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Efficiency and Performance of Different Fish Marketing Channels in Raichur District of Karnataka, India

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Authors' contributions

This work was carried out in collaboration among all authors. Author PB designed the study, collected the data, performed the statistical analysis, wrote the protocol, and wrote the first draft of the manuscript. Author SKK, Author CV and Author SBG helped in formulating the study, analyzing the data. Author BSR and Author SAC corrected the drafted manuscript. All authors read and approved the final manuscript.

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ABSTRACT

Agriculture plays a pivotal role in India's economic growth, with fish farming being one of the earliest and most critical methods of food production. Every year the production of fish has been increasing. When compared to the advancements made in fish production, India's fish marketing system is incredibly inadequate and ineffective. Hence this study tried to find efficiency of various fish marketing channels. In various marketing channels, there are several marketing intermediaries. The net returns of fish farmers will vary depending on the number of intermediaries, distance to the marketing location and exports of the commodity. Therefore, out of all the different marketing channels available in their area, farmers must select the most effective one. Hence, to find out the effective marketing channel of Raichur District the study was formulated with 120 fish farmers as respondents who belongs to community based fish farming. Results showed that, majority of the fish producers sold their produce through channel III (69.50%) even though it is less efficient marketing channel than channel I (11.55%) and channel II (18.95%) because of their nearness and convenience. Also the quantity sold was more in the same channel which was around 2876.27 kg of the total production. This research provides valuable insights into the current state of fish marketing in Raichur and offers a foundation for future studies and policy interventions aimed at optimizing the fish farming sector in India.

Keywords: Fisheries; returns; marketing channel; efficiency.

1. INTRODUCTION

In India, agriculture has a significant impact on economic growth. In addition to crops, the nation's food demands are also greatly aided by the production of fruits, vegetables, animals and fish. Fish farming is one of the oldest human endeavors in the production of livestock; humans learned to fish long before they could learn anything about agriculture. It was probably created as one of the several major production methods to stabilize food supply by the earliest farmers. Pond fish culture was first mentioned in writing 4,000 years ago in China and 2700 years ago in India [1,2].

Fish production and consumption are currently one of the main sectors of attention in India, which offers enormous potential for the expansion of the fish industry. The fishing industry has been contributing significantly to the national economy by creating jobs, increasing the availability of food, and making up 1.1% of the GDP overall and 5.1% of the GDP from agriculture. As a rich source of protein, fish is in high demand due to its nutritional benefits. India's food insecurity issue has become concerning as a result of the nation's fast growing population and declining per capita land availability. In order to meet the nutritional needs of the expanding population, farmers and policymakers are being forced by current scientific, economic, environmental, and social trends to explore for workable alternatives. In this case, fish with an average protein content of 18 to 21 percent may be the best option. The

development of underutilized and unutilized fisheries resources offers a viable solution to the global problem of malnutrition. Fish farming techniques have the ability to significantly boost the rural economy and show promise for many small farmers. In addition to being a long-standing and essential part of agriculture, fish farming is also the most effective method of producing food and has the most potential to raise the socioeconomic standing of the vast majority of rural residents who fish and raise fish. Since there exist never ending demand for fish meat, fisheries can provide a good source of reliable income for the farmers. Following China (3,9937 MT), Peru (7,878 MT), Japan (7,408 MT), Chile (6,366 MT) and the United States (5,493 MT), India is the world's sixth-largest fish producer (5,477 MT). 130882 MT of fish are produced worldwide [3].

After China, India is the world's second-largest producer of inland fisheries. The previous 50 years have seen significant advancements in Indian fisheries, with an average yearly production of 6.40 million tons. Commercial freshwater fishing activities are referred to as inland fisheries. It is carried out in lagoons, tanks, cages, pens, natural and artificial ponds, brackish coastal regions, irrigation reservoirs and canals. Fish are cultivated in a pond or other controlled setting and harvested when the appropriate size is reached in fish farming. The Indian economy greatly benefits economically from its inland fisheries. The development of inland fisheries and the growth that goes along with it can be used to address a variety of issues,

including nutrition and food supply, income and employment opportunities, investment facilitation, mosquito control and suitability for environmental education and scientific research. Millions of people work in the fishing sector and rely on fisheries in one way or another since fish are an abundant source of food. In addition to those who capture fish for commercial purposes, a sizable population works in related fields such as processing, refrigeration, preservation and the production of tools and fish equipment. When compared to other states in the nation, Karnataka ranks sixth for marine fish output and ninth for inland fish production. With inland water resources of all kinds, Karnataka is one of the wealthiest states in India and accounts for around 9.30% of all inland water resources in the country. This comprises 5.60 lakh ha of inland waterways, which are made up of 5,813 km of rivers and 2.93 lakh ha of large and small tanks and reservoirs with an area of 2.67 lakh ha. As a result, the state offers enormous potential for inland fisheries growth [3].

In community fish farming different communities participate fish raising from single pond. Most of the farmers cannot afford all the items needed for raising fish. Therefore they enter into joint ventures dividing the input required and profit made into shares [4]. The key reasons for the growth of inland fisheries have been advances in research and development, adherence to customer needs, better aquaculture policies and the transition from a traditional industry to a highly developed business. But when it comes to India's domestic fish market, it is extremely disorganized and uncontrolled, yet it has a lot of potential. Fish marketing has not received the same level of attention as fish production and for a variety of reasons, it has been ignored for a long time. When compared to the advancements made in fish production, India's fish marketing system is incredibly inadequate and ineffective. Karnataka is producing more fish than ever before and because value addition in the marketing process affects growers, distributors, retailers, consumers and farmers in particular. So, it is crucial to understand how fish is marketed [5]. Fish marketing studies are crucial for the long-term viability of fish farmers and the enhancement of their producers' share in customers rupee. The marketing and supply chain analysis of inland and community-based fish farming approaches have not received much attention in India. The National Fisheries Development Board, or NFDB, has worked very hard to create a market framework that would

boost marketing effectiveness. For this they are undertaking construction of modern fish markets which are hygienic and well appealing to consumers. One of the most important tactics for minimizing processing costs is supply chain management, which may also increase product production and quality while lowering distribution expenses. The main issues with marketing include the fish's great bulkiness and perishability, the high cost of transportation and storage, the lack of a guarantee on the quality and quantity of the product, and the wide range of prices. Farmers must carefully select the marketing channel in order to get around at least some of these obstacles and boost their net returns. In various marketing channels, there are several marketing middlemen. The proportion of customers' rupees that fish farmers receive will vary depending on the number of intermediaries, distance to the marketing location and exports of the commodity [6]. Therefore, out of all the different marketing channels available in their area, farmers must select the most effective one [7,8].

In general, no comprehensive empirical research has been carried out to determine the various supply chains and fish marketing in the Karnataka district of Raichur. In light of the foregoing, the study examined the current fish farmers' net returns, marketing efficiency and channels, market intermediaries and marketing structure in the Raichur area. It is difficult to generalize this regional result since fish is a highly heterogeneous commodity and have various marketing channels with tremendous spatial and seasonal variations in size, quantity, quality and price [9].

2. METHODOLOGY

The Ex-post-facto research design was used for this study. The study was conducted in Raichur district of Karnataka, India. Total eight villages were selected from four selected taluks based on highest number of community based fisheries farmers in the taluks. From each selected village 15 fisheries farmers who are under a fish farmers community were selected with the help of simple random sampling procedure to make up a total of 120 fisheries farmers. For studying the objective the marketing channels available within the district has been identified. Later the respondents were asked to respond to the most usual marketing channel followed by them. Then the returns of the farmers were calculated by considering the average quantity of produce sold by the farmers and average price

they received from that particular channel. Later frequency of the farmers following different channels was calculated along with the percentage [10].

Total operational cost was worked out. The gross returns, net returns and returns per rupee of investment was calculated by using the formula given below

Gross returns (Rs.) = Yield of (fishes) /acre x market price (Rs. /t)

Net returns (Rs.) = Gross returns (Rs/acre) - total operational cost (Rs. /acre)

3. RESULTS AND DISCUSSION

3.1 Accessibility of Marketing Channels in Inland Fisheries Farmers

The selection of marketing channels becomes imperative for the farmers since the real benefit accrued to them is mainly depend upon the choice of agency and channel for disposal of their produce. The channels selected by them must account for minimum marketing cost and ensure higher share of consumer's rupee. The selection of marketing channels depends upon quantity of marketable surplus available with the farmers, withholding capacity of the farmer, price structure, availability of infrastructure facilities, etc. In the study area, following three important channels were identified in marketing of pond fish.

Channel-I: Producer → Consumer.

Channel-II: Producer→ Retailer →Consumer.

Channel-III: Producer→ Wholesaler →Retailer →Consumer.

Channel I was the shortest marketing channel as the harvested fish from the producer sold directly to the ultimate consumer. Channel III was found different from other channels as the wholesaler himself bears the harvesting cost which is not found in the channels I and II. Since the harvesting cost was borne out by the producer in channel I as well as channels II, the selling price was higher in these two channels compared to

channel III. The quantity of fish sold in channel I (478 kg) was low compared to channel II (784kg) and III (2876kg). Various marketing channels followed by the fisheries farmers have been described in Table 1, Fig. 1.

From the Table 2 and Fig. 2, it is observed that channel-III was the important channel for the disposal of fishes. The 69.50 per cent of the fish producers marketed their fish in the channel-III (Producer - Wholesaler - Retailer – Consumer) with the average of Rs. 150. The 18.95 per cent of the fish producers marketed their produce in channel-II (Producer - Retailer – Consumer) with the average price of Rs. 210 and 11.55 per cent of the fish producers marketed their produce in channel-I (Producer-Consumer) with average of 230.

After the production of any farm product it is important to know the marketing channel to know the competitiveness of product in the market. According to the background research done we found three fish marketing channels in the study area constituting channel I (Producer-Consumer), channel II (Producer-Retailer-Consumer) and channel III (Producer-Whole Seller-Retailer-Consumer). Majority of the fish producers sold their produce through channel III (69.50%) and even the quantity sold was more in the same channel which was around 2876.27 kg of the total production. The quantity of produce sold varied among the channels due to the fact that fish is highly perishable in nature. Hence, farmers were interested in selling produce in bulk quantity which would reduce the loss due to highly perishable nature of fish and even the marketing cost would be minimized. As a result, majority of the farmers followed channel III (69.50%) even though it is less efficient marketing channel than channel I (11.55%) and channel II (18.95%). Marketing efficiency of channel III was less efficient due to the fact that the producer's income is divided among intermediaries. Hence, the share of producer in consumer rupee was less in channel III as compared to channel I.

Table 1. Identification of marketing channels for marketing of inland fishes in the study area (n=120)

Sl. No	Marketing channel	Respondent	Per cent
1.	Channel I (Producer – consumer)	28	23.33
2.	Channel II (Producer- retailer – consumer)	35	29.17
3.	Channel III (Producer – wholesaler - retailer – consumer)	57	47.50
Total		120	100

Note: Decimal values are rounded to its nearest value

Table 2. Quantity of inland fishes sold through fish marketing different channels in the study area (n=120)

Sl. No	Channel	Quantity sold (Kg)	Per cent	Average price (Rs.)
1	Channel I	478	11.55	230
2	Channel II	784	18.95	210
3	Channel III	2876	69.50	150
	Total	4,138	100	

Note: Decimal values are rounded to its nearest value

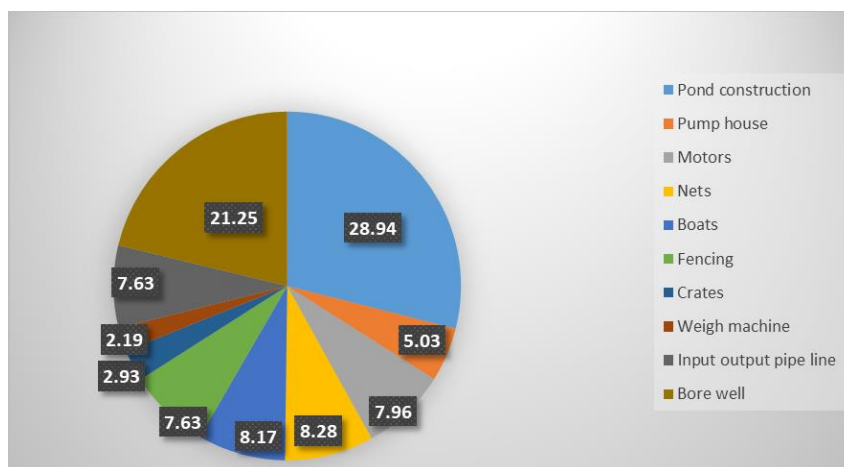


Fig. 1. Investment pattern on establishment of fish pond in study area

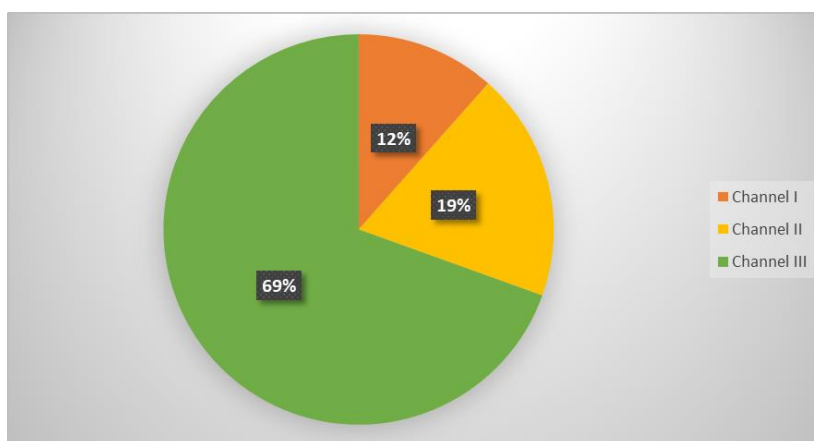


Fig. 2. Quantity of fish sold through different channels in the study area

4. CONCLUSION

The research highlights the importance of marketing channels in determining the financial benefits to fish farmers. Among the three identified channels—Producer to Consumer, Producer to Retailer to Consumer and Producer to Wholesaler to Retailer to Consumer—the majority of fish farmers (69.50%) prefer the third channel despite its lower marketing efficiency due to the involvement of multiple intermediaries. This preference is driven by the need to minimize losses from fish perishability and to reduce

marketing costs through bulk sales. The study also revealed that while channel I offers the highest average price per kilogram of fish, it is the least utilized, emphasizing the complexities and trade-offs farmers face between marketing efficiency and practical realities. The findings call for enhanced attention to fish marketing strategies to improve efficiency and maximize returns for farmers. Addressing issues such as transportation, storage and intermediary roles can significantly enhance the profitability and sustainability of fish farming in the region.

Overall, the development of inland fisheries, coupled with improved marketing frameworks, can substantially contribute to addressing nutritional needs, generating employment and boosting the rural economy. This research provides valuable insights into the current state of fish marketing in Raichur and offers a foundation for future studies and policy interventions aimed at optimizing the fish farming sector in India.

DISCLAIMER (ARTIFICIAL INTELLIGENCE)

Author(s) hereby declare that NO generative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc) and text-to-image generators have been used during writing or editing of manuscripts.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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