor showing significant positive effect on technical efficiency. Factors of skipper characteristics (family background, education, experience and age of captain) and age of vessels were insignificant. Factors like family background, education and experience of captains however, showed negative signs on technical inefficiency analysis. On the other hand, factors like age of vessels and age of captain showed positive signs on technical inefficiency analysis. This research concluded that echo sounder had become an important factor in increasing technical efficiency scores of fishing vessels, and so to maximize the fish landings.

**Keyword:** Technical efficiency; Trawl fishery; DEA.