MARKETING OF MARINE FISHRIES IN INDIA with SPECIAL REFERENCE TO VISAKHAPATNAM COAST OF ANDHRA PRADESH, INDIA

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Abstract
An attempt is made in this study to analyse the existing marine fisheries marketing system in India with special emphasis on Visakahapatnam coast of Andhra Pradesh, East coast of India. This study has been carried out with a sample of 180 Mechanised Fishing Boat Operators (MFBOs) operating from Visakhapatnam fishing harbor in the East coast of India. Primary data on select variables relating to the marketing of marine fisheries is collected by means of a well-structured Schedule. The selected variables are Quantum of catch (produce) per voyage, grading of the catch, pricing mechanism, role of the market intermediaries, channel types and the problems of MFBOs in marketing of their catch. The conclusions have been highlighted which will be useful to formulate constructive policies to enhance the profitability as well as economic status of MFBOs in Visakhapatnam coast of India.

I. Introduction
'Fishing Communities' are considered as one of the most backward sections of the Indian society. Data or information on economics and marketing activities of different fishing boat operators forms a good database for effective management of this economically backward sector with proper management and operational policies and plans. Mechanised fishing boat operations were first introduced in late fifties in Andhra Pradesh and developed at fast pace during late sixties and seventies of the previous century, when both the central and state governments announced a special scheme to provide boats on subsidy. This scheme became a great success in the East coast of India. After that, the Visakhapatnam Fishing Harbor came into existence during 1976-77 with financial assistance from the World Bank. Initially the fishing harbor was designed to accommodate only for 15 large fishing vessels and 200 mechanized boats. At present it can accommodate around 100 fishing vessels and 600 different varieties of mechanized boats.The fishing fleet of Visakhapatnam is categorized into **'Three'** types according to the potential distance of their operation and duration of the voyage in the sea. They are (i) Traditional or Artisan sector operating in the shores water with or without outboard engine (ii) Small mechanized sector consisting of small trawlers (32 to 42 footer with 60 to 110 hp engines) and purseseines (40 to 48 footers with 120 HP engines) and (iii) Large vessels designed to operate the high seas. In this study, only the second category, i.e., mechanized fishing boats were selected due to their contribution in terms of both volume (80%) and value (80%) of the total marine catch of the Visakhapatnam coast.

Study Area
 Visakhapatnam District is one of the North Eastern coastal districts of Andhra Pradesh, India and it lies between 17°15 minutes and 18°32 minutes Northern latitude and 18° 54 minutes and 83° 30 minutes East longitude (Annexure - I). The MFBOs are permitted to operate their boats up to Chennai towards South and to Kolkota towards North. Depending on their experiences they usually move either towards south or north. However main concentration will be in and around Visakhapatnam only. The major fishing grounds in and around Visakhapatnam are Pentakota, Pudi Madika, Visakhapatnam, Bhimunipatnam, Konada, Chintapalli, Kalingapatnam, Bhavanapadu, Poondi and Bharuva. When enquired about their preferential fishing areas, more than 90% of both the type of boat operators expressed that, they concentrate in Visakhapatnam, Kalingapatnam

II. Methodology
Objective of the Study
 In Visakhapatnam Fishing Harbor, many types of specialised mechanized fishing boats were famous till 80's namely Pablo, Pomfret, Royya, Sorra, Jalaja, Dolphin, which are seen now only in single digit. The only two

types namely Sona and Sorra type are now being in extensively operational. Hence, the study is concentrated mainly on Sona and Sorra types of Mechanized Fishing Boat Operators (MFBOs). The main objective of the study is to analyse the marketing activities of MFBOs in Visakhapatnam coast. This includes the quantum of catch (produce) per voyage, grading of the catch, pricing mechanism, role of the market intermediaries, channel types and the problems of MFBOs in marketing of their catch.

Selection of the Sample
According to the records of the Visakhapatnam Port Trust and Visakhapatnam fishing harbor, there are 600 mechanised fishing boats. Out of this, 450 are of Sona type and 150 are of Sorra type. For the present study a sample of 120 Sona type MFBOs and 60 Sorra type MFBOs are selected randomly in different time periods during 2013-14.

Data Collection
In this study both the primary and secondary data are used. Primary data and Information on select variables are collected by means of a well-structured Schedule. The schedule is revised after conducting a test trail of sample of 30 MFBOs.

Analysis
The entire data is coded and computerized in Excel format and Statistical Package is used to obtain Bivariate Frequency Tables. Further, Chi-Square Tests are used wherever found necessary.

III. Results and Discussion
Fish Marketing System
Fish marketing system may be defined as all those activities involved from the point of catching of fish to the point of final consumption. The price efficiency is concerned with improving the operations of buying, selling and other connected aspects of marketing process so that it will remain responsive to consumer behaviour. Marine fish marketing system in Visakhapatnam coast can be developed as a multistage model.

Stage 1: Quantum of catch (produce) by MFBOs per voyage.

Stage 2: Grading of the catch i.e., separating the entire catch into different categories of products (P1, P2 andP3) where Product category 1 (P1) – Exportable, high quality and high value prawn, Product category 2 (P2) – High quality and high value marine fish (exportable) and Product category 3 (P3) – low quality and trash (low priced) fish.

Stage 3: Selling activity, Price fixation and fixing of P1 price by different agencies like Marine Products Exports Development Authority and Association of Marine Fish Exporters in Visakhapatnam.

Stage 4: Entry of commission agents and exporters in determining the prices of P1 and P2 categories of catch (price fixed by the authorized agencies – commission charged by the intermediaries).

Stage 5: Market actors: Wholesalers/ Vendors/ Fishermen/Fisherwomen.

Stage 6: Consumer.

Singh, Chhotan and A.K. Vasisht (1994), Shrivastava and Randhir(1995) explained the price characteristics of agricultural marketing and fish marketing system in India and Mr.Sathiadhas(1981)considered only fishermen-auctioneer-agent-consumer as different stages in marketing system in his study. In this article an attempt is made to analyse the quantum and price differences of each categories of marine catch (P1, P2 and P3), time schedule taken by the MFBOs to sell their catch, processing and selling activity, market place and market intermediaries,

preferential attitudes of MFBOs towards intermediaries, terms and conditions of payments, opinions of MFBOs regarding price fluctuations and its determining factors.

Stage 1: Quantum of catch (produce) by MFBOs per voyage
1.1. Classification of Marine Fish Catch

1.2. A close examination of the species-wise landings indicates that themarine catches of Andhra Pradesh arecharacterized by the presence of a large number of species. They were divided broadly into two main groups. (a) Pelagic, the type of fish that is found on the surface or in the upper layers of the open sea. (b) Demersal, the types of fish that live near the bottom of the sea. The Important pelagic group of fish in Andhra coast comprise of Chiro-Centrus, Oil Sardine, Other Sardines, Hilsa, Anchovies, White Bait, Other Clupeodids, Robbin fish, Carangids, Mackerel and Seer Fish etc. The important demersal group of fish in Andhra Coast comprises of Elasmobranchs (Sharks, skates and rays),Eels, Cat fishes, Per ches, Polynemids, Sciaenids, Silver bellies, Pomfrets, Prawns, DecapterusSp, NemipterusSp, PsenesSP, Lizard fishBombay Duck and Flat fish. On the basis of the pelagic group and demersal group of marine fishes, the entire marine fishing catch (Product mix) of the MFBO's in the Visakhapatnam fishing harbor is divided into four broad categories, namely, P1, P2, P3, and P4.

1.3. Product Mix of Marine catch
Data relating to distribution of MFBOs according to annual total volume and value of the catch per boat on an average for different products P1, P2 and P3 (Product mix) and type of boat are presented in table -1.

Table -1,Distribution of MFBOs according to annual total volume and value of the catch per Boat on average for different category of products P1, P2 & P3 and Type of Boat

Product Category	Boat Type	Quantity (Kg.)	Price (Rs.)	Value (Rs.)
P1	Sona	2288	335	766480
	Sorra	2016	317	639072
	Total	2286	329	752094
P2	Sona	6928	56	387968
	Sorra	6951	54	375354
	Total	7200	55	396000
P3	Sona	8912	12	106944
	Sorra	9681	10	96810
	Total	9450	11	103950

Source: Survey data.

It can be seen from table -1 that, the quantity of P1 variety of marine catch is significantly higher in Sona type of MFB than Sorra type of MFB while that of P_3 variety of marine catch is higher in Sorra than Sona type of MFB. However, there is no significant difference in P2 variety. Regarding value of product mix per mechanized boat; it is significantly higher in Sona type than in Sorra type in P1 category of product and the degree of difference is not significant in the other two categories of products. It is to be noted here that the average price of marine catch in all categories of products is higher in Sona type of MFBO'S than the Sorra type of MFBO'S. This is due to the quality, size and variety of the product

Stage 2: Grading of the Catch
2.1. Product line-1(P1): Products, Price and Value
This category of marine fishes mainly consists of demersal group of fish, namely, Prawns, (White, Brown, Tiger, Flower, Scampi and Shrimps). It can be seen from table -2 that, the average P1 volume per voyage is 143 kgs in Sona type and 96 kgs in Sorra type of boat operations. The average P1 volume for both the types of boats comes to 127 kgs. The Average price of P1 variety of marine catch received by Sona MFBO's is Rs.335 per kg and and Sorra MFBOs is Rs.317/-and both together received an average price of Rs.329/- per kg. Further it is noted that, the value of the marine catch is derived by two major components. They are (a) volume of the catch and (b)

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price of the catch. The average total value of the P1 variety of marine catch per voyage is Rs.47, 905/- by Sona type of MFBO's and Rs.30,432/- by Sorra type of MFBO's. Both put together the average value is Rs.41,783/-.

Table -2,Distribution of MFBOs according to the volume and value of the catch per Voyage on average for different category of products P1, P2 & P3 and Type of Boat

	Determinant	Volume(KGs)	Price Per KG(Rs)	Value(Rs)
P1	Sona	143	335	47, 905
	Sorra	96	317	30,432
	Average	127	329	41,783
P2	Sona	433	56	24,248
	Sorra	331	54	17,874
	Average	400	55	22, 000
P3	Sona	557	12	6,684
	Sorra	461	10	4,610
	Average	525	11	5,775

Source: Survey data.

These differences in the value of P1 are mainly due to the voyage period and also availability of good quality of marine species. The calculated chi-square value (with Yates correction) is 19.84 and is found to be statistically significant at 1% level. Further the coefficient of association is 0.69.

2.2. Product line-2(P2) Products, Price and Value
This category consists of different varieties boththepelagic and demersal groups, viz., Tuna, Sheerfish, Pomfrets, Sharks, Sardinella gibbosa, caranx, cuttlefish, white-bats, Hilsakelee, Bombay duck, Flatfish, Perches and Mackerel, etc. The average P2 volume per voyage is 433 kgs in Sona type of boat and 331 kgs in Sorra type of boat. Both put together the total average of P2 volume per voyage comes to 400 kgs. The calculated chi-square value (with Yates correction) is 20.07 and is found to be statistically significant at 1%level, further the coefficient of association is 0.65. Irrespective of type of boat, all the sampled MFBO's sell their P2 variety of marine catch at the price range between Rs.54/- and Rs.56/- per kg. There is no much significant difference in the prices of P2 variety between both the types of boat operators. The average total value of P2 variety of marine catch per voyage is Rs.24,248/- in Sona type of boat operators and Rs.17,874/- in Sorra type of boat operators. Both put together the average value of P3 variety comes to Rs.22, 000/- per voyage. This difference is mainly due to the variety of fish catch, and its quality and size. The calculated chi-square value (with Yates correction) is 16.52 and is found to be statistically significant at 1% level. Further, the coefficient of association is 0.61.

2.3. Product line-3(P3) Products, Price and Value
This category consisting of Low grade Prawn, Sheerfish, Rainbow Runner, Reefcod, Scads, Goatfish, Ribbonfish, Rays, Lizardfish, Indian Pellona and Whitebites, etc.The average P3 volume per voyage is 557 kgs. In Sona type of boat and 461 kgs. in Sorra type of boat. Both put together the average volume comes to 525 kgs. The difference is mainly due to (a) preservation of ice, (b) variety of marine fish, (c) size and quality of the catch. The calculated Chi-square value (with Yates correction) is 10.39 and is found to be statistically significant at 1% level. Further the coefficient of association is 0.51. There is no much significant difference in the prices of P3 variety of marine catch. All the sampled mechanised boat operators sold their P3 variety at a price ranges between Rs.10/- and Rs.12/- per kg. The main factors determining the price of P3 variety of marine catch are, Freshness of the stock, Variety of the fishes in the stock, Market demand, Supply of these varieties in the Visakhapatnam fishing harbor. The average total value of P3 variety of marine catch per voyage is Rs.6,684/- in Sona type of and Rs. 4,610/- in Sorra type of MFBOs . Both put together the average value of P3 variety is Rs.5,775/-. The calculated chi-square value (with Yates correction) is 36.34 and is found to be statistically significant at 1% level. Further the coefficient of association is 0.85.

2.4. Product line-4 (P4)) Products, Price and Value

This category consisting of low grade and low qualityfish from both the pelagic and demersal groups which is used to prepare fish meal and poultry feed which has low economic value. The money they get from these products is negligible. Hence it's not included in this analysis.

2.5. Total Value of the Catch per Voyage

The total value of the catch per voyage is obtained by multiplyingthe volume of catch of each type of product lines with its price for which it is sold by the mechanized fishing boat operators. The value of the catch per voyage on an average for the MFBO's comes to Rs.78,837/- in the case of Sona type, Rs.52,916/- in the case of Sorra type and Rs.69,558/- in the case of both the type of boat operators. The calculated Chi-square value (with Yates correction) is 18.55 and is found to be statistically significant at 1% level. Further the coefficient of association is 0.66.Since frequency of voyages differs significantly, the total value of the catch per annum is estimated taking into account, the frequency of voyages and the product mix. However, the price is considered uniform.

2.6. Annual Total Value of the Catch

The total value of the marine catch per annum is obtained by multiplying the value of the catch per voyage of each type of boat with the number of voyages made by the different MFBO's per year. The total value of the catch per year on an average for the boat operators comes to Rs.11,67,362/- in the case of Sona type, Rs.10,56,410/- in the case of Sorra type and it is Rs.11,30,378/- in the case of both types. The calculated chi-square value (with Yates correction) is 20.32 and is found to be statistically significant at 1% level. Further the coefficient of association is 0.67.

2.7. Profit Per annum

In the mechanized fishing boat operations, most of the capital is their own or borrowed from commission agents. The commission agents discount the price by Rs.30-40 per kg of P_1 variety of catch over the actual market price. Hence interest charges do not come in to existence either for the fixed capital or variable capital. Therefore the calculation is being done as the differences between the total estimated net return per annum and the estimated variable cost (Annexure - II) to get the profit. Thus in interpreting the profit /loss of MFBO's in Visakhapatnam, the point to be noted is that no amount has been deducted towards imputed cost of capital in the case of own and interest on the fixed or the variable costs. For those who have contributed more from their own funds, profits may be an overestimate since imputed cost of capital has not been deducted and for those who borrowed more from commission agents, profit may be an under estimate as the commission charges will be much higher than the interest rates. Since this practice is going on for years in this field, profit is simply defined as the revenue minus variable costs, i.e., Receipts minus Expenditure on variable costs. The average profit per annum is Rs.1,41,000 in the case of Sona MFBOs and Rs.80,0000/- in the case of Sorra MFBOs. The calculated Chi-square value (with Yates correction) is 0.9689 and is not found to be statistically significant at 1% level.

Stage 3: Selling Activity

3.1. Time schedule to sell the Marine Catch (Product Mix): Distribution Information is elicited regarding with in how many days the product is sold after returning from the voyage from both types in MFBOs. Data relating to the distribution of MFBOs according to the time schedule to sell the marine catch and type of boat are presented in table -3.

Table -3,Distribution of MFBOs according to the time to sell the catch and type of boat

Product Category	Boat Type	Within one day	Within three days	Total
P1	Sona	92(81.67)	28(23.33)	120(100.00)
	Sorra	49(61.67)	11(23.33)	60(100.00)
P2	Sona	56(46.67)	64(53.33)	120(100.00)
	Sorra	23(38.33)	37(61.67)	60(100.00)
P3	Sona	30(25.00)	90(75.00)	120(100.00)
	Sorra	14(24.44)	46(75.56)	60(100.00)

(Figures in the brackets are percentage to totals)   (Source: Survey data)

It can be seen from table -3 that, all the MFBO'S irrespective of the type of Boat sell their entire product mix with in 2 or 3 days after voyage on return to the Visakhapatnam fishing harbor. It is observed that about 75 per cent of MFBO'S in both the types of boats are selling P1 variety of catch on the same day itself to the different market intermediaries like commission agents, exporters in the fishing harbor or exporters outside the fishing harbor. Due to high value and fixed price structure, most of the MFBO'S are selling this variety of marine catch with in one day.

However the entire P1 catch is graded on the basis of size, weight and variety of the prawn/shrimp. Processing and grading will be done during their return in the boat itself and it will be checked by commission agents before purchase. Sometimes this variety is sold after removing the head of the prawn. This is called headless prawn which has high monetary value in international market Though it has high export value, no MFBO or association is engaged in the exports of this variety of marine catch. Further it is observed that more than 50% of the MFBOs in both the types of boats usually store the P2 variety of marine catch for 2 or 3 days to get a good price in the auction. Similarly around 75% of MFBOs in both the categories expressed that P3 variety is not sold immediately but stored for 2 or 3 days in the boat to get good price through auction. Furthermore, P3 varieties of marine fish have been graded according to the fish variety and the price fixed through auction in bulk or sometimes in weight with pre-fixed rate. All the Sorra MFBOs and 86% of Sona MFBOs sell the product immediately through auction.

3.2. Selling Activity – P1/P2&P3
It is observed that irrespective of the type of boat and variety of catch, the maximum storage period of the catch is 3 days, After 4 or 5 days they start for the next voyage. It is also observed that none of the sampled MFBOs directly export the marine catch to other states or countries. All the sampled MFBOs in Visakhapatnam fishing harbor are selling their marine catch to the market intermediaries only. This is also more or less true in the case of P2 variety of marine catch (high quality and exportable fish). But in the case of P3 variety, the product is sold immediately through auction by all the Sorra type MFBOs and 86 per cent of Sona type of MFBOs. None of the sampled MFBOs processed their P2 and P3 variety of fish before selling.

3.3. Place to sell the catch – P1, P2&P3
After the boat returns to the Visakhapatnam Fishing Harbour from the voyage, the marine catch is sold in different places like local markets in the city, harbor markets, exporter's agents in the fishing harbor and directly to exporters outside the fishing harbor. Data relating to market place of the marine catch, type of boat and variety of products are presented in table -4.

Table – 4,Preferential Attitude of MFBO'S towards selling of different varieties of products to different intermediaries

Product Category	Boat type	Place of Selling the Catch				Total
		Local Markets	Fishing harbor market	Direct Exporter's agents in the harbor	Commission Agents in the Harbour	
P1	Sona	0(0.00)	0(0.00)	46(38.33)	74(61.67)	120(100.0)
	Sorra	0(0.00)	0(0.00)	21(35.00)	39(65.00)	60(100.00)
P2	Sona	0(0.00)	1(0.83)	118(98.34)	1(0.83)	120(100.00)
	Sorra	0(0.00)	0(0.00)	60(100.00)	0(0.00)	60(100.00)
P3	Sona	0(0.00)	120(100.00)	0(0.00)	0(0.00)	120(100.00)
	Sorra	0(0.00)	60(100.00)	0(0.00)	0(0.00)	60(100.0)

(Figures in the brackets are percentage to totals)   *Source: Survey data.*

It can be seen from the above table -4 that, around 35-38% of MFBO'S sold their P1 variety of catch to the exporter's agents outside the fishing harbor or at their shop in the fishing harbor. They in turn transported this

catch to their processing and packing units, which were situated in and around Visakhapatnam city. The remaining 62-65% of MFBOs in sold their P1 variety of the catch to the commission agents in the Visakhapatnam harbor due to the tie-up agreements. Regarding P2 variety of marine product almost all the sampled MFBO'S sold to the commission agents in the Visakhapatnam fishing harbor. Regarding P_3 variety, it is observed that, of almost all the sampled MFBO'S sold the produce within the harbor market through auction.

3.4. Reasons for not storing the Catch
When it is observed that most of the sampled MFBO'S are selling their produce within a day in case of P1 variety and within 3 days in the case of both P2 andP3 varieties, they were questioned why they were not able to store the catch. They were asked to give one or more reasons on the basis of importance. Data relating to the reasons for not storing the catch for better price and type of boat are presented in table -5.

Table -5, Reasons for not storing the Catch (Figures in percentages)

Type of Boat	Poor financial background	Lack of storage facility	Capacity to store	Price fluctuations	Agreements
Sona	38.33	95.83	9.17	18.33	50.00
Sorra	48.33	100.00	0	28.33	60.00

(Totals does not add to 100 as MFBO's were asked to give one or more reasons) Source: Survey data

From table -5 it is observed that, around 95 percent of the sampled Sona and100% of the Sorra type of MFBO'S have said that lack of storage facilities is the reason for selling the catch immediately. This indicates the importance of cold storages and other related infrastructure facilities in and around Visakhapatnam Fishing Harbour. Second major reason quoted is that they have no other go except to abide by tie up agreements with the fish traders. However about 40% of the sampled MFBO'S in the both the type of boats also expressed that their financial background/capacity is not sufficient to store the produce for a long period to get a better price. It is observed that, almost all the MFBO'S sold their catch within one or two days to pool up the working capital for the next voyage and about 20-30% of the sampled MFBO'S expressed the fact that price fluctuations could not be predicted.

Stage 4: Entry of Government agencies / commission agents and exporters in determining the prices of P1 and P2
4.1. Pricing Mechanism
The peculiar characteristic of marine fish market in India is price controlled by different intermediaries. The two major intermediaries are commission agents and exporters who finance both short term and long term capital for their mechanized fishing boat operations in Visakhapatnam fishing zone. The high commission charges are mainly responsible for high price spread i.e., the difference between the price received by the MFBOs and price paid by the ultimate consumer. This is more severe in the case of P1 category of catch. The characteristics of marine fish market are that of oligopsonistic in nature. As in the case of oligopoly, cartels form in the buyer's market and rule the fish market. Sometimes, price leadership characteristic of oligopoly model is also observed in this oligopsontic marine fish market. Generally, The price of the P1 will be fixed by government agency like Marine products export development authority (MPEDA) and also sometimes one of the prominent exporters behaves as the price leader and the commission agents follow him. As Fernando, (1985) commented, marine fish markets in most of the developing nations are facing monopsony, oligoposony and monopsonistic competition. This is the reason for the MFBOs to get lower price for their marine catch and being exploited by the group of buyers who have both money and muscle power.

4.2. Price Determining Agents
A question was posed to the MFBOs regarding who determines the price of different varieties of marine catch (product wise). It is to be noted here that both P1 and P_2 varieties of marine catch are mostly exported to major

cities and countries like USA, U.K. and Japan and P_3 variety is mostly a locally consumed product. The opinions gathered regarding price determining agents are tabulated and presented in table -6.

Table -6,Price Determining Agents

| Product Category | Boat type | Price Determining Agents | | | | Total |
		Exporters	Commission Agents	Govt. Agencies	Auction	
P1	Sona	44(36.67)	76(63.33)	0(0.00)	0(0.00)	120(100.00)
	Sorra	21(35.00)	39(65.00)	0(0.00)	0(0.00)	60(100.00)
P_2	Sona	44(36.67)	76(63.33)	0(0.00)	0(0.00)	120(100.00)
	Sorra	21(35.00)	39(65.00)	0(0.00)	0(0.00)	60(100.00)
P_3	Sona	0(0.00)	0(0.00)	0(0.00)	120(100.00)	120(100.00)
	Sorra	0(0.00)	0(0.00)	0(0.00)	60(100.00)	60(100.00)

(Figures in the brackets are percentage to totals)   *Source: Survey data*

It can be seen from table -6 that, two-thirds, of the MFBO'S expressed the opinion that the price of P1 and P_2 varieties is determined by "Commission Agents" and remaining one third of MFBO'S expressed that "Exporters" in the Visakhapatnam fishing zone determine the price. Regarding P_3 variety of catch, it is observed that, the product is auctioned and the price is determined by the market demand and supply conditions.

4.3. Factors Determining the Prices Of P1/P2&P3
In order to know the awareness of the MFBO'S a question was posed to know the factors that influence the Commission Agents or the Exporters to arrive at a price. The findings are tabulated and presented in table -7

Table – 7,Factors influencing the prices of P1 / P2 & P3 (Figures are percentages to total MFBOs)

| Product Category | Boat Type | Factors influencing on price | | | | Others |
		International price	Quantity of the catch in the fishing harbor	Season	Quality of the catch	
P1	Sona	77.50	0.00	0.00	100.00	22.50
	Sorra	80.00	0.00	0.00	100.00	20.00
P2	Sona	75.83	0.00	0.00	100.00	24.17
	Sorra	80.00	0.00	0.00	100.00	20.00
P3	Sona	0.00	84.17	50.83	76.67	0.83
	Sorra	0.00	88.3	40.00	66.67	0.00

Note: Total does not tally to 100.00 as the one are more reasons are considered.Source: Survey data

It can be seen from table -8 that, about 75-80% of the MFBO'S are aware that the international price and the quality of the catch are the two major determining factors of prices of P1 and P2 varieties. Regarding P3 variety they expressed that supply (quantity of the catch), season (festival) and quality have their own roles in determining the price. It is worth to note that no single MFBO expressed the opinion that supply and season has anything to do with the prices of P1 and P2 varieties of marine catch.

4.5. Terms and Conditions of the Payment to MFBOs
A question was posed regarding terms and conditions of the payments made by different intermediaries to MFBO'S. This question is intended for a cross check that many of the MFBO'S expressed that they were supplying the catch to the "Commission Agents" and "Exporters" as they give them short-term loans. Opinions regarding this aspect are analysed and presented in table -8.

Table – 8, Terms and Conditions of Payments - P1/P2&P3

Product Category	Boat Type	Terms and Conditions of Payments				Total
		Cash	Demand Draft/ Cheque	Cash Deduction from loans	Partly cash and partly credit	
P1	Sona	45(37.50)	0(0.00)	74(61.67)	1(0.83)	120(100.00)
	Sorra	21(35.00)	0(0.00)	39(65.00)	0(0.00)	60(100.00)
P2	Sona	45(37.50)	0(0.00)	74(61.67)	1(0.83)	120(100.00)
	Sorra	21(35.00)	0(0.00)	39(65.00)	0(0.00)	60(100.00)
P3	Sona	115(95.83)	0(0.00)	2(1.67)	3(2.50)	120(100.00)
	Sorra	58(96.67)	0(0.00)	1(1.67)	1(1.67)	60(100.00)

(*Figures in the brackets are percentage to totals*)   *Source: Survey data*

It can be seen from table -8 that, about 60-65% of the MFBO'S trading in P1 and P2 varieties of catch expressed the opinion that Commission part was deducted before the final payment and only 35-38% of MFBO'S expressed the view that they receive cash in toto. There is no way of payment by demand draft or cheque and all are cash transactions. Regarding P3 variety about 95% of MFBO'S expressed that they were paid cash for the product. It is also noticed that besides commission, the agents will also deduct some amount towards principal amount of loan.

4.6. Price Trends

As referred earlier many of the MFBO'S are in this fishing boat operations for more than ten years. Hence a question was posed to elicit the opinion of the MFBO'S regarding whether the price is attractive, reasonable or low during last two years as the marine fish trade is facing wide fluctuations due to severe competition from Thailand, China and Japan. The opinions obtained are tabulated and presented in table -9.

Table -9
MFBO'S opinion about prices – P1/P2&P3 (2010-2011, 2011-2012, 2012-2013)

Product category	Boat Type	2010-2011			2011-2012			2012-2013		
		Very Low	Reason-able	Attractive	Very Low	Reason-able	Attractive	Very Low	Reason-able	Attractive
P1	Sona	0 (0.00)	11 (9.17)	109 (90.83)	16 (13.33)	94 (78.33)	10 (8.33)	95 (79.17)	20 (16.67)	5 (4.17)
	Sorra	0 (0.00)	10 (16.67)	50 (83.33)	16 (26.67)	43 (71.67)	1 (1.67)	48 (80.00)	9 (15.00)	3(5.00)

P2	Sona	12 (10.00)	65 (54.17)	43 (35.83)	16 (13.33)	90 (75.00)	14 (11.69	11 (9.17)	34 (28.33)	75 (62.50)
	Sorra	10 (16.67)	39 (65.00)	11(18.33)	16 (26.67)	43 (71.67)	1 (1.67)	7 (11.67)	19 (31.67)	34 (56.67)
P3	Sona	90 (75.00)	26 (21.67)	4 (3.33)	85 (70.83)	33 (27.50)	2 (1.67)	102 (65.00)	16 (13.33)	2 (1.67)
	Sorra	39 (65.00)	18 (30.00)	3 (5.00)	44 (73.33)	16 (26.67)	0 (0.00)	52 (86.67)	8 (13.33)	0 (0.00)

Source: Survey data.

It can be noted from table -10 that, more than 70% of MFBO'S of both Sona and Sorra type expressed the opinion that, price of P1 is attractive in the year 2010-2011, reasonable in the year 2011-2012 and presently low during the year 2012-2013. In case of P2, it is opined that, price was reasonable in 2010-2011and 2011-2012 and attractive during 2012-2013. This may be due to the fact that P2 variety of catch is now exported to different countries like Japan, European Union countries and U.S. Regarding P3 variety of catch most of the MFBO'S expressed the   view that price is low and not at all attractive for the last two years.

4.7. Reasons for the Price Decline
In continuation of the awareness of price fluctuation of the catch, another question was posed to MFBO'S regarding 'trends in exports', 'knowledge of International price, 'price policy' or 'oligopsony element' in the export market. The opinions gathered are tabulated and presented in table -10.

Table -10,Reasons for price Decline – P1/P2&P3

Product Category	Boat Type	Reasons for price Decline					Cannot say
		Decline of Exports	Less International price	Monopoly of exporters	Lack of price Stabilization policy	More supply at a time	
P1	Sona	15.83	60.83	88.33	23.3	0.00	11.67
	Sorra	31.67	83.33	91.67	26.67	0.00	25.0
P2	Sona	23.33	67.50	88.33	79.17	0.00	17.50
	Sorra	6.67	80.00	91.67	81.67	0.00	28.33
P3	Sona	0.00	0.00	0.00	60.00	98.33	16.67
	Sorra	0.00	0.00	0.00	65.00	98.33	18.33

Source: Survey data.

It can be seen from table-10 that, in the case of P1 product between 60-80% of the MFBO'S have knowledge about declining international price and about 90% of them know that there is a oligopsony element in the

Visakhapatnam fisheries market. Some even expressed that the commission agents and exporters collude and offer a low price in addition to deducting commission charges. In case of P2 product besides the two factors namely price decline in International market and collusion among the buyers, about 80% of MFBO'S expressed that there is no price stabilization policy for this product. It is to be noted here that up to1995-96 the price of P1 and P2 varieties was fixed by the state government agencies and almost all the buyers used to abide for that norm. But during the last 4-5 years government has withdrawn the price stabilization policy and left it to the market conditions. Regarding P3, never there is any price stabilization policy and the supply determines the price.

4.8. Time Gap for Receipt of Payments
Boat operators were asked about time taken to receive the payment from different intermediaries towards the catch sold to them. Sometimes payment is received within 2-3 days and sometimes it was extended up to 6-8 days. The time gap depends upon the agreement at the time of borrowing the capital to meet the costs of fishing boat and their operations. Further it is also noted that, the time gap also varies from product to product. Data relating to the time gap for receipt of payments by MFBO'S are tabulated and presented in table -11.

Table -11,Time Gap for Receipt of Payment – P1/P2/P3

Product Category	Boat Type	Time Gap			Total
		1-3 days	4-6 days	7-9 days	
P1	Sona	50(41.66)	33(27.5)	37(30.83)	120(100.00)
	Sorra	27(45.00)	20(33.33)	13(21.66)	60(100.00)
P2	Sona	34(28.33)	59(49.16)	27(22.50)	120(100.00)
	Sorra	15(25.00)	36(60.00)	9(15.00)	60(100.00)
P3	Sona	117(97.50)	3(2.50)	0(0.00)	120(100.00)
	Sorra	60(100.00)	0(0.00)	0(0.00)	60(100.00

(Figures in the brackets are percentage to totals)   Source: Survey data

From table -11 it can be seen that, most of the intermediaries made the payment within three days for P1 product and took 4 to 5 days for P_2 product of catch. Almost all the MFBO'S receive full payment within 3 days for P_3 product. Probably intermediaries might have taken time to realise their sale produce in the secondary market for payment to the MFBO'S for P1 and P_2 products of catch. Since most of the P_3 product is sold to the wholesalers/vendors/fishermen/ product might have reached the ultimate consumer soon and they might have realized the monies for prompt and spot payments to MFBO'S in Visakhapatnam Fishing Harbour.

Stage 5 &6: market actors: Wholesalers/ Vendors/ processors/Exporters/Fishermen/Fisherwomen/consumers

5.1. Market Intermediaries
There are five principal types of market intermediaries with different functions in the marine fish market in Visakhapatnam fishing zone. They are Auctioneers, Exporters, Processors, Commission agents, Wholesalers, Private vendors and Fisherwomen. Different intermediaries perform different roles in marine fish marketing system. The different functions performed by these intermediaries are auctioning, grading, packing, weighing, semi processing (cleaning, drying, salting etc), storing, selling to end users for both export-cum-domestic markets. When the sampled MFBOs gave their preferential pattern of Intermediaries a question was posed the Sona and Sorra MFBO's sell regarding how much quantity of the catch to different market intermediaries. Data relating to the distribution of quantum to different market intermediaries according to the type of boat are presented in table-12.

Table – 12,Product-wise Quantity and Proportion Sold to Different Intermediaries

| Product category | Boat Type | Market intermediaries | | | | Total |
		Commission Agents	Wholesalers/ Vendors/ Fishermen	Processors / Exporters	Consumers	
P1	Sona	3496875 (61.37)	0(0.00)	19920.50 34.96)	205000 (3.67)	5697925 (100.00)
	Sorra	1165750 (64.30)	0(0.00)	592750 (32.70)	54400 (3.00)	1812900 (100.00)
P2	Sona	1528770 (53.05)	212050(7.36)	873175 (30.30)	268000 (9.29)	28819995 (100.00)
	Sorra	666050 (61.01)	49300(4.52)	233550 (21.40)	142710 (13.07)	1091600 (100.00)
P3	Sona	102180 (12.99)	442485(56.24)	0(0.00)	242120 (30.77)	786785 (100.00)
	Sorra	35480 (13.43)	122120(46.21)	0(0.00)	1066.70(40.36)	264250 (100.00)

(Figures in the brackets are percentage to totals)   *Source: Survey data*

It can be seen from table -12 that, about 60 per cent of P1 variety of marine catch is sold to commission agents while about 35 per cent is sold to processors and exporters. Regarding P2 variety of marine catch, between 50-60 percent of the catch is sold to commission agents and remaining 20 to 30 per cent of the catch is sold to exporters. But in respect of P3 a large portion is sold to wholesalers, private vendors, or fisherwomen in the Visakhapatnam fishing harbor market and substantial amount is sold to direct consumers like domestic consumers and hotels and restaurants located in and around Visakhapatnam..

5.2. Preferential attitudes of MFBOs towards Market Intermediaries

It is seen earlier that Exporters and Commission agents play a major role as market intermediary for P1 and P2 while vendors and fisherwomen for P3 variety of marine catch. In this context a question relating to opinions of the MFBO's regarding the reasons for choosing an intermediary was posed and the opinions gathered are tabulated and presented in table -13. Here MFBO'S were asked to give one or more reasons on the basis of their preference.

Table -13, Reasons for choosing different Intermediaries by MFBOs (Figures are percentages to total MFBOs

| Market intermediaries | Boat Type | Reasons | | | | | |
		Lack OF Govt. Agencies	Accessibility of traders in spot	Took advances and loan	Spot/ Prompt payment	Relationship with Trader	Attractive prices
Exporters/ Processors	Sona	55.83	36.67	20.83	22.33	36.67	36.67
	Sorra	36.67	35.00	15.00	16.67	35.00	35.00
Small vendors & fisher women	Sona	0.00	87.50	25.83	26.67	31.67	14.17
	Sorra	0.00	78.33	31.67	18.33	33.33	10.00
Commission Agents	Sona	0.00	38.33	62.50	0.00	39.17	0.00
	Sorra	0.00	65.00	66.67	0.00	60.00	0.00
Consumers	Sona	0.00	11.67	0.00	56.67	0.00	10.83
	Sorra	0.00	16.67	0.00	41.67	0.00	3.33

Note: Total does not tally to 100.00 as the one are more reasons are considered.(Source: Survey data)

It can be seen from table - 13 that

- Commission Agents: Are preferred mainly because they used to give advances with a tag of selling the catch exclusively to them immediately after the voyage or they advanced loans and charge commission. Further it is also opined that they maintain cordial and friendly relationships and also highly accessible to lift the product in the Visakhapatnam fishing harbor.

- Wholesalers, Vendors and fisher women are preferred mainly for P2 and P3 variety of marine catch as they are the direct procuring agents in the Visakhapatnam fishing harbor and hence highly accessible to the MFBOs. Further MFBOs also mentioned that they maintain more human relations and show concern.

- Exporters/Processors: Also play a significant role in P1 category of marine catch. They dominate in marine fish trade as no government agency directly or indirectly participate in marine fish trade activity.

- They are also accessible to the MFBOs and maintain good relationships and offer an attractive price.

- Most of the locals prefer to go to Visakhapatnam Fishing Harbour market on Sundays and other holidays to get fish from the pond (sea). Local sales are also significant in P3 variety of marine catch.

- It is also noted that some star hotels also pay a visit on demand days and procure a good variety of prawn (P1) and offer a relatively better price for its quality.

- A Comparison is made regarding the attitude of preferences between Exporters and Commission Agents. It is found that exporters offer a better price and make spot payment while commission agents give loans and advance for working capital. This type of advancing makes the MFBOs to commit and sell the captured marine catch at a lower price than they actually get if they sell it to exporters. Here it is also noticed that there are some cases of exporters indirectly financing commission agents and getting the marine catch with a tacit agreement.

Problems in Marketing of Marine Fisheries

Fish being a perishable good, market structure plays a vital role. Grading, Pricing and Marketing policies play an important role in the marine fisheries sector. In this study an attempt is made to study and analyse the marketing problems such as availability of market information, grading practices and grading agencies and malpractices indulged in marketing. Opinions are also elicited regarding solutions to solve the present grading problems and views on elimination of malpractices in marketing of marine catch.

- ✓ Market Information, i.e., regarding the price of the product it is usually announced by the cooperative associations. All the selected sampled MFBOs in the study area are the members of one or the other Cooperative associations. The associations publish the price data of P1 variety of catch and supply them at regular intervals i.e, every month. But in the case of P2 and P3 varieties of catch, demand only determines the price. Here a notable point is that in the case of P1 exporters play a major role while fixing the price. So price of P1 variety of the catch is determined by the exporters and it depends on international price and USA dollar value.

- ✓ Regarding grading of the catch, the present practice is the count per Kg. (1000 grams) in P1 variety. Remaining products P2 and P3 varieties are graded according to the group or sub group and size of the fish. Usually the commission Agents or Intermediaries grade the catch for fixing the price. However sometimes discrimination is shown while grading the fish and most of the MFBOs expressed the opinion that there should be an authorized agency to grade the marine catch instead of graded by the commission agents who use discretion. In this regard some malpractices are observed in Weighment, Improper

grading, differentiated price, role of middlemen and price set by the exporters. The obtained opinions are coded and results are presented in Table-14.

Table-14,Opinions of MFBOs regarding types of malpractices indulged in fish marketing

Variety of the product	Type of Boat	Types of malpractices				
		Improper Weighment	Improper grading	Price discrimination	Unfair charges of middle men	Price Restrictive practices
P1	Sona	120(100.00)	109(90.83)	22(18.33)	47(39.17)	109(90.83)
	Sorra	4(6.67)	45(75.00)	6(10.00)	35(58.33)	52(86.67)
P2	Sona	112(93.33)	54(45.00)	45(37.50)	78(65.00)	105(87.50)
	Sorra	56(93.33)	22(36.67)	22(36.67)	43(91.67)	53(88.33)
P3	Sona	112(93.33)	9(7.50)	79(65.83)	0(0.00)	1(0.83)
	Sorra	59(98.33)	0(0.00)	29(48.33)	0(0.00)	0(0.00)

(Figures in the brackets are percentages to total sample MFBOs, totals do not add to 100 as they gave more than one answer)   Source: Survey data

It can be seen from Table 7.13 that
- The major marketing malpractice in P1 variety of catch is improper grading, weighment and the monopsonistic role of exporters (price restrictive practices) in fixing the price
- Regarding P2 variety of catch, the major malpractice is improper weighment followed by role of exporters in fixing the price and unfair charges of middlemen.
- Regarding P3 variety of catch, the major problem is improper weighment followed by price discrimination.
- When a question was raised to the selected sampled MFBOs regarding the elimination of malpractices, most of the MFBOs preferred sales through organized market system with the support of government agencies or other institutional support like MPEDA, etc.

IV. Conclusions: From the above analysis it is noted that
- The entire marine catch is graded into three types P1, P2, P3 and P4. The estimated annual quantum of P1 catch is higher in Sona type of boat than in Sorra type of boat, while that of P2 catch is higher in Sorra type than in Sona type of boat. Since P4 is trash fish it has not been included in this analysis.
- P1 and P2 categories have exportable value and value of catch is high in Sona type of boat than in Sorra type of boat.
- Regarding P3, though quantum is high in Sona type of boat price is the same for both.
- Due to good storage facility, Sona type of MFBOs receive relatively better price than Sorra MFBOs, Thus due to high catch and good price Sona MFBOs recovers good price than Sorra type of MFBOs. This is also true in the case of P2 category of catch.
- The total value of the catch per voyage is significantly higher (Rs.78,000) in Sona type of boat than in Sorra type of boat (Rs.52,000/-).
- Taking into account the number of voyages total annual catch is estimated and it is found that the total annual receipts of Sona type MFBOs comes to about Rs.11.67 lakhs while that of Sorra comes to about Rs.10.56 lakhs. The costs and returns, the average profit per annum of Sona type of MFBOs is the higher (Rs.1.41 Lakhs) than that of Sorra type of MFBOs (Rs.0.80 Lakhs). (Table shows the economics of boat operation is attached at the end)

- Irrespective of the type of boat, the entire product mix is sold within a day in respect of P1 type of product and within 2-3 days in respective of other two varieties of products (P2 and P3).
- P1 catch is graded on the basis of size, weight and variety of the prawn. Processing and grading will be done in the boat during the return of voyage. Prawn is sometimes sold by removing the head (headless prawn).
- Most of the P_1 catch is sold to Commission agents while most of the P2 catch is sold to agents of exporters and P3 is sold to fisher women and other traders in the fishing harbor.
- The reason expressed for selling the product immediately is lack of storage facilities.
- In the total quantum of catch of all selected MFBOs, 60% of P1 catch goes to commission agents and 30% to the exporters directly.
- In P2 variety of product share of commission agents varies between 53 to 61% while that of exporters varies between 21-30%. In respect of P3, 46 to 56% of the product goes to fishermen/fisherwomen/vendors/ and 30 to 40% goes to consumers directly.
- A large percentage of MFBOs expressed the view that Commission agents and exporters determine the price of P1 and P2. Further they are also aware that prices of P1 and P2 are influenced by international price and good quality of the product gets a better price than inferior quality.
- Most of the MFBOs are aware of the fact that declining Price of P1 product since 1999-2000 is due to decline in the international market price. The attractive price of P2 during 2001-2002 is due to change in export diversification to countries like Japan, European Union and United States.
- Regarding the malpractices in marine fish market most of the MFBOs reported that improper grading in the case of P1 $_{and}$ improper weighment and unfair charges of middlemen in the case of P2 and improper weighment and price discrimination in the case of P3 verities.

V.Suggestions
- The MFBOs in general and cooperative associations in particular should upgrade their leadership capabilities. They should have sufficient exposure in grading the catch, knowledge about international market prices, identification of target markets and supportive government schemes.
- These cooperative associations should take support of different government and nongovernmental organizations to market their marine catch directly to the target market in both Local, domestic, and international markets.
- The establishment of cold chains and specialized warehouses at different levels of the marketing channel structure to store the produce when the price of the produce is low.
- Pricing process for P1 and P2 products has to be transparent and need to involve the MFBOs in this process.
- Every coastal state and union territory should set up a separate financial institution to render the financial services to the MFBO's at lower interest rate whenever they are in need. This would be helpful for them to get rid from the middlemen who provides finance easily but at higher interest rates. This facility would be useful to get more profit.
- The establishment of a proper technology to grade as well as to weigh the catch in more standardized manner. Finally,
- It is always profitable to the fishermen community if they supply the produce based on the market requirements by creating some value addition through different scientific methods approved by standardization agencies.

References
1. Singh, Chhotan and A.K. Vasisht (1994) , Performance and prospects of agricultural exports in India, Indian Journal of Agricultural Economics,49(3): 446.

2. C.S.George (1991) "Prospects and Performance of Deep Sea fishing Vessels for Low Energy Fishing Techniques, Proc. Of the National Workshop on Low Energy Fishing 8-9 August, 1991, Society of Fisheries Tech, India cochin, 193, pp.79-81.
3. Fernando, S.,1985.Cost and Profitability of Small-Scale Fishing Operations in Sri Lanka. Panayotou, (Ed.), 1985. pp. 137-150. Small-Scal e Fisheries in Asia: Socio economic Analysis and Policy. International Development Research Center, Ottawa, Canada.
4. Highlights of 'Fisheries Development in Andhra Pradesh'. Fishing chimes, Visakhapatnam., April 2002; pp.64-70.
5. Mia, G. M. F. 1996. A study of production and marketing of culture fishes the selected pond owners in Mymensingh district. MS Thesis. Department of Co-operative and Marketing. Bangladesh Agricultural University. Mymensingh.119 p.
6. Rami Reddy, S., 'Report on the Study of Fisheries Development in the Coastal Districts of Andhra Pradesh Technical Cell, Andhra University, Waltiar, December, 1978.
7. Rao, P.S., and Rao, G.K., "Growth and Productivity of Indian Fisheries", Journal of Marine Biology, Ass. India, 31 (1 and 2), 1989, pp.218-227.
8. Mia, G. M. F. 1996. A study of production and marketing of culture fishes the selected pond owners in Mymensingh district. MS Thesis.Department of Co-operative and Marketing.Bangladesh Agricultural University. Mymensingh.119p.
9. Sivayya, K.V., and Ratnam, C.S.V., "A Study on the Impact of the Activities of the AndhraPradesh Fisheries Corporation on Traditional Fisherman", Andhra University, Waltair, 1982 (Mimeo)
10. Shrivastava, R. S. M. and Randhir. 1995. Efficiency of fish marketing at Bhubaneshwar city of Orissa (India): some policy implications. Bangladesh. J. Agric Econs . 18(1): 89-97.
11. Subramanyam, N.V and Sivayya, K.V. Study of Fisheries Development in the Coastal Districts of Andhra Pradesh, Technical Cell, Andhra University, Waltair, December, 1978.
12. Subba Rao, N., "Mechanisation and Marine Fishermeen – A Case Study of Visakhapatnam", 1988, Northern Book Centre, New Delhi.
13. Sudakara Rao, G., "Prawn Fishery by the Sona Boats at Visakhaptnam", Indian Jurnal of fish, 46(1), January - March,1999 pp.13-23.
14. Subba Rao, N. "Economies of Fisheries - A Case Study of Andhra Pradesh", Daya Publishing House, New Delhi, (1986).
15. Sudakara Rao, G., (1999), "Prawn Fishery by the Sona Boats at Visakhaptnam", Indian Jurnal of fish, 46(1), January - March, , pp.13-23.
16. Sudarsan,D (1991)"Marine Fishery Resources in the Exclusive Economic Zone of India", Proceedings of the National Workshop on Low Energy Fishing", 8-9, August 1991, Society of Fisheries Technologists (India), Cochin 1993,pp.3-11.
17. Thingalaya, N.K. Financing of Indian Marine Fisheries. The first Indian fishermen forum (Abstracts) Asian Fisheries Society Indian Branch, Karnataka. 1987,p.324.
18. U.K.Srivastava, Amarjeet Singh and Martin Santha Kumar, "Economics of Brackish Water Culture In India-Some Preliminary Evidence", Fisheries Development In India, Edited by Srivastsva, U.K and Dhannareddy, Concept Publishing House, New Delhi.
19. Warrier, K.M. Socio-Economic Survey of Fishermen in Madras City, Economic Research Centre, Loyola College, Madras, 1968 (unpublished).