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Structural performance of fish market and socio-economic status of market functionaries of Naveen Machhali Mandi Mahanva of Gorakhpur, Uttar Pradesh

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ABSTRACT

The fish marketing is crucial for achieving the target efficient production system and consumer satisfaction. Further an ideal market situation also requires to satisfy all group of players who are involved in flow of the goods and services from the producers to consumer. Keeping this in view this study carried out with specific objective to analyse market behavior for fish wholesale fish market Naveen Machhali Mandi Mahanva of Gorakhpur district in Uttar Pradesh and also the socio-economic status of fish marketers. A random sampling technique was used to select 90 market functionaries for personal interview and primary data collection. The primary data were analyzed using descriptive statistical methods. The result of this study showed and suggests that fish trade is carried out only by men. The family size of the majority respondents was found to large (>7 members) and their education level was low. Three marketing channels were identify in study area and marketing channel III was found to be have highest Marketing efficiency (59.17%). Whereas marketing channel I had lowest marketing efficiency. The markets infrastructure facility observed to be poor in terms of fish handling, icing, packaging, and cold storage and transportation facilities. The study also identified the constraints being faced by the fish farmers.

Keywords: Fish marketing, efficiency, margin, marketing constraints, Uttar Pradesh

Markets are the arena for two important tasks required in all societies: the physical marketing functions, and the communication of signals to producers and consumers about the costs of buying something or the benefits of selling it. Governments concerned about equal distribution of economic welfare to all citizens are understandably loathe to allow those price signals to be generated by anonymous market forces when the values of such important commodities as food item like fish. Marketing has been defined as all processes involved from the production of a commodity until it gets to the final consumer (Crammer *et al.,* 2001). A market is an area within which the, forces of demand and supply

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converge to Establish a single price. Market Structure refers to those characteristics of the market, which affect the traders' behavior and their performances (Salim *et al.,* 2005). Unlike marketing systems of agricultural products, fish marketing is characterized by heterogeneous nature of the products with respect to species, size, weight, nutritional quality, storage quality and price (Upadhyay and Pandey, 2009).

Fish being highly perishable commodities which after harvest requires proper preservation and storage to increase its shelf life (Clucas and Ward, 1996). The main problems associated with fish marketing include high perishability and bulkiness of the fish, high cost of storage and transportation, no guarantee of quality and quantity of Commodity, low demand and high price spread (Ravindranath, 2008). Other socio-economic problems such as transportation and distance to the point of sale to the final consumers have affected the quality and cost of fish products (Gittenger, 1984). Rao (1983) has reported that an efficient fish marketing system could eliminate some of the depressed pockets of malnutrition by supplying fish at reasonable prices to people living on subsistence level. The Uttar Pradesh is a highly populous state in the country. The state has vast Inland fisheries resources and has great potential for fish production. However the demand in the state is much higher in comparison to the production within the state. Thus, state has to depend upon outside produces that comes from Andhra Pradesh and sometimes from West Bengal.

If the potential of available resources is exploited properly this will meet out internal fish demand as well as it will provide gainful employment, income to the poor people and nutritional security to rural masses. Beside low level of per capita availability of fish in the state fish consumption level is also relatively low. Among several factors like lack of adequate and hygienic fish, poor marketing infrastructure and cold chain, transportation of fish and fish products, food habits, lack of awareness about the nutritional facts and benefits of fish are responsible for low consumption of fish in the state. A total of 351 fish markets are there in Uttar Pradesh. The fish marketing as a business in state is controlled by a few families in each of wholesale and retail markets. The Marketing of fish depend upon the local traders where middlemen earn more profit and transfer fewer shares to the people who involved in production. With this brief background, this study aimed to analyse market behavior for fish wholesale fish market Naveen Machhali Mandi Mahanva of Gorakhpur district in Uttar Pradesh and also the socio-economic status of fish marketers. The study has also identified constraints faced by the fish marketers.

Materials and Methods

The study was conducted in wholesale fish market namely the Naveen Machhali Mandi Mahanva Gorakhpur district in Utter Pradesh. The data were collected from primary as well as secondary sources. The primary data pertain to the period February and March, 2014. A total of 90 respondents including different market functionaries were selected randomly for interview. The survey schedule including general information of the respondents, type of function he performed, market arrival, marketing cost, buying and selling prices of fishes, market infrastructure, and the problems faced in marketing. The information on fish prices, volume of trade, marketing functions etc were collected through market agencies. The data obtained through market survey were analyzed using descriptive statistics in terms of frequencies and percentages to summaries the socio-economic characteristics of market functionaries, marketing costs, margin and price spread was estimated using average and percentage analyses.

Farmers' Net Price: The net price received by the farmers was estimated as a difference between gross price received and sum of the marketing costs incurred, including the post-harvest losses at different stages of handling the produce.

$$NPF = GPF - (CF)$$

where,

NPF = The net price received by the farmers (₹/kg)

GPF = The gross price received by farmers (₹/kg)

CF = The cost incurred by the farmers during marketing (₹/kg), and

The total marketing margin of the market intermediaries (MM) was calculated as:

$$MM = \sum MM_i$$

MM_i - market margin of i^{th} middlemen

Total marketing cost (MC) incurred by the producer/ seller and by various intermediaries was calculated as:

$$MC = \sum CM_i$$

(marketing cost incurred by i^{th} middlemen)

Modified Marketing Efficiency: Acharya's modified marketing efficiency formula (Acharya and Agarwal, 2001) has been applied for calculating market efficiency.

$$MME = FP/(MC+MM)$$

Where, MME is modified measure of marketing efficiency, FP is price received by farmers, MC is marketing cost, MM is marketing margin.

Constraints in Fish marketing: In order to study the constraints, a schedule was developed in accordance with the available literature (Michael Khoveio, 2012). Accordingly, constraints faced in fish marketing were identified and thereafter the response of the sample fish farmers were recorded. The ranks given by the respondents were then converted into percentage position with the help of formula:

$$\text{Percent position} = \frac{100(Rij - 0.5)}{Nj}$$

Where,

Rij = Rank given to i^{th} constraint by j^{th} individual

Nj = Number of constraints ranked by j^{th} individual

Results and Discussion

Fisheries Resources

The economy of the Uttar Pradesh state is based on agriculture and allied activities in general. In the state 79% population are living in the rural areas. The fisheries is particularly considered to be one of the vital sectors for the economic development of the state. The fisheries sector in the state also important to ensures nutritional security of rural masses; generates gainful rural employment and enhances income fish farmers/ fishermen. At present, 4.32 lakh hectares confined water area is available for fisheries in the state, out of which 1.38 lakh ha manmade reservoirs, natural oxbow lakes, 1.33 lakh ha and 1.61 lakh ha under rural ponds and lakes. The state also has vast flowing water resources rivers and canal with 28,500 km (Dept. of fisheries UP).

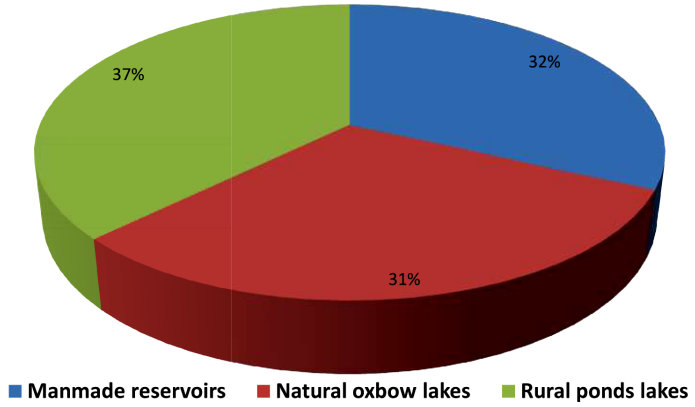


Fig. 1: Confined fisheries Resources in Uttar Pradesh (in Lakh ha)

Marketing System in Uttar Pradesh: The fish marketing as a business is controlled by a few families in each of wholesale and retail markets. There are 5-special new markets was setup by state government, in 5-districts namely Gorakhpur, Gaziabad, Allahabad, Raibarrely, and Lucknow. Under changing economic situation the Department Fisheries Govt of Uttar Pradesh has focus more for developing the cold chain and provisions for storage of fish produces which are highly perishable in nature. At present state is lacking with cold storage facilities retaining fishes for a longer period. Marketing of the fish mainly depend upon the local traders/ middlemen and they trying maximize their margins and transferring less proportion of sale value to the producers.

Socio-economic status: The socio-economic status of market functionaries is given in Table 1. It is found that fish trading is only undertaken by male (100%), this shows women do not have significant role in fish marketing. The age of the respondents was examined using four categories (<20, 21-40, 41- 50 and >50 years). It is evident from the table that age group 41-50 years had the highest proportion (36.67%) of the respondents,

Table 1: Socio Economic characteristics of the fish market functionaries of Naveen Machhali Mandi Mahanva whole sale market of Uttar Pradesh

Variables		Frequency	Percentage (%)
Gender	Male	90	100
	Female	—	—
Age –group	<20	6	6.67
	21-40	27	30.00
	41-50	33	36.67
	>50	24	26.67
Family size (No. of member)	5-7	6	6.67
	>7	84	93.33
Educational status	Illiterate	—	—
	Primary	24	26.67
	Junior high school	27	30.00
	High school	33	36.67
	Intermediate and above	6	6.67
Marital status	Single	12	13.33
	Married	78	86.67
Occupation	Fish marketing only	6	6.67
	Fish marketing and agriculture	66	73.33
	Fish processing and marketing	15	16.67
	Other business	3	3.33
Caste	Hindu	39	43.33
	Muslim	51	56.67
Experience (Year)	<5	12	13.33
	6 to10	39	43.33
	11 to 15	30	33.33
	>15	9	10.00

followed by age group 21-40 years with 30%. In case of family size of respondents it was found that the majority of respondents (93.33%) had their family size >7 members. This is an indicative of heavy dependency of the people for their livelihood who involved in fish marketing.

According to census 2011 the literacy rate of Uttar Pradesh was about 67.68% and literacy rate of Gorakhpur district about 73.25%. The education level of respondents shows that 6.67% had senior secondary, 36.67% had higher secondary, 30% had junior high school and reaming 26.70% had primary level education. This implies that majority of the fish marketers in selected market had higher secondary/junior high school level of education. The most of the fish marketers were found married. The occupational structure of market functionaries showed that the about 73.33% respondents involved in fish marketing as well as in agriculture, while 16.67% respondents involved in fish processing and fish marketing, whereas, 7% of respondents were exclusively engaged with fish marketing. This implies that majority of the respondents were involved in fish trading but they have their secondary occupation as agriculture. The fish marketing is mainly performed by

Muslim (Table 1). The majority of respondents (76.66%) were having sufficient experience (6-15 years) in fish marketing.

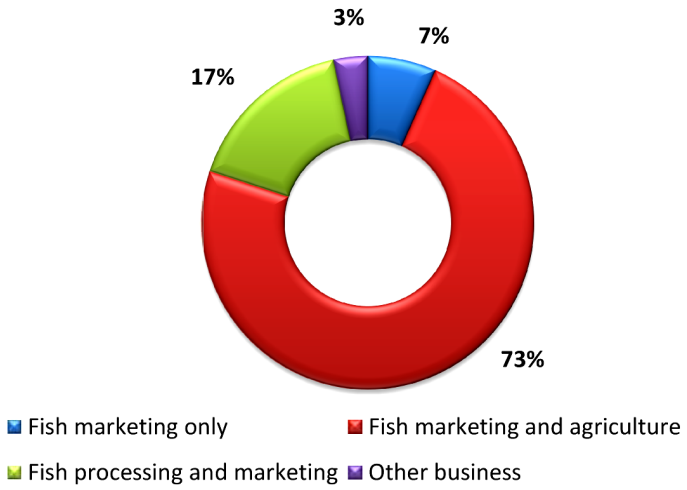


Fig. 2: Occupational structure of Market functionaries

Infrastructure facility

The total markets area was reported to be 30 acre and total 45 number of wholesalers were observed to be functioning in this market with small space and temporary shelters. There is separate parking space for this market. The marketing activities begin at 6 A.M. and ends at 10 P.M. but in many cases the duration was found to change depending upon season, demand and supply fish. The market facilities are considered to be very essential for fish handling include off-loading docks, icing, packaging materials, storage facilities, parking space, drinking water, electricity and telephones (Mukasa and Reynold, 1991). It was observed during the survey that the Naveen Machhali Mandi Mahanva fish market lacking lack in basic infrastructure and services for fish handling and storage. The storage facilities are very poor of the markets is tin-shaded and the auctions are done on the ground itself.

Marketing channels

The fish marketing channels are alternate routes through which fish and fish products flows from the point of production to the point of consumption. Fish marketing channel start with farmer/fishermen and ends with the fish consumer and in between intermediaries are involved. The involvement of these market intermediaries provides services of head loading, cleaning, sorting, grading, processing (icing), preservation, packaging and transporting of fishes. Such activities resulted in cost addition at every stage of marketing (Bishnoi, 2005). The identified marketing channels in this study is given in Table 2 and it also depicted through flow diagam (Fig. 3).

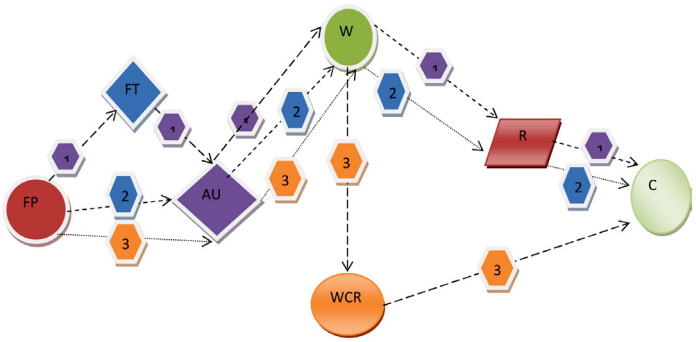


Fig. 3: Different marketing channels in Naveen Machhali Mandi Mahanva whole sale market of Uttar Pradesh

Major intermediaries in the fish marketing channels in selected fish market were identified as fish traders, wholesalers, commission agents and retailers. In this study it was found that the farmers cannot sell fish directly to the retailers or consumer's because wholesaler-cum-commission agents would not allow for direct selling in the market.

Market arrival: On an average, the total fish arrival in the Naveen Machhali Mandi Mahanva of Utter Pradesh was reported to be 4096 kg/day and 1500 tones in a year. The major fish Species was sold in the markets and their

Table 2: Marketing channels in Naveen Machhali Mandi Mahanva wholesale market of Uttar Pradesh

Channels I: Farmers- Fish traders-Auctioneers- Whole sellers-Retailers- Consumers
Channels II: Farmers- Auctioneers-Wholesaler-Retailer-Consumer
Channels III: Farmers- Auctioneers- Wholesaler -Wholesaler cum Retailer-Consumer

shares is represented in Table 3. The pangasius account for about 27 percent, followed by rohu (13.55%), catla (13.02%), grass carps (7.20%), tilapia (6.45%), silver carps (5.91%), mrigal (4.98%), punitus (4.85%), channa (4.14%), mangur (3.56%) singhi (1.58%) and eel (1.46%) of total market arrival/day. The above results indicates that highest market arrival of pangasius it was mainly due to pangasisus was imported from the outside of state mainly from Andhra Pradesh and West Bengals. This results clearly indicates that fish as commodity traded to distant places. Hence in order to ensure the quality of fish at consumption point, good logistic and cold storage facilities is essentially required. It will also reduce post harvest losses of fish.

Table 3: Species-wise market arrival of fishes in the Naveen Machhali Mandi Mahanva whole sale market of Uttar Pradesh

Fish species	Market arrivals	
	Quantity in Kg	Percentage of total arrival
Pangasius spp. (*Pangasius pangasius)*	789	19.26
Rohu (*Lebeo rohita)*	555	13.55
Catla (*Catla catla)*	533	13.02
Grass carps *(Ctenopharyngodon idella)*	312	7.62
Common carps *(Cyprinus carpio)*	287	7.00
Tilapia *(Oreochromis niloticus)*	271	6.63
Mystus (*Mystus* tengara)	264	6.45
Silver carps *(Hypophthalmichthys molitrix)*	242	5.91
Mrigala *(Cirrhinus mrigala)*	204	4.98
Puntius spp.	199	4.85
Channa spp.	170	4.14
Mangur *(Clarias batrachus)*	146	3.56
Singhi (*Heteropneustes fossilis*)	65	1.58
Eel (*Ophisternon bengalense*)	60	1.46
Total (Kg)	4096	100.00

Marketing Cost: The cost incurred by different marketing intermediaries is given in Table 4. From the table, per quintal marketing cost of fish incurred by the intermediaries was highest in channel I (₹ 66.81/ kg) followed by channel III (₹ 52.88/kg) and II (50.34). In channel I, fish producers sell their produce to fish trader and the trader bring the produce in market and sell it. Out of these total marketing cost fish traders in channel I incurred ₹ 15.84/kg, cost incurred by the auctioneer ranges between ₹ 16.38/kg to ₹ 20.38/kg; wholesaler ₹ 13.05/kg to 18.25 and retailers ₹ 16.73 to ₹ 17.73/kg. The total marketing cost excluding the margin of the intermediaries varies between 32.03%; 41.50% and 40.40% of the retail price in channel-II; Channel-III and Channel-I respectively. Like other agricultural produce in fish marketing also the labour, commission charges, packaging and transportation are the major cost items.

Marketing margin and price spread: Price spread is the difference on ultimate price paid by the consumer and the net price received by the producer for an equivalent quantity of farm product. It consists of marketing cost and margins of the intermediaries that determines the overall effectiveness of marketing system. The producers share in consumers' rupee (Table 4) was highest in channel III (59.17%) and lowest in channel I (44.67%). Large percentage share of producer in channel III are the less number of middlemen between producers and consumers.

Table 4: Price spread for fishes in different marketing channels in Utter Pradesh

Particulars	Marketing channels		
	Channel I	Channel II	Channel III
Price received by producers	73.93 (44.67)	78.32 (49.83)	75.38 (59.17)
Cost incurred by traders	15.84 (9.58)	—	—
Market margin	5.61 (3.40)	—	—
Price paid by auctioneer	95.38 (57.70)	78.32 (49.83)	75.38 (59.17)
Cost incurred by auctioneer	20.38 (12.32)	16.38 (10.42)	16.38 (12.85)
Margin	6.10 (3.38)	7.21 (4.59)	8.25 (6.47)

Price paid by whole sellers	121.86 (73.68)	101.91 (64.84)	99.93 (78.45)
Cost incurred by whole sellers	13.05 (7.89)	17.23 (10.96)	18.25 (14.32)
Margin	6.45 (3.90)	4.30 (2.74)	9.20 (7.22)
Price paid by retailers	141.36 (85.47)	126.44 (80.45)	—
Cost incurred by retailer	17.53 (10.60)	16.73 (10.4)	—
Margin	6.50 (3.93)	7.30 (4.64)	—
Price paid by wholesaler cum retailer	—	—	99.93 (78.93)
Cost incurred wholesaler cum retailer	—	—	18.25 (14.32)
Margin	—	—	9.20 (7.22)
Total Marketing cost	**66.81**	50.34	**52.88**
Total market margin	**24.66**	18.81	**26.65**
Consumer price/ retailer	165.39 (100)	157.17 (100)	127.38 (100)
Marketing efficiency	0.808243	1.13261	0.947818

Values are given in the parentheses indicate percentages in consumer price

Next profitable channel of producers for sale of fish was through auctioneer in wholesale market (channel II, 49.83%). Producers share is directly related to the number of market intermediaries involved in the marketing of fish as revealed by the study. The net margin earned by intermediaries were 26.65 24.66 18.81in channel-III, Channel-I and Channel- II, respectively. The percentage share of gross marketing margin in consumers rupee was (55.31%), (43.99%) and (62.43%) respectively in channel I, II and III. The gross marketing margin was recorded the highest in channel III and lowest in channel II.

Marketing efficiency: Marketing efficiency ratio was found to be highest in marketing channel III (Table 4). This high ratio indicates the less number of market middlemen. Applying: Acharya's modified marketing efficiency formula (Acharya and Agarwal, 2001), marketing efficiency in channel I, 0.808243; II, 1.13261; and III, 0.947818. Channel II is the most efficient marketing channel of fish while channel III was second most efficient channel. The study depicts that higher marketing margins pocketed by the intermediaries resulted in poor marketing efficiency of fish.

Constraint faced by fish marketers

The fish farmers faced a large number of marketing-related constraints which are given below:

Table 5: Marketing constraint faced by fish farmers

Marketing constraint	Percentage	Rank
Higher number of middlemen	96.67	I
High cost of transportation	93.33	II
High marketing cost	90.00	III
Delay in settlement of sale proceeds	86.67	IV
Lack of market information on price	83.33	V
High degree of dependency on middlemen for financial support	76.67	VI
Poor infrastructural facilities	73.33	VII
Inadequate storage facilities	60.00	VIII
Lack of good quality and verity of fish species	50.00	IX
Low level of social, economic and educational status	43.33	X
Lack of basic facilities like drinking water, power supply etc.	33.33	XI

In the present study, 11 constraints were considered and ranked by using Garret ranking Technique suggested by Das *et al.* 2013. The major marketing constraint was observed during study faced by farmers were higher number of middlemen (96.67%), followed by high transportation (93.33%), High marketing cost (90.00), Delay in settlement of sale proceeds (86.67), Lack of market information on price (83.33%), High degree of dependency on middlemen for financial support (76.67%), poor infrastructural facilities (65.54), inadequate storage facilities (60.00%), Lack of good quality and verity of fish species (50%), Low level of social, economic and educational status (43.33%) and

Lack of basic facilities like drinking water, power supply etc. (33.33%).

Conclusion and Recommendation

The domestic fish marketing plays an important role, it is still highly unorganized and unregulated (Ganesh Kumar *et al*., 2008). Like other states of India, the fish markets of Utter Pradesh have been found lacking in marketing infrastructure, high transportation cost Improvement in the fish marketing and distribution system in the state will not only reduce supply-demand gap, but will also help in ensuring food and nutritional security to the people of the state. It can, therefore, be concluded that the whole sale fish markets is profitable and higher profit margin can be attained by the marketers if attentions are given to the problems identified by the respondents.

- The involvement of several marketing intermediaries which reduces producer's share in consumer's rupee and reduces marketing efficiency, could be minimized by evolving a cooperative fish marketing system with proper price monitoring system in the market yard as suggested by Das *et al*. 2013.
- The state fisheries departments and state fish development corporations have schemes to help fish farmer to market their harvesting efficiently. The schemes include provision of vehicles for transporting fish from place of harvesting to markets and icing facility.
- State department should be set up several organizations at the national level to promote the fisheries sector and help the fish farmers. These include organizations such as the National Cooperative Development Corporation (NCDC), the National Federation of Fishermen's Cooperatives Ltd. (FISHCOPFED) and the National Fisheries Development Board (NFDB) suggested by Ganesh *et al.* (2008).

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