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Study of fish marketing system: A case study of wholesale fish market, Kishanganj, Bihar

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Abstract

The study examined the parametric and non-parametric marketing approaches for distribution and price determination of fish in wholesale markets ($n_1=10$) of Bihar. The descriptive statistics, Gini index and Coefficient of Variation were used for analysis. The results connote that the price determination was done through open auction method. The average monthly income of wholesalers was ₹ 68,715/-. The Gini coefficient provided the variation in quantity of fish each wholesaler was selling as 36%. Price instability for both iced and live fish was measured with Range and Coefficient of Variance, which implied that the existence of price volatility. The hectic traffic, lack of modernization, lack of organization in market facilities and cess (*Batta*) on fish containers are significant constraints for retailers ($n_2=50$). The policy implications need to address these key issues by developing modern market facilities with the support of state/central funding agencies.

Keywords: Fish, wholesale market, price, batta and aarat

Introduction

The term marketing involves the movement of commodities or a goods from the area of production/surplus to the area of consumption/demand. The agricultural marketing system consists of many complex phases before the product reaches the consumers. In fish marketing such phases include production, assembly, sorting, reassembly, and distribution. The social institution or mechanism that forms linkage between farmers/fishermen and retailers is the assembling and wholesale trading system. The wholesale market can organize a large number of producers (fishermen/farmers) to sell small quantities to be purchased by traders or wholesalers in bulk. In absence of wholesalers, retailers have to purchase directly from producers which again involves chaotic minor transactions, sorting, reassembly, storage and distribution functions. The wholesale markets, with the presence of wholesalers and assemblers facilitate these functions and therefore retailers concentrate on retailing business.

The study particularly focuses on the structure of wholesale fish market in Kishanganj, and emphasizes the strategies employed by wholesalers. The objective is to enhance marketing efficiency in virtue of cost-effective movement of fish from farmers/fishermen to consumers according to their preference. Insights of the study would aid policymakers to internalize dynamics and challenges of fish markets, marketing behavior, facilitate informed decision-making for better planning and monitoring.

Description of study locale

Wholesale fish market in Kishanganj is located near Khagra Mela gate functioning under Municipal Corporation. The market witnesses a daily sale of 8,000 to 10,000 kg of fish with ten wholesalers. Though this wholesale fish market forms a source for majority of retailers however few of them were procuring from West Bengal. Market operates with negligible price competition and rare non-price competition without any visible barriers to embrace the dependent local retailers.

Materials and Methods

A pre-tested interview schedule was used to collect data from wholesalers ($n_1=10$). Descriptive statistics, PESTLE Analysis, Gini index, Lorenz curve, Range and Coefficient of Variation (CV) were used appropriately to describe market and marketing system of wholesale market.

Gini Coefficient was used to find out market concentration and was obtained as follows;

$$\text{Gini Coefficient (G)} = 1 - XY$$

Where,

X = Proportion of wholesalers and Y = Cumulative proportion of sales.

Price instability is assessed with Range and CV which have been given as follows

Range (R) = Highest price - Lowest price

$$\text{Coefficient of Variance (CV)} = \frac{\text{Standard deviation}}{(M-P)} \times 100$$

M – P refers to Mean of price variable. Higher the value of CV, greater is the price instability in the wholesale fish market.

Pestle analysis

The wholesale fish markets are generally influenced different factors which will last either in short-run or long-run. The PESTLE analysis, emphasizes various macro-environmental factors such as Political, Economic, Sociological, Technological, Legal and Environmental factors that are responsible for such dynamics. Fig 1 illustrates the market environmental factors.



Fig 1: Macro-Environmental Factors

In order to understand the constraints of wholesale fish market, 50 retailers were interviewed and data obtained was analyzed using Rank Based Quotient (RBQ) which has been given as follows

$$RBQ = \frac{\sum f_i(n + 1 - i) \times 100}{N \times n}$$

Where,

f_i = No. of wholesalers reporting a particular constraint under i^{th} rank.

n = No. of constraints identified

N = Total No. of wholesaler

r = No. of Rank

Results and Discussion

Disaggregation of fishes sold in the market

The Kishanganj wholesale fish market majorly deals with the Indian Major Carps viz. Catla, Rohu, and Mrigal. In addition to these carps, Catfish such as Singhi (*Heteropneustes fossilis*), Magur (*Clarias batrachus*), and Pangasius (*Pangasius pangasius*) are also prevalent. Fish varieties such as shellfish, Grass Carp, Silver Carp, and Common Carp are available at limited quantities.

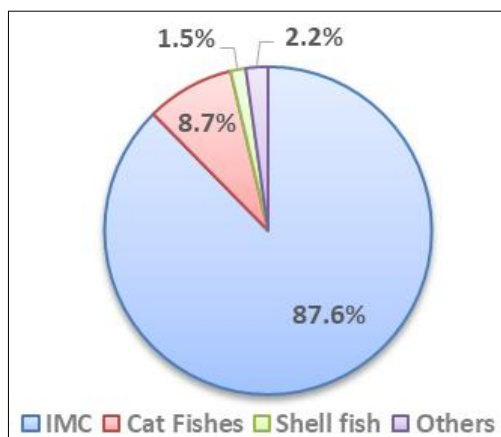


Fig 2: Common fishes sold in Wholesale fish market

Marketing cost (Aarat)

The term *aarat* refers to marketing cost (includes shop rent, labor cost, electricity charges etc.) levied by wholesalers on producers/traders at the rate of 1-2% of the total sale. For instance, if a producer has made a sale of 100 kg of fish through a wholesaler at the price of ₹ 150/- per kg then producer will be charged ₹ 150 - 300 as *aarat*.

Price determination in wholesale fish market

Price of fish in wholesale market is established through the open auction method. Wholesalers place a basket of fish at the center, prompting interested buyers will bid for the fish. All buyers participate in bidding and the buyer who place highest bid owns the fish.

Price determinants of fish prices in wholesale fish Market

- Quality of Fish
- Time of arrival of fish in the market
- Types of fish species
- No. of buyers in the market at the time of auction
- Supply of fish in the market

Average monthly income

The monthly average income of wholesalers from the sale of fish was estimated as ₹ 67,500/- and particulars are depicted in the following table 1.

Table 1: Monthly average income of wholesalers

Particulars	Quantity (kg)	Price (₹/kg)	Value (₹)
A. Average fish sold	33,750 Kg	92	31,05,000/-
B. Market margin charged from farmers	33,750 Kg	2	67,500/-
C. Marketing cost (Aarat)	33,750 Kg	1	33,750/-
D. Average Gross income for wholesalers	-	-	1,01,250/-
E. Marketing cost	-	-	33,750/-
F. Net Income (D-E)	-	-	67,500/-

Market concentration

Market concentration in wholesale fish market determines the market structure and it was assessed using Gini coefficient and Lorenz curve. The Gini coefficient value of 0.36 signifies variation among wholesalers in quantity of fish they sell. This difference could also be observed from the Lorenz curve (Fig. 3).

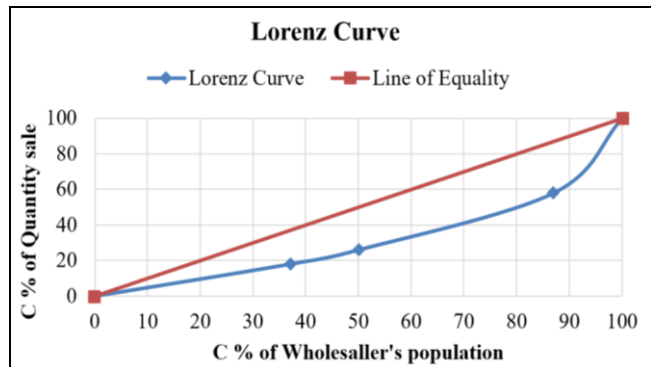


Fig 3: Lorenz curve for wholesalers

Price instability

The table 2 depicts that, in Kishanganj wholesale market, price range of iced fish is lower than that of live fish. The difference was due to the consistent demand for live fish than the iced fish.

Table 2: Price range of iced and live fishes

Fish Items	Lowest Price	Highest Price	Range
Iced Fish	136.50	146.00	9.50
Live Fish	177.00	193.50	16.50

On other hand, the highest CV value of live fish (3.45) than the iced fish (2.45) indicates that the former has more price risk than latter which was due to high supply fluctuation of live fish.

Pestle analysis

Various factors affect the performance of wholesale fish market. The PESTLE analysis encompasses these factors as Political, Economic, Sociological, Technological, Legal and Environmental factors.

Political factors

Political factors are external to the market environment however can affect any organization. These factors include stability in decision making, market organizational structure and personals, ethics, economic policies and international trading agreements. As the wholesale fish market, Kishanganj is a traditional type, the effect of political factors are meagre. However, the Bihar/ Central government policies aiming at fisheries sector have positively affected the supply and availability of fresh fish in the district.

Economic factors

Economic factors relate to the availability and accessibility to institutional credit. A good credit system enables the wholesalers, traders and processors to improve their capacity for fishing, post-harvest handling and preservation/storage facilities. Since the wholesalers are having limited means to secure a loan, availing institutional credit facility is a difficult task for them.

Sociological factors

Certain social and cultural factors influence the continuous supply, quantity and quality of fish available at the market. The vegetarian population in Kishanganj district is less in comparison to other districts of Bihar which gives the insight for further expansion of fisheries activities including marketing. Creation of awareness about health benefits of fish consumption would enable the increased per capita consumption thereby further expansion of wholesale market fish market.

Technological factors

Technology is the essence for the competitive advantage. The wholesale fish market of Kishanganj is a traditional type and therefore the lack of advanced technologies in transportation, storage/preservation and disposal of fish hinders the market performance in terms of quality, pricing and shelf-life of fish.

Legal

A good legal system regulates financial, environment, consumer health and safety aspects. Though the government has issued regulations covering harvesting, post-harvest handling, resource management, storage and marketing yet these are unknown or rarely followed by the majority of the market intermediaries.

Environmental factors

Environmental factors have a great impact on the supply of fish especially from the capture fisheries. The environmental degradation escorted by overfishing in inland waters leads to limited availability of capture fishes at the market.

Constraints in wholesale fish market

All the prominent constraints of the wholesale fish market were ranked based on their impact on retailers by using RBQ method.

- 1. Traffic problem in the Market:** Vehicular movement has become very difficult especially during loading and unloading of vehicles. This creates serious traffic chaos in the market. This problem can be solved through proper arrangement of market facilities as shown in fig 4.

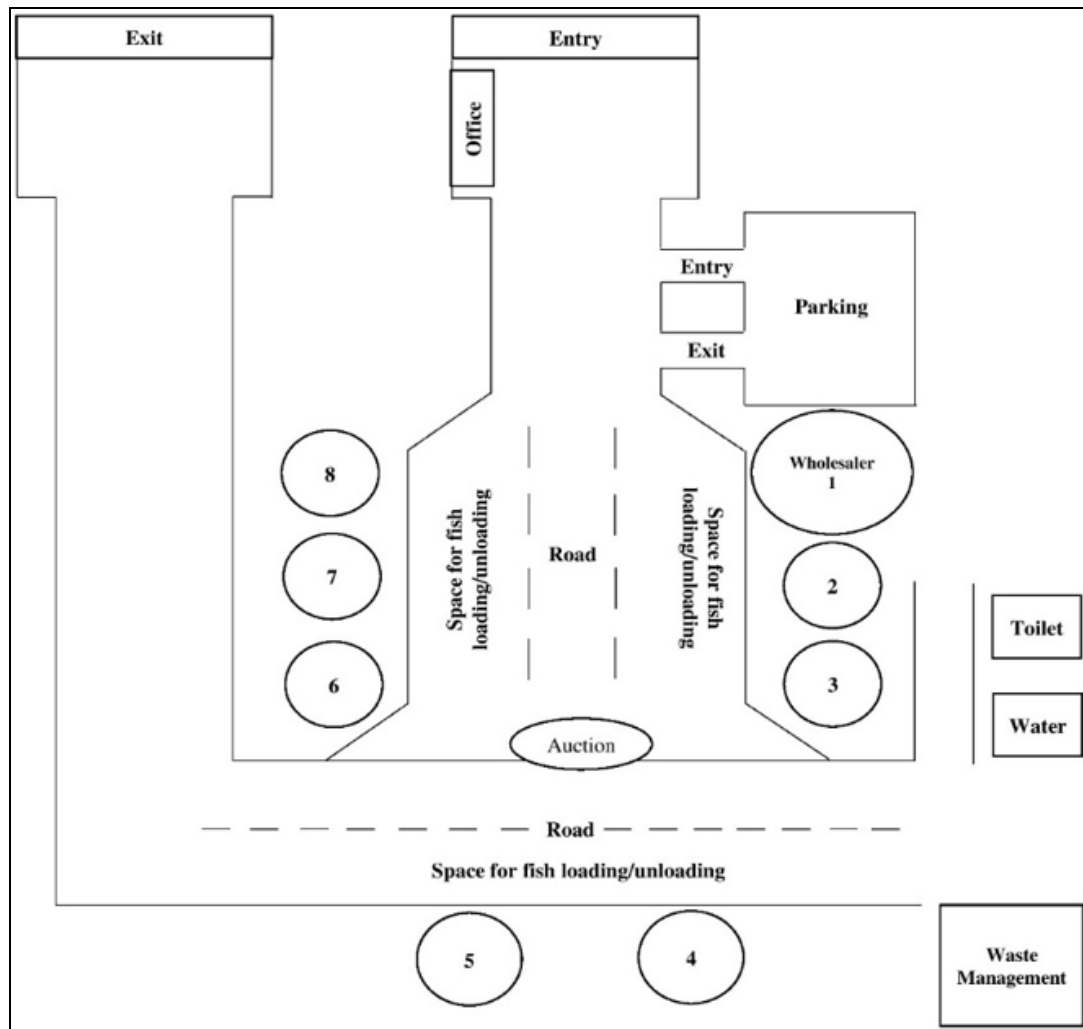


Fig 4: Proposed structure of modern wholesale fish market

2. **Lack of maintenance:** The present wholesale fish market was found to be unhygienic and impeded by poor managed. There is a need to improvement of the facilities such as entry and exit, parking, loading and unloading facility, auction centers, free vehicle movement facility, foot paths for those visit market, waste disposal facility etc. as shown in in the fig. 4.
3. **Poor infrastructure facility:** The hygienic markets and freshness of fish will have a direct effect on consumer preference as their purchasing power is increasing. Being a traditional wholesale fish market, a quality fish is assured only if modern handling practices are followed. Technological upgradation not only attract consumers but also benefit the wholesalers to minimize losses due to poor handling. At present many funding agencies such as Central/State governments and NFDB are supporting for the development of infrastructure facilities in the fisheries sector. These funds can be availed either by individual or group/institutional approach.
4. **Lack of proper sanitation:** In order to serve a good quality fish, the wholesale fish market of Kishanganj has to focus on cleanliness of the market premises. The Municipal corporation may be engaged for sanitation purpose.

Conclusions

The wholesale fish market located in Kishanganj is a traditional one and it is the only one wholesale fish market in the district. The wholesaler's average monthly income of ₹ 68,715/- indicates that wholesale marketing was profitable. The Gini coefficient depicted that 36% variation in quantity of fish sold by wholesalers. Price instability coefficient revealed that both live fish experiences high price instability than iced fish. The influential external micro-environmental factors such as political, economic, sociological, technological, legal, and environmental (PESTLE) factors need to be focused to ensure better management and efficiency of the market. The market structure must be optimized keeping in view of the market problems such as market infrastructure, road conveyance, market entry and exit, foot path for buyers, waste disposal facility and sanitization.

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