

Fishery Products and Technology in the New Normal Era

Lis M. Yapanto¹, Arfiani Rizki Paramata¹, Yumanraya Noho², Farid Th. Musa³

¹Water Resources Management, Faculty of Fisheries and Marine Sciences
Gorontalo State University

²Faculty of Tourism, State University of Gorontalo

³Faculty of Sociology Universitas Negeri Gorontalo

Email: lizrossler@ung.ac.id

ABSTRACT

This research aims to determine the technical efficiency of handline fishing gear and allocative efficiency (price) of handline fishing gear as well as the economic efficiency of handline fishing gear in the new normal era in Kayubulan Village, Batudaa Pantai District, Gorontalo Regency, Gorontalo Province. This research was conducted in October-November 2018. This research used the method quantitative descriptive by using data analysis DEA (Data Envelopment Analysis) to measure technical efficiency and CBA (Cost Benefit Analysis) to measure allocative efficiency (price) and economic efficiency analysis is the result of technical efficiency and allocative efficiency (price). Analyze technical efficiency using DEAP software version 2.1. The results of the study show that technical efficiency (ET) is known that the average value of technical efficiency obtained is 0.788 or < 1 , meaning that the fishing effort of handline fishermen is still not technically efficient. The average allocative efficiency/price (EH) obtained is 3.881 or > 1 , so the fishing effort with handline fishing gear is allocatively efficient. The average economic efficiency obtained is 3.091 or > 1 , so the average fishing effort with this handline fishing gear is economically efficient.

KEYWORDS: efficiency, technical, allocative, economic, handline, DEA

INTRODUCTION

The potential for fisheries in Indonesia, especially in Gorontalo City, which is directly opposite the waters of WPP 715 (Tomini Bay to Halmahera waters), is very abundant to be utilized as well as possible and of course requires serious handling by the fishermen themselves, and of course also must be supported and assisted by all parties. especially by the Government of the Republic of Indonesia so that this great potential can bring benefits to all of us. The relationship between the potential of coastal areas and welfare is explained in the form of technology diversification carried out by fishing communities, it is hoped that product and technology diversification can improve fishermen's welfare. of course requires strategy and technological innovation in increasing revenue. Pandemic Covid-19 has provided its own challenges for business people, especially for those engaged in the industry MSMEs (Micro small and Medium Enterprises). The Ministry of Cooperatives and SMEs

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noted that there were at least 37,000 actors MSMEs feel the impact from this pandemic. Fish is a basic need that has a great opportunity to compete in local and even national markets. Meanwhile, according to the Indonesian Retail Entrepreneurs Association, changes in consumer behavior patterns have a direct effect on modern retail, resulting in a 80-85% drop in transactions for non-food products and 30-40% for food products since the implementation of the PSBB took effect. This shift represents a gradually evolving consumption pattern that will eventually map out the overall change in the trade scenario amid the pandemic Covid-19 or as we know it as 'new normal'. We, from universities, are ready to equip cooperative and institutional actors MSMEs to face the era new normal through the development of digital technology in the face of a less contact economy. The Covid-19 pandemic has significantly changed the way businesses interact with their customers. It is important for MSMEs to map patterns of changes in consumer behavior in the new normal era. This includes the desires, hopes and needs of consumers in carrying out the new normal. With this impact, MSME actors need to improve in the field of technology, especially in marketing their products so that they reach consumers.

Formulation of the problem

The problem formulation consists of:

1. How is the technical efficiency of handline fishing gear in Kayubulan Village, Batudaa Pantai District, Gorontalo Regency?
2. How is the allocative efficiency (price efficiency) of handline fishing gear in Kayubulan Village, Batudaa Pantai District, Gorontalo Regency?
3. How is the economic efficiency of handline fishing gear in the New Normal Era in Kayubulan Village, Batudaa Pantai District, Gorontalo Regency?

1.1 Aim

The purpose of compiling the results of this study is as follows:

1. To find out the technical efficiency of handline fishing gear in Kayubulan Village, Batudaa Pantai District, Gorontalo Regency
2. To find out the allocative efficiency (price efficiency) of handline fishing gear in Kayubulan Village, Batudaa Pantai District, Gorontalo Regency
3. To determine the economic efficiency of handline fishing gear in Kayubulan Village, Batudaa Pantai District, Gorontalo Regency

1.2 Benefit

The benefits of compiling the results of this study are as follows:

1. As input for the government and other parties in an effort to find approaches to improve technical, allocative and economic efficiency of handline fishing gear.
2. It can be used as basic information material for further researchers regarding technical, allocative and economic efficiency of handline fishing gear.

a Achievement plan and achievement indicators for the application of technology to SMEs

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indicator	Month					
	1	2	3	4	5	6
Production	10%	15%	20%	25%	30%	35%
Sale	10%	15%	20%	25%	30%	35%
turnover	5%	10%	15%	20%	25%	30%
consumer	5%	6%	7%	9%	11%	15%

b Publication outputs in reputable international journals.

RESEARCH METHODS

The location of this research was carried out in Kayubulan Village, Batudaa Pantai District, Gorontalo Regency. The time of this research was carried out in October-November 2018. For more details, the research locations can be seen in Figure 2 below.



Figure 2. Map of Kayubulan Village (Source: GPS Essential)

1.1 Data collection technique

The data collected consists of primary data and secondary data. Primary data obtained from observations and interviews with respondents directly in the field. Data collected regarding the volume of catch (Kg/Trip), cost of supplies (Rp/Trip), fuel (Liters/Trip), number and duration of trips, engine size (PK), boat size (GT) and number of crew (fishermen). Secondary data is data used to support information obtained from village profiles, previous research, and literature related to this research.

The sampling technique was carried out using the purposive sampling method, namely sampling based on consideration or the researcher considered that what was taken had information and was related to the research objectives (Hiola, 2017). The sample to be taken was determined to be 65 people from 185 fishermen (Kayubulan Village Profile, 2017). This sampling is determined using the slovin formula (Simanjuntak, 2016):

$$n = \frac{N}{1 + Ne^2}$$

$$n = \frac{185}{1 + 185 \times 0,1^2}$$

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$$n = \frac{185}{1 + 1,85}$$

$$n = \frac{185}{2,85}$$

$n = 64,91$ (65 Respondents)

Information:

n = Sample Size

N = Population size or number of fishermen

e = Percent of inaccuracy due to sampling errors that can still be tolerated (tolerance degree of error sampling), namely 10% (0.1).

1.2 Data analysis

The analytical method used in this research is a quantitative descriptive method. This research method is used to collect data or information about a population by using a sample. The characteristic of this research method is that information is obtained from the sample and collected through asking questions (oral or written) (Aprilia, 2011).

1) Data Envelopment Analysis(DEA) 2.1

Data Envelopment Analysis(DEA) is an analysis for measuring efficiency which is value free because it is based on available data without having to consider the judgment of the decision maker. The DEA model approach, which is a mathematical programming approach to estimate technical efficiency (TE) and capacity output. DEA analysis aims to measure the relative performance of the unit of analysis in the presence of multiple inputs and outputs (Wardono, 2016).

The technique, which is also known as CCR (from the names of the three inventors: Charnes, Cooper and Rhodes, 1978), is a measurement of the performance of the relative efficiency of DMU decision making units (decision making units) in an activity. In fisheries applications, DEA has advantages in its ability to estimate capacity under certain policy implementation constraints (Nababan and Sari, 2010). Another feature of the DEA model is its ability to accommodate multiple outputs and multiple inputs (Wardono, 2016). Data Envelopment Analysis (DEA) in this study was carried out with assistance DEAP version 2.1.

2) Cost Benefit Analysis(CBA)

B/C is the value or benefit obtained from each unit cost incurred. Where B/C is obtained by dividing total receipts with total expenses. Kadariah and Gray (1987) in Alhuda et al (2016), stated that parameters can be used to determine the level of efficiency of a business, namely by measuring the amount of income divided by the amount of expenditure, where:

$$B/C = \frac{\text{Penerimaan Total}}{\text{Biaya Total}}$$

With criteria:

$B/C > 1$: Efficient

$B/C = 1$: break even

$B/C < 1$: Not efficient

3) Economic efficiency

Economic efficiency is a product of technical efficiency and price efficiency. (Susantun, 2000 in Sutanto, 2005). So economic efficiency can be achieved if these two efficiencies are achieved so that it can be written as follows:

$$EE = ET.EH$$

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Where :

EE = Economic Efficiency

ET = Technical Efficiency

EH = Price Efficiency (Allocative)

Preparation phase	
Pre-Survey	Identification of partners' problems & needs (specific problems experienced by partners)
Team & Partner Coordination	Planning for program implementation conceptually, operationally, implementing marketing technology, etc. as well as job descriptions from Team & Partners.
Examination stage (Activities Conducted at Partner Locations)	
Dissemination of potential development and business opportunities for processing fishery products/local products To use support the Artificial Proud movement	Activities carried out through material presentation and discussion (30 minutes)
Indonesia through the programe-Smart IKM and the launch of the #EverythingThereDiresi campaign	
Assistance and training for MSME actors in order to increase added value and product quality results and packaging of processed products by UKM players	Activities carried out through material presentation and discussion (30 minutes)
Socialization planning income and financial management education for business owners during a pandemic	Activities carried out through material presentation and discussion (30 minutes)
Brand socialization as a marketing strategy in business activities	Activities carried out through presentations material and discussion (30 minutes)
Dissemination of marketing strategy mechanisms to increase sales, for example by marketing products online (online <i>marketplace</i>) as well as social media	Activities carried out through material presentation and discussion (30 minutes)
Program Evaluation	
This is done by comparing the conditions of the partners before and after the implementation of the program. Indicators of program success with positive changes from partners (business development) after	

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the implementation of the program
Reporting
Report preparation is carried out as a form of accountability for program implementation for later publication

3.3. Description of the technology product to be used implemented to Catch Fishers in Kayubulan, Gorontalo District

1. Diversification of processed fishery products, for example fish dumplings, fish burgers, fish sticks, fish balls, nuggets, tuna fillets, etc., bearing in mind that the area has considerable potential. Both tuna and pelagic and demersal fish..

2. Improvement of the construction of fishery product packaging so that it has a selling value, as well

Ecolabelling processed fish.

3. Cloud-based online accounting software, for cash flow recording, making billing and payment documents easily. make income and expenditure budget posts as a reference when recording actual sales and operating expenses, so that profit margins can be controlled, etc

4. Making application and web networks for businesses and utilizing online marketplaces so that MSMEs can have greater opportunities to expand their target market and motivate business actors to actively market their products through social media.

Marketing technology through mobile phones with Android applications is arranged in a simple way that can be accessed easily through Personal Computers and Android gadgets. The benefits are (1) Increased productivity and welfare for MSME actors, (2) Increased insight, knowledge, skills of MSME actors in managing production processes and business administration and increasing the value of MSME product competitiveness, (3) Building networks and synergies partnerships between MSME actors, government, banking, markets, social communities, and universities, (4) Reducing the risk of failure in managing the production process and business opportunities for MSME actors.

An example of a digital marketing system that can be accessed from home and anywhere.

The services provided are made that way in accordance with the needs that have always been a problem faced by SMEs. MSMEs will get a variety of insights, knowledge, networks, as well as interaction services for solving daily problems. Marketing technology through mobile phones with android applications is arranged in a simple way that can be accessed easily through personal computers and Android gadgets. The benefits are (1) Increased productivity and welfare for MSME actors, (2) Increased insight, knowledge, skills of MSME actors in managing production processes and business administration and increasing the value of MSME product competitiveness, (3) Building networks and synergies partnerships between MSME actors, government, banking, markets, social communities, and universities, (4) Reducing the risk of failure in managing the production process and business opportunities for MSME players, (5) Compilation of a road map for the development and management of MSMEs that are competitive in the global market. MSMEs from various regions are expected to be able to share or exchange information, problems in an easier way, one of which is by utilizing the development of smartphones, it is hoped that they can improve/respond to the challenges of the industrial revolution 4.0.

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3.4. *Work procedures to support the realization of the method*

The work procedure for empowering the target group is training with socialization learning techniques from fisheries extension officers and the Gorontalo Province KPERINDAG Office.

3.5. *Partner participation in program implementation*

Its partners are MSME business actors in Tanjung Kramat Village, Hulonthalangi District, consisting of representatives of MSME business actors and fisheries cooperative institutions. Participation of partners in the PKM program includes: 1. Partners as providers of places for organizing socialization activities, which are located in Hulonthalangi District, Gorontalo City 2. Partners act as socialization participants and actively participate in discussion/question and answer activities 3. Partners are involved as a whole in the PKM program including problem formulation, program planning, activity scheduling, program implementation up to the activity evaluation stage.

3.6. *Program Evaluation*

In detail, program evaluation can be seen based on the following table:

Program	Indicator	Criteria	Instrument
Socialization development potential and business opportunities for processing fishery products/local products for use support the Proud Made in Indonesia movement through the IKM e-Smart program and launch the #EverythingThere Is Here campaign	Partner understanding About potency development and opportunities effort processing fishery products/local products	Increased understanding of potential development and business opportunities for processing local fishery products/products	<ul style="list-style-type: none"> • Observati • Interview
Accompaniment and training for MSME actors in the context of for Upgrade added value and product quality as well as the result packing o land for SMEs	Partner understanding in increasing added value and quality products and packaging processed by SMEs	Increased understanding of added value and product quality as well as packaging for processed products by SMEs	<ul style="list-style-type: none"> • Observati • Interview
Socialization of income planning and financial management education for business owners during a pandemic	Understanding partners and revenue planning financial management education for business owners during a pandemic	Increased understanding of income planning and financial management education for business owners during a pandemic	<ul style="list-style-type: none"> • Observati • Interview

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Brand socialization as a marketing strategy in business activities	Understanding partners that the brand as a marketing strategy in business activities	Increased understanding of the brand as a marketing strategy in business activities	<ul style="list-style-type: none"> • Observati • Interview
Dissemination of marketing strategy mechanisms to increase sales, for example by marketing products online (online marketplace) and social media	Partner understanding about marketing strategy for example to increase sales with marketing product individually online (online marketplace) and social media	Increased understanding of marketing strategies to increase sales, for example by marketing products online (online marketplace) and social media	<ul style="list-style-type: none"> • Observati • Interview

Conclusion

After the entire program has been completed, it is important to plan for the continuation of the program. The sustainability of the program in the field after the PKM activities have been completed includes: a. Monitoring the creation of brands and registration of trademarks/services, Monitoring the implementation of marketing strategies in business activities c. Socialization of online marketing in business activities and its legal aspects for partners.

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