

Technical Efficiency Analysis of Terubok Fisheries in Malaysia

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Received: Oct. 14, 2018 Accepted: Nov. 30, 2018 Online published: Mar. 3, 2019

doi:10.5296/jpag.v9i1.13772

URL: <https://doi.org/10.5296/jpag.v9i1.13772>

Abstract

Terubok fish is an estuarine fish that is significant among local fishermen because of high commercial value and it also constitutes to source of income for Terubok fishermen during its catching season. Therefore, due to high commercial value, Terubok fish has been subject to overfished and the population has been declining throughout the years. This study is carried out to analyse the efficiency performance of Terubok fisheries in Malaysia. A sample of actively Terubok fishermen was selected through stratified random sampling and the field survey has conducted at three different places in Sarawak. Data Envelopment Analysis (DEA) and Tobit Analysis were employed to determine the technical efficiency level and factors influencing technical efficiency among Terubok fishermen. The results of the study show that, most fishing units exhibit a low level of technical efficiency. This implies that either fishing inputs were used inefficiently, or insufficient inputs were used in fishing operations. The mean technical efficiency of the sample was estimated to be 0.304 using CRS Model, 0.406 using VRS Model and Scale Efficiency is 0.805. The determinant factors of efficiency among Terubok fishermen was among all, hours in a day, days spent in fishing per month, engine horsepower and fisherman association show positive sign towards efficiency contradictorily other determinant such as age, education, distance and length of vessels possess negative sign towards efficiency. These findings suggest that there's urgent need to the efficiency level of the fishermen as this will indicate the impact of their living standard. With appropriate training and using more advanced technologies by the fishermen, the level of technical efficiency can be raised, segmented for inshore fisheries.

Keywords: Technical efficiency, Terubok fisheries, Data Envelopment Analysis, Tobit Regression

1. Introduction

The importance of the fisheries sector and its contribution to the country's economy is undeniable because the renewable aquatic resources are the infinite gift of nature; thus, the modern fisheries industry has greater potential to help raise the livelihoods of fish farmers and fishermen while reducing import dependence from other countries and increasing the export the fisheries production instead. The effort towards advancing the fisheries sector should increase the dynamic development to transform the sector as an advanced, modern and competitive commercial entity. Further, fishing activity also contributes to income generation, general sources of food to human population, employment opportunity and fisheries have been the primary sources of protein, which considered as one fifth from all animal protein took in the human consumption and diet (Teh, 2012). By the year of 2050, with estimated 9 billion people in the world will questioning the challenge on how to maintain an aquatic food supply for growing demand as well as protecting sustainable food production. As for Malaysia, until 2016, Malaysia was a 15th global producer for fisheries production that produced 1,458,126 metric tonnes in 2014, while China was the largest fisheries producer (14,811,390 metric tonnes) in the world. As the significant role to provide food security to the country, the production of global fisheries is not efficient in performance, where with the help of scientific analyses, the natural resources can be managed in a good quality as the use of