

VALUATION OF FISH ACROSS THE SUPPLY CHAIN

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Definition

Valuation of fish includes assigning monetary value to the produce across the locations where it land .The valuation attains significant changes owing to the place, form, time and type of product. Economic valuation provides a means for measuring and comparing the various benefits of fisheries resources. Economic impact assessment, through monitoring landing centers and fish markets to estimate output volume and value based on prices.

Utility

Valuation provides an insight into the price realized at the different levels of fish marketing. The valuation takes into account the numerous complexities involves in the spatial, temporal and species. The valuation of landings also provides an idea on the revenue generated by the fish across the value chain. It requires relatively little data and no formal sampling. It has good potential for reliability and scaling-up and requires comparatively little time for processing data. Demands on local capacity are modest, and expertise may be strengthened quickly with relatively simple training.

Data set required

Quantity of fish traded across the landing centres (point of first sale) and retail centers (point of last sale) across time periods with its prices realised .

Methodology

The methodology adopted for the arriving at the valuation of the fish across the different point of sales involves the following steps.

Step I-Sampling design

Step II-Developing schedules

Step III-Data collection

StepIV-Analytical Tools

Step I-Sampling design

India has a coast line about 8219km. Marine fish landings take place almost all along the coastal line throughout the day and sometimes during night. According to marine fisheries census 2010, there are 3288 fishing villages scattered along the coast line from where fishermen go for fishing and return to a landing centre which may be distinct from the fishing village. There are 1511 landing centres scattered along the coastline of the main land. Under these conditions collection of data by complete enumeration is expensive and time consuming, so from each maritime state, sample landing centres are selected based on the proportion of landings and the nearby retail markets were selected for collection of data. These centers could change based on the quantum of landings and relevance.

Step II-Developing schedules

There are schedules developed the collection with a vernacular support for data entry at field level called MAP (market price) and the prices released according to size are collected using a manual developed. The data are tabulated and processed

Step III -Data collection

Trained field staff was deployed on a weekly/ fortnightly basis to collect data on prices and count of different species from selected landing centres and retail markets. The mean prices across seasons and year are computed to arrive at the valuation estimates. In arriving at valuation estimates the prices realized and are considered outliers due to abnormal supply / demand were denoted in the schedules and often not considered while arriving at mean prices.

Step IV -Analytical Tools

Conventional tabular, percentage and ratio analysis could be used wherever necessary. The other analytical concepts used are described below.

A) Valuation of marine fish landings

The growth and development of fisheries sector greatly depends on the revenue or income earned from the sector and the income earning potential in the future. The gross revenue earned from the marine fish landings at maritime state level and national level were worked out separately. The valuation was done at two points namely landing centre level and retail centre level. Also we have four layers of valuation namely Valuation of Species (VS_i), Periodic wise valuation (VP_j), Location wise valuation (VL_k) and Aggregate State/ Country valuation (V)

1. Valuation at species level

Let S_{ijk} denote species i of j^{th} period at k^{th} location, then

$$VS_i = \sum_{j=1}^m \sum_{k=1}^l VS_{ijk} \quad ; i=1,2,\dots,n(\text{species})$$

Where $VS_{ijk} = Q_{ijk} * P_{ijk}$; $j=1,2,\dots,m(\text{months/week})$
 $k=1,2,\dots,l(\text{state/centres})$

Q_{ijk} is quantity of species i in j^{th} period at k^{th} location and

P_{ijk} is price of species i in j^{th} period at k^{th} location

2. Valuation at Location level

$$VL_k = \sum_{i=1}^n \sum_{j=1}^m VS_{ijk} \quad ; k=1,2,\dots,l(\text{locations})$$

3. Valuation at periodic level

$$VP_j = \sum_{i=1}^n \sum_{k=1}^l VS_{ijk} \quad ; j=1,2,\dots,m(\text{periods})$$

4. Valuation at Aggregate level

$$V = \sum_{i=1}^n \sum_{j=1}^m \sum_{k=1}^l VS_{ijk}$$

Work out example

Given below are tables representing the data set on the quantity of fish landed and traded across the point of first sales during 2014 and 2015 across the coastal states.

Table 2- Valuation of aggregate marine fish landings representing location and periodicity

Landing Centre Valuation						
Location	Period 2014			Period 2015		
	Quantity (t)	Aggregate Average price of all species (₹)	Total species valuation (crores)	Quantity (t)	Average price of all species (₹)	Total species valuation (crores)
Andhra Pradesh	3,41,699	69.86	2387	295,052	103.30	3,048
Gujarat	7,11,930	83.74	5962	721,549	97.39	7,027
Karnataka	4,74,076	75.20	3565	442,693	104.29	4,617
Kerala	5,75,644	121.86	7015	482,499	198.43	9,574
Maharashtra	3,44,648	96.19	3315	264,891	174.64	4,626
Tamilnadu	6,65,858	70.60	4701	709,337	79.43	5,634
Goa	1,53,230	55.80	855	68,561	154.61	1,060
Puducherry	65,393	17.59	115	79,148	24.01	190
West Bengal	76,536	136.15	1042	1,18,650	102.82	1,220
Orissa	1,38,722	160.03	2220	1,41,120	175.74	2,480
Daman Diu	46,097	124.30	573	81,271	76.29	620
Total	35,93,835	88.35*	31,750	34,04,771	117.76*	40,095

*Average price

Table 2- Valuation of oil sardine landings (species level) in India during the year 2014 - 2015.

Location	Period 2014			Period 2015		
	Q _{ijk} (tonne)	P _{ijk} (₹)	VS _{ijk} (crore)	Q _{ijk} (tonne)	P _{ijk} (₹)	VS _{ijk} (crore)
Kerala	1,55,087	45.01	698	68431	65.03	445
Karnataka	143,494	43.97	631	43489	49.67	216
Maharashtra	30,039	54.93	165	16841	72.44	122
Tamilnadu	77,409	21.06	163	87553	22.04	193
Andhra Pradesh	11,957	18.40	22	23622	27.09	64
Odisha	582	68.73	4	406	73.89	3
Gujarat	6,891	21.77	15	2053	29.23	6
West Bengal	40	70.00	0.28	NA	NA	0
Goa	1,22,046	39.98	488	16212	49.96	81
Total	5,47,545	39.92*	2,186	2,58,607	43.65	1,129

*Average price computed based on total valuation and landings

Interpretation of results

The Table I indicate the average price realized across the states and is computed for estimating the valuation of landings at the point of fist sales. It has been found that

Suggested Readings / References

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