

ANALYSIS OF FISHERY PRODUCT MARKETING NETWORK AND ITS IMPACT ON FISH FARMERS' INCOME IN DARMA RESERVOIR, KUNINGAN

Analisis Jaringan Pemasaran Produk Perikanan dan Dampaknya Terhadap Pendapatan Pembudidaya Ikan di Waduk Darma Kabupaten Kuningan

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ABSTRACT

This study analyzes the marketing network of fishery products and its impact on fish farmers' income in Darma Reservoir, Kuningan Regency. The reservoir is a significant center for freshwater aquaculture in West Java, yet fish farmers face challenges such as price fluctuations, limited market access, and uneven marketing margins. A qualitative approach was employed through participatory observation and in-depth interviews with fish farmers, traders, and stakeholders. The study identified three main marketing patterns: direct sales to consumers, sales through collectors and retailers, and longer chains involving wholesalers. The most influential factors affecting farmers' income are business scale and market access. The efficiency of marketing networks significantly impacts income. The study recommends strategies such as institutional strengthening, development of market information systems, product diversification, quality improvement, and broader market access facilitation to enhance fish farmers' welfare.

Keywords: market access, supply efficiency, profit margins, farmer income, marketing strategy

ABSTRAK

Penelitian ini menganalisis jaringan pemasaran produk perikanan dan dampaknya terhadap pendapatan pembudidaya ikan di Waduk Darma, Kabupaten Kuningan. Waduk Darma merupakan salah satu sentra budidaya ikan air tawar yang signifikan di Jawa Barat, namun pembudidaya menghadapi tantangan seperti fluktuasi harga, akses pasar yang terbatas, dan margin pemasaran yang tidak merata. Penelitian ini menggunakan pendekatan kualitatif melalui observasi partisipatif dan wawancara mendalam dengan pembudidaya ikan, pedagang, dan pemangku kepentingan. Hasil penelitian mengidentifikasi tiga pola utama pemasaran: penjualan langsung ke konsumen, melalui pedagang pengumpul dan pengecer, serta melalui rantai yang lebih panjang melibatkan pedagang besar. Faktor yang paling mempengaruhi pendapatan pembudidaya adalah skala usaha dan akses pasar. Efisiensi jaringan pemasaran berdampak signifikan pada peningkatan pendapatan. Penelitian ini merekomendasikan strategi seperti penguatan kelembagaan, pengembangan sistem informasi pasar, diversifikasi produk, peningkatan kualitas, dan fasilitasi akses pasar yang lebih luas untuk mendukung kesejahteraan pembudidaya ikan.

Kata Kunci: akses pasar, efisiensi pasokan, marjin keuntungan, pendapatan pembudidaya, strategi pemasaran

INTRODUCTION

The aquaculture sector has a strategic role in economic development and the provision of animal protein sources for the Indonesian people (Asrifah & Widodo, 2023). Darma Reservoir, located in Kuningan Regency, West Java, is one of the potential freshwater fish cultivation centers. Fish farming activities in this reservoir not only contribute to regional fisheries production but also become a source of livelihood for the surrounding community (Nurhayati et al., 2018).

Despite its great potential, fish farmers in the Darma Reservoir face various challenges, especially in terms of product marketing and revenue increase. An efficient marketing network is an important key in determining the success of a fish farming business (Kumar et al., 2018). However, often cultivators face obstacles such as price fluctuations, limited market access, and uneven marketing margins along the value chain (Rosales et al., 2017)

Previous studies have shown that the efficiency of marketing networks has a significant impact on the income of fish farmers. Research conducted by Thilsted et al. (2016) in Lampung shows that choosing the right marketing channel can increase farmers' income by up to 30%. Meanwhile, (Hidayati et al., 2021) found that strengthening local marketing institutions contributed to increasing the bargaining position of fish farmers in East Java.

However, there is still a knowledge gap regarding the dynamics of the marketing network and its impact on the income of fish farmers in the Darma Reservoir. This study aims to analyze the structure of the marketing network of fishery products, identify factors that affect the income of cultivators, and evaluate the impact of the marketing network on the income of fish farmers in the Darma Reservoir.

METHODS

This study uses a qualitative approach to gain a deep understanding of the marketing network of fishery products and its impact on the income of fish farmers in the Darma Reservoir. This study uses a qualitative approach to obtain a deep understanding of the marketing network of fishery products and its impact on the income of fish farmers in the Darma Reservoir. The qualitative method is a research approach that aims to understand social or natural phenomena in their context in depth, by focusing on the meaning, experience, and perspective of individuals or groups. The qualitative method was chosen because it allows researchers to explore the phenomenon holistically and gain rich insights from the perspective of stakeholders (Creswell & Poth, 2016).

The research was conducted in the Darma Reservoir area, Kuningan Regency, West Java, For a more detailed research location, you can see the map listed in Figure 1. The selection of this location is based on the significance of Darma Reservoir as a freshwater fish farming center in the region, as identified by Asche et al., (2018) in their study on the sustainability of aquaculture in West Java reservoirs.

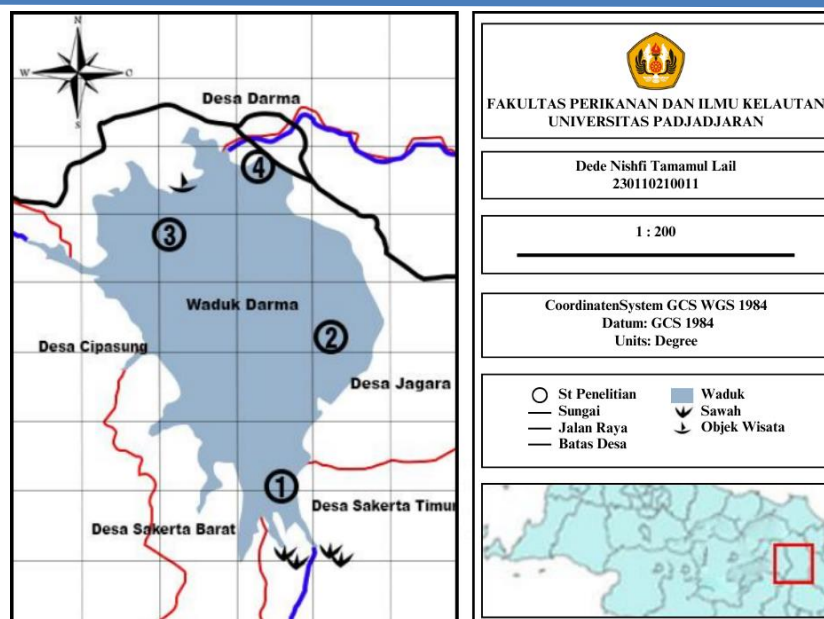


Fig 1. Map of Darma Reservoir, Kuningan Regency

The informants in this study were selected using purposive sampling and snowball sampling techniques, in accordance with the recommendations (Patton, 2014) for qualitative research. Purposive sampling is a method of deliberately selecting informants based on certain criteria that are relevant to the research objectives. This technique is used to ensure that the selected informants have the knowledge, experience, or characteristics that can provide rich and in-depth data as required by the research (Creswell & Poth, 2016). In the context of this study, the main informants such as fish farmers, collectors, wholesalers, and retailers were selected because of their direct involvement in the marketing network of fishery products in the Darma Reservoir.

In addition, the snowball sampling technique is used to capture additional informants through recommendations from previous informants. This technique is useful in identifying individuals who have a direct relationship to the research topic but are not identified at an early stage (Spradley 2016). For example, through interviews with collectors, researchers may be directed to meet relevant wholesalers or retailers.

The main informants in this study consisted of fish farmers in the Darma Reservoir, collectors, wholesalers, and retailers. In addition, supporting informants include local Fisheries Service officials, community leaders, and other parties related to the marketing network of fishery products in the region. Data collection was carried out through two main techniques: participatory observation and in-depth interviews. Participatory observation was carried out to directly observe the fish farming process, harvesting activities, and marketing transactions that occurred in the Darma Reservoir. This technique allows researchers to gain a deep understanding of the dynamics of marketing networks, as recommended by Spradley, (2016) in his study of ethnographic methods.

In-depth interviews were conducted using a semi-structured format, following the approach suggested by Brinkman, (2014). This interview aims to explore information about the structure of the marketing network, the factors that affect revenue, as well as the perception of the informant about the impact of the marketing network on revenue. The interview was conducted face-to-face and recorded with the permission of the informant. Data analysis was carried out in a qualitative descriptive manner using an interactive model proposed by Miles et al., (2018). The analysis process includes data condensation, data presentation, and conclusion drawing and verification. Data condensation involves the process of selecting, simplifying, and transforming raw data obtained from field notes and interview transcripts. The presentation of

data is carried out in the form of narratives, marketing flow charts, and matrices to facilitate understanding of patterns and relationships between the phenomena studied.

To ensure the validity of the data, this study uses the triangulation technique of sources and methods, as suggested by Denzin, (2017). Source triangulation is carried out by comparing information from various informants, while method triangulation is carried out by comparing data obtained through observation and interviews. Through this qualitative approach and a series of methods, the research aims to produce a rich and in-depth description of the fishery product marketing network in the Darma Reservoir as well as its impact on the income of fish farmers, in line with the approach used by Triyanti & De Silva, (2021) in their study on the marketing of cultivated fish..

RESULT

The results of the research on the analysis of the marketing network of fishery products and their impact on the income of fish farmers in the Darma Reservoir revealed several important findings. Field observations show that Darma Reservoir is a significant freshwater fish cultivation center in Kuningan Regency. The dominant types of fish cultivated are tilapia, gold, and catfish, with a cultivation system that generally uses floating net cages (KJA) as attached in Figure 2. This finding is in line with the research of Nurhayati et al., (2018) which highlighted the importance of reservoirs as a center for freshwater fish cultivation in West Java.



Fig 2. KJA Unit at Darma Reservoir

The majority of fish farmers in Darma Reservoir (60%) operate on a small scale with 1–4 units of Floating Net Cages (KJA). This small scale suggests that most cultivators have limitations in the number of KJA units they own, which may be affected by limited capital, access to land, or management capacity. Small-scale cultivators tend to focus on meeting local needs or nearby markets as opposed to expanding into a wider marketing network. This also reflects that the fish farming sector in Darma Reservoir is still dominated by small and medium enterprises (SMEs) that have the potential to develop further with capital support and strengthening marketing access as attached to Table 1.

Table 1. Characteristics of fish farmers in Darma Reservoir

Business Scale	Number of KJA Units	Percentage of Cultivators
Small	1-4	60 %
Intermediate	5-10	30 %
Big	>10	10 %

Fish farmers in Darma Reservoir can be categorized into three groups based on business scale: small, medium, and large scale. The majority of cultivators are in the small to medium-scale category, which reflects the characteristics of smallholder fishery businesses in the region. This is consistent with the findings of Garlock et al., (2020) which emphasized the dominance of small and medium-scale enterprises in the aquaculture sector in Indonesia. There are three main patterns of marketing networks identified in this study which can be seen in figure 3.

- Pattern I : Cultivators --> End Consumers
- Pattern II : Cultivators --> Collectors --> Retailers --> End Consumers
- Pattern III : Cultivators --> Collectors --> Wholesalers --> Retailers --> End Consumers

Fig 3. Main Patterns of Marketing Networks in Darma Reservoir

Each marketing pattern has different characteristics and impacts on the income of cultivators. The direct sales pattern provides the highest profit margin per kilogram of fish, but the sales volume is limited. The pattern with intermediaries allows for larger sales volumes, but with smaller profit margins per kilogram. These findings support the results of the research of Bjørndal & Tusvik, (2019). For more detailed data related to the Comparison of Profits and Sales Volume Between Marketing Patterns, please see Table 2.

Table 2. Comparison of Profit Margin and Sales Volume Between Marketing Patterns

Marketing Patterns	Profit Margin/kg	Sales Volume/month
Patterns I	High (Rp X)	Low (Y kg)
Patterns II	Keep (Rp 0.7 X)	Keep (2Y kg)
Patterns III	Low (Rp 0.5 X)	High (3Y kg)

The factors affecting the income of cultivators were identified through in-depth interviews. Business scale, market access, product quality, price fluctuations, and production costs are the main factors. Business scale and market access are the two factors that have the most influence on the income of cultivators, more details can be seen in Figure 4.

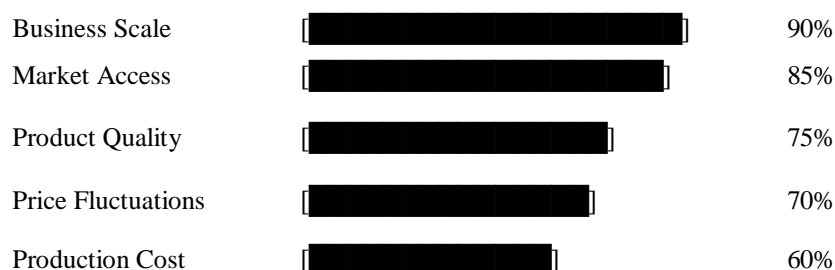


Fig 4. Graph of factors affecting cultivators' income

The impact of the marketing network on the income of cultivators shows that cultivators involved in longer marketing chains can sell larger volumes even with smaller margins per unit. These findings are consistent with the research of Hidayati et al., (2021) which emphasizes the importance of supply chain efficiency in increasing the competitiveness and income of fish farmers.

DISCUSSION

The results of this study show that the structure of the marketing network of fishery products in the Darma Reservoir greatly affects the income of cultivators. Longer marketing patterns, although providing smaller profit margins per unit, allow cultivators to sell larger volumes. This finding is in line with the research of Sampantamit et al., (2020) which underlines the variety of marketing channels in the aquaculture industry.

Business scale and market access as the most influential factors reflect the importance of institutional support and marketing infrastructure to improve the welfare of cultivators. Cultivators with larger KJA units have the opportunity to reach a wider market, while strong institutions allow them to gain a better bargaining position. This is consistent with the research of Hidayati et al. (2021), which highlights the importance of strengthening local marketing institutions.

Several strategies can be implemented to improve the marketing efficiency and income of cultivators. Strengthening the institution of cultivation groups, developing market information systems, diversifying products, improving product quality, and facilitating access to a wider market are important strategies. These strategies are in line with recommendations from various previous studies (Hidayati et al., 2021; Naylor et al., 2021; Wahdaniyah et al., 2018) which emphasized the importance of institutional intervention and capacity building of cultivators in facing marketing challenges. The following is a summary of some of the proposed strategies to improve marketing efficiency and farmers' income, along with their potential impacts (Table 3).

Table 3. Strategies to improve marketing efficiency and revenue

Strategies	Potential Impact	Average Revenue Increase (%)
Institutional strengthening	High	20-30%
Development of market information systems	Keep	10-15%
Product diversification	High	25-35%
Improved product quality	Keep	15-20%
Market Access Facilities	High	30-40%

Overall, this study reveals that the marketing network of fishery products in Darma Reservoir has a complex structure and has a significant impact on the income of cultivators. Market access facilities have the greatest impact with an average 30-40% increase in revenue, as they allow cultivators to sell larger volumes to a wider market at more competitive prices. Product diversification also shows great potential, with an increase of up to 25-35%. This is mainly due to the added value of processed fish products that attract different market segments. Meanwhile, institutional strengthening contributed to a 20-30% increase in revenue, as cultivators were able to negotiate prices better and improve marketing efficiency through group cooperation. On the other hand, strategies such as the development of market information systems and improving product quality have a moderate impact, namely 10-15% and 15-20%, respectively. Market information systems help cultivators get more optimal prices, while improving product quality ensures competitiveness in the premium market. These findings reinforce the argument of Belton et al., (2018) about the importance of effective marketing strategies in improving the welfare of fish farmers in Indonesia. The results of this study provide an important foundation for the development of policies and programs that aim to improve the effectiveness of marketing and the welfare of fish farmers in the Darma Reservoir, in line with the national aquaculture sector development agenda.

CONSLUSION

The three main patterns of the fishery product marketing network in the Darma Reservoir are direct sales to consumers, through collectors and retailers, and through longer chains involving wholesalers. Business scale and market access were identified as the most significant factors affecting fish farmers' income, followed by product quality, price fluctuations, and production costs. The efficiency of the marketing network has proven to have a significant impact on the income of cultivators, with longer marketing patterns allowing for greater sales volumes even with smaller margins per unit. The majority of cultivators (60%) operate on a small scale with 1-4 units of floating net cages (KJA), showing the dominance of small-scale businesses in the region. To improve marketing efficiency and farmers' income, it is recommended strategies to strengthen institutions, develop market information systems, diversify and improve product quality, and facilitate wider market access.

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