

# A Pilot Study on Marine Fish Distribution Channels in Maharashtra

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## Abstract

Fishing is an important livelihood activity in India. In fish production India ranks second in the world. The distribution channel for marine fish plays a significant role in marketing of fish because fish are perishable in nature. This research paper throughs light on the distribution channels, factors affecting on distribution of marine fish and understanding the effectiveness of marine fish distribution channels. Through the survey the data were gathered by purposive sampling method form Palghar district area for the study. The results revealed the two types of distribution channels; first is Fishermen - Distributor - Wholesaler or Commission Agent - Retailer – Consumer and second is Fishermen - Wholesaler / Retailer – Vendor - Consumer. Reliability of variables shows high internal consistency. KMO and Bartlett's Test results reject the null hypothesis. For understanding the problems in distributing the marine fish and effectiveness of distribution channels for marine fish the factor analysis is effective.

**Keywords:** Marine Fish Distribution Channel, Marine Fish, Marketing Channel, Distribution Channel

## 1. INTRODUCTION

Inferable from its enormous seashore of more than 8,000 km and a huge resources of streams, fisheries have consistently assumed a critical part in India's economy. Presently, fisheries area gives vocation to more than 2.8 crore individuals inside the country. All things considered; this is an area with undiscovered capacity. Export profit from the fisheries area was \$6.67 bn during 2019-20. The current spending plan has made viable strides towards tending to the difficulties and improving the capability of this area. In spite of difficulties relating to framework, the actions by the Central government in the last six years guaranteed that fisheries area kept on enlisting a yearly development pace of in excess of 10%. In 2019-20, with a general creation of 142 lakh tons, India delivered 8% of the worldwide share. During similar time, India's fisheries trades remained at Rs 46,662 crore, comprising around 18% of India's agri commodities.

Fisheries in India is a vital financial action. Fisheries is a significant sector in India- - it provides work to huge number of individuals and adds to food safety of the country. As of now, fisheries and hydroponics contribute 1.07 percent to the public GDP, and 5.30 percent to horticulture and unified exercises. It has a gigantic linkage impact in the economy with

the regressive linkage working through speculation, business and development in boat, fishing vessel and net making units and the forward linkage managing those in ice plants, cold capacity, handling, transportation, promoting, and other related exercises.

Total world populace is relied upon to reach 9.8 billion up to 2050, inferring a further press the current food assets. Fisheries area can assume an indispensable part in taking care of the rising worldwide interest for protein. The Department of Fisheries, Ministry of Fisheries, Animal Husbandry and Dairying is executing a leader conspire "Pradhan Mantri Matsya Sampada Yojana (PMMSY)- A plan to achieve Blue Revolution in fisheries area by maintainable and drastic improvement of fisheries infrastructure in India" with the budget of INR 20,050 crore for five years from the monetary year 2020-21 to 2024-25 in all India.

Olubunmi and Bankole (2012) reported that Marketing activities and distribution channels are significant attributes during the time spent getting produce from source to consumers.

The fish is perishable in nature so in the marketing and selling of the fish, channel plays a crucial role. Distribution channels are significant in marketing of marine fish because channel decisions directly affect the firms

marketing, distribution activities and profitability. This Pilot study is aimed to study the existing distribution channels and identify the factors in domestic fish distribution of the marine fisheries of Maharashtra.

## 2. RESEARCH OBJECTIVES

1. To study the distribution channels of marine fish.
2. To find the factors impacting on distribution channels.
3. To find the suitability of factor analysis for understanding the effectiveness of marine fish distribution channels.

## 3. HYPOTHESIS:

**H<sub>0</sub>:** The factor analysis is not effective for identifying the effectiveness of marine fish distribution channels.

**H<sub>a</sub>:** The factor analysis is effective for identifying the effectiveness of marine fish distribution channels.

## 5. DATA ANALYSIS AND INTERPRETATION:

### Distribution of Respondents as per Age:

Age	Respondents Number	Percentage
Below 30	9	18
31-40	16	32
41-50	14	28
Above 50	11	22
<b>Total</b>	<b>50</b>	<b>100</b>

Above table reveals that 32 % are in the age group of 31 to 40 and in the age group of 41 to 50 years are 28 %. In the age group of above 50 years are 22 % and in the age group of below 30 years are 18 %. It denotes that most

## 4. RESEARCH METHOD

This research was conducted with the objectives of studying the distribution channels, factors impacting on the distribution channels, and effectiveness of marine fish distribution channels. To fulfil the objectives, primary data was collected by using structured questionnaire. Total 50 respondents were surveyed using purposive sampling method. The present study conducted in Satpati village in Palghar District of Maharashtra in the year 2021.

Research Design: Descriptive Research – Cross sectional study

Number of Respondents for Pilot study: 50

Sampling Method: Non-probability purposive sampling

Sampling Tool: Questionnaire

Research Approach: Survey

Analysis Tool: SPSS Software

of the Respondents involved in marketing of fish at Satpati village in Palghar district are in the age group of 31 to 40 years and the persons in the age group of below 30 years are rarely involved in fish marketing in the study area.

### Distribution of Respondents as per Marital Status:

Marital Status	Respondents Number	Percentage
Married	33	66
Unmarried	17	34
<b>Total</b>	<b>50</b>	<b>100</b>

Table shows that 66 % are married and 34 % are unmarried. It divulges that married

individuals are highly involved in fish marketing at Satpati village in Palghar district.

### Distribution of Respondents as per Family System:

Family System	Respondents Number	Percentage
Joint Family	18	36
Nuclear Family	32	64
<b>Total</b>	<b>50</b>	<b>100</b>

From the table it reveals that 64 per cent belong to nuclear family and 36 per cent

belong to joint family. Thus, it is concluded that most of the Respondents in the study area are living in nuclear families.

**Type of Fishing**

Type of Fishing	No. of Respondents	Percentage
Mechanized	32	64
Motorized	14	28
Traditional	4	08
<b>Total</b>	<b>50</b>	<b>100</b>

From the table it shows that 38 per cent earn annual income of Rs.200001 to Rs.300000, 26 per cent earn annual income of Rs.100001, 14 per cent earn annual income of Rs.300001 to Rs.400001, 8 per cent earn annual income of Rs.400001 to Rs.500000, and 2 per cent earn an annual income of above Rs.500000. It reveals from the table that majority from respondents earn annual income of Rs.200001 to Rs.300000.

**Table(s) determining the Reliability Analysis for problems in selling fish**

In this study, reliability for the variables has been tested to understand the problems in selling marine fish.

**Cronbach Alpha( $\alpha$ )** is designed as a model for reliability analysis, and it can be considered as a measure of internal consistency. The internal consistency of variables is greater if the  $\alpha$  is closer to 1.

**Table No. 1:** For Determining of Problems in selling fish - Cronbach's Alpha ( $\alpha$ ) for 15 Variables

Item description	Cronbach's Alpha ( $\alpha$ )
Unavailability of Market	0.765
High Market access fees	0.806
Unavailability of transport facility	0.816
High Transportation cost	0.806
Proper Roads are not there	0.796
Unavailability of cold storage facility	0.776
Monopoly by Big fishermen in market	0.806
Fisheries co-operative society not supporting for selling of fish	0.801
Enough space in market is not available	0.786
Stringent rules by Local Govt. on selling of fish	0.779
Middlemen control the market	0.806
Middlemen over exploit the distribution channel	0.809
Fish prices increases due to more no. of middlemen in distribution channels	0.802
Inadequate market knowledge causes the improper distribution of fish quantity in market	0.786
Delay in payment by middlemen effect on fishermen's choice of distribution channel	0.808

**Table 2:** Reliability Statistics for Alpha Value for problems in selling fish

value of Cronbach's Alpha ( $\alpha$ )	No. of Items
.796	15

**Inference:** From the table 2, it shows the value of Alpha ( $\alpha$ ) is 0.796. The value of Cronbach's Alpha ( $\alpha$ ) is close to 0.8, So we can infer that the variables are having high internal consistency

**Table(s) determining the Reliability Analysis for factors determining the distribution of fish**

In this study, reliability for the variables has been tested to determine the effectiveness of distribution channels for fish.

**Table 3:** For determining the effectiveness of distribution channels for fish - Cronbach's Alpha ( $\alpha$ ) for 30 Variables

Item description	Cronbach's Alpha ( $\alpha$ )
Age of Fish producer	0.778
Gender of Fish producer	0.786
Level of Education	0.802

Household size (Number)	0.764
Experience of Fish producer	0.777
Access to credit	0.804
Access to market information (Demand & Price)	0.786
Access to transport facility	0.808
Affordability of transport facility	0.793
Distance to market (Km)	0.808
Experience in selling of fish (Years)	0.818
Location of market (Vicinity of Consumer)	0.776
Price of Fish	0.781
Cold storage facility	0.771
Govt. support for transportation of fish	0.816
Govt. support in marketing of fish	0.811
Market access fees	0.786
Species wise demand information	0.805
Training on fish preservation	0.765
Training on marketing of fish	0.778
Financial support by Govt.	0.793
Mutual understanding between channel members	0.804
Value addition of fish	0.807
Subsidy on taxes by Govt.	0.782
Membership of Fisheries Coop. Soc.	0.803
Training on increasing shelf life of fish	0.789
Information of Consumer preferences / demand	0.801
Co-ordination between channel members	0.808
Fish Quantity to transport at a time	0.798
Cost of Marketing	0.763

**Table 4:** Reliability Statistics for Alpha Value for determining the effectiveness of distribution channels for fish

Value of Cronbach's Alpha ( $\alpha$ )	No. of Items
.791	30

**Inference:** From the table 4, it shows the value of Alpha ( $\alpha$ ) is 0.791. The value of Cronbach's Alpha ( $\alpha$ ) is close to 0.8, So we can infer that the variables are having high internal consistency

#### Factor Analysis - problems in the distribution of fish

#### KMO and Bartlett's Test of hypothesis

For Factor analysis KMO and Bartlett's Test for hypothesis is an inbuilt statistical measure. The value of Kaiser-Meyer-Olkin Measure of Sampling Adequacy should be always more than 0.5 and the significance level should be less than 5%.

**Table 5:** Hypothesis testing test - KMO and Bartlett's Test (factor analysis)

Sampling Adequacy - Kaiser-Meyer-Olkin Measure	0.507
Chi-Square Value - Bartlett's Test of Sphericity	285.962
Degrees of freedom	47
Level of Significance	0.000

**Source: primary data**

**Inference:** The significance (0.00) is less than the assumed value (0.05) shown in the table 5. The value of KMO measure has been observed as 0.507 which was more than 0.5. Based on

this KMO measure, it can be revealed that the factor analysis for data summarization is effective for understanding the problems in distributing the fish.

**Table 6: Matrix of Rotated Component (factors number deciding)**

[The extraction method used is Analysis of Principal Component through the Method of Rotation: Varimax with Kaiser Normalization]

Item description	Components	
	1	2
Unavailability of Market	0.803	0.321
High Market access fees	0.262	0.462
Unavailability of transport facility	0.798	0.007
High Transportation cost	0.777	0.347
Proper Roads are not there	0.745	0.307
Unavailability of cold storage facility	0.744	0.486
Monopoly by Big fishermen in market	0.245	0.729
Fisheries co-operative society not supporting for selling of fish	0.284	0.789
Enough space in market is not available	0.788	0.343
Stringent rules by Local Govt. on selling of fish	0.711	0.314
Middlemen control the market	0.377	0.808
Middlemen over exploit the distribution channel	0.252	0.802
Fish prices increases due to more no. of middlemen in distribution channels	0.307	0.792
Inadequate market knowledge causes the improper distribution of fish quantity in market	0.265	0.781
Delay in payment by middlemen effect on fishermen's choice of distribution channel	0.314	0.769

**Source: primary data**

### Interpretation

The two factors can be categorized from the Table 6 of Rotated Component Matrix are as follows:

#### FACTOR 1

- Unavailability of Market
- Unavailability of transport facility
- Enough space in market is not available
- High Transportation cost
- Proper Roads are not there
- Unavailability of cold storage facility
- Stringent rules by Local Govt. on selling of fish

#### Factor 2

- Middlemen control the market
- Middlemen over exploit the distribution channel
- Fish prices increases due to more no. of middlemen in distribution channels
- Fisheries co-operative society not supporting for selling of fish

- Inadequate market knowledge causes the improper distribution of fish quantity in market
- Delay in payment by middlemen effect on fishermen's choice of distribution channel
- Monopoly by Big fishermen in market

#### The factors are restated as follows:

Factor one – Infrastructure Factors

Factor two – Middlemen Factors

From the above Factor analysis, it shows that Infrastructure Factors and Middlemen Factors are highly significant in understanding the problems in the distribution of fish.

#### Factor Analysis for the effectiveness of distribution channels of fish

Factor Analysis has been used to classify in understanding the effectiveness of distribution channels of fish

#### KMO and Bartlett's Test of hypothesis

KMO and Bartlett's Test of hypothesis is an inbuilt statistical measure in Factor analysis. The value of Kaiser-Meyer-Olkin Measure of Sampling Adequacy should be always more than 0.5 and the significance level should be less than 5%.

**Table 7: Hypothesis testing test - KMO and Bartlett's Test (factor analysis)**

Sampling Adequacy - Kaiser-Meyer-Olkin Measure	0.542
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Chi-Square Value - Bartlett's Test of Sphericity	1685.729
Degrees of freedom	136
Level of Significance	0.000

Source: primary data

### Interpretation

The significance (0.00) is less than the assumed value (0.05) shown in the table 7.

The value of KMO measure has been observed as 0.542 which was more than 0.5. Based on

### Table 8: Matrix of Rotated Component (factors number deciding)

[The extraction method used is Analysis of Principal Component through the Method of Rotation: Varimax with Kaiser Normalization]

Item description	Components	
	1	2
Age of Fish producer	0.178	0.007
Gender of Fish producer	0.127	0.347
Level of Education	0.245	0.707
Household size (Number)	0.044	0.486
Experience of Fish producer	0.045	0.729
Access to credit	0.184	0.759
Access to market information (Demand & Price)	0.768	0.343
Access to transport facility	0.701	0.326
Affordability of transport facility	0.777	0.308
Distance to market (Km)	0.152	0.302
Experience in selling of fish (Years)	0.707	0.292
Location of market (Vicinity of Consumer)	0.285	0.771
Price of Fish	0.114	0.709
Cold storage facility	0.74	0.355
Govt. support for transportation of fish	0.804	0.362
Govt. support in marketing of fish	0.814	0.258
Market access fees	0.018	0.782
Species wise demand information	0.394	0.162
Training on fish preservation	0.139	0.722
Training on marketing of fish	0.198	0.765
Financial support by Govt.	0.812	0.395
Mutual understanding between channel members	0.745	0.311
Value addition of fish	0.404	0.03
Subsidy on taxes by Govt.	0.148	0.789
Membership of Fisheries Coop. Soc.	0.172	0.155
Training on increasing shelf life of fish	0.803	0.054
Information of Consumer preferences / demand	0.451	0.761
Co-ordination between channel members	0.396	0.798
Fish Quantity to transport at a time	0.329	0.303
Cost of Marketing	0.257	0.785

Source: primary data

### Interpretation:

From the Table 8 of Rotated Component Matrix, the two factors can be categorized as follows:

#### Factor 1:

this KMO measure, it can be revealed that the factor analysis for data summarization is effective for identifying the effectiveness of distribution channels for fish.

- Govt. support in marketing of fish
- Financial support by Govt.
- Govt. support for transportation of fish
- Training on increasing shelf life of fish

- Affordability of transport facility
- Access to market information (Demand & Price)
- Mutual understanding between channel members
- Cold storage facility
- Experience in selling of fish (Years)
- Access to transport facility

### Factor 2

- Co-ordination between channel members
- Subsidy on taxes by Govt.
- Cost of Marketing
- Market access fees
- Location of market (Vicinity of Consumer)
- Training on marketing of fish
- Information of Consumer preferences / demand
- Access to credit
- Experience of Fish producer
- Training on fish preservation
- Price of Fish
- Level of Education

### The factors are restated as follows

Factor one – Support Factors

Factor two – Market Factors

From the above Factor analysis it shows that Support Factors and Market Factors are highly significant in understanding the effectiveness of distribution channels for fish.

## 6. RESULTS AND DISCUSSION:

### Distribution Channels

Distribution Channels referred as the network which product deliver from producers to consumers.

A distribution channel is a gathering of relied upon one another association units, which are partaking in course of stream of items or products from producers to consumers, Szopa P. (2012). In the Palghar district, mainly two types of channels were found, Fishermen - Distributor - Wholesaler or Commission Agent - Retailer - Consumer. The other channel

found is Fishermen - Wholesaler / Retailer - Vendor - Consumer.

### Channel - 1

Fishermen - Distributor - Wholesaler or Commission Agent - Retailer - Consumer

### Channel - 2

Fishermen - Wholesaler / Retailer - Vendor - Consumer

In the study area fishermen were used primary distribution channel for selling of the fish. The Koli community is engaged in the catching the fish from coastal area of Palghar District. Most of the fishermen owns boat and some were hired the boat from the nearby area and catch the fishes. Their majority time was spent on catching the fish, thus they sale their produce to commission agent or wholesaler. Those having small boat for catching the fish, they sale directly to the consumer for their livelihood.

Reliability has been tested for the variables understanding the problems in selling fish and variables determining the effectiveness of distribution channels for fish. The value of Alpha ( $\alpha$ ) is 0.796 and 0.791 respectively. Both the values of Cronbach's Alpha ( $\alpha$ ) are near to 0.8 so it presume internal consistency of the factors are high.

In this study the null hypothesis is taken as "The factor analysis is not effective for identifying the effectiveness of marine fish distribution channels." Hypothesis testing test - KMO and Bartlett's Test is an inbuilt statistical measure in Factor analysis. The value of Kaiser-Meyer-Olkin Measure should be always more than 0.5 for Adequacy of Sampling.

The value of KMO measure in the table no. 5 and 7 has been observed as 0.507 and 0.542 respectively. which was more than 0.5. Based on this KMO measure, it can be revealed that the factor analysis for data summarization is effective for understanding the problems in distributing the fish and for identifying the effectiveness of distribution channels for fish. Hence the rejected hypothesis is null hypothesis, and the accepted hypothesis is alternate hypothesis which is "The factor analysis is effective for identifying the effectiveness of marine fish distribution channels."

The Factor analysis shows the Infrastructure Factors and Middlemen Factors are profoundly significant in understanding the problems in the distribution of marine fish whereas Support Factors and Market Factors are profoundly significant in understanding the effectiveness of distribution channels for marine fish.

## 7. CONCLUSION

The present study shows there were mainly two types of channels found, first is Fishermen - Distributor - Wholesaler or Commission Agent - Retailer - Consumer and second is Fishermen - Wholesaler / Retailer - Vendor - Consumer. Reliability has been tested for the different factors which shows internal consistency is high for the factors. KMO & Bartlett's Test used for testing the hypothesis. The test results reject the null hypothesis, it revealed that the factor analysis is effective for understanding the problems in distributing the fish and for identifying the effectiveness of distribution channels for fish.

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