

Structure, Conduct, and Performance of Domestic Fish Markets in Kerala

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The present paper examines how domestic fish markets function and how spatial location influences market organization, supply channels and its vulnerability to external supply shocks and identifies the major constraints. The study was conducted across selected fish markets in different districts in Kerala viz. Thrissur (Urban Coastal), Pathanamthitta (Non-Coastal Urban) and Palakkad (Non- Coastal Rural). A total of seven markets, including both wholesale and retail markets, were surveyed across these districts. Primary data collected during 2025–26 were analysed using descriptive statistics, the Herfindahl–Hirschman Index (HHI), Gini coefficient, price spread analysis and Garrett’s ranking technique. The findings indicate clear spatial differences in market organization and fish supply, with Thrissur markets having relatively greater access to nearby marine landing centres, while the inland markets of Palakkad and Pathanamthitta depended more on inter-district and interstate supplies. Market concentration and the distribution of trade also varied across markets, reflecting differences in the number and market shares of traders. Price spreads generally increased in inland markets, indicating the role of transportation, handling and distribution in influencing price differences between landing and retail stages. The study further identified inadequate infrastructure, high transportation and marketing costs, and demand-related concerns as major constraints faced by market participants. The findings highlight the importance of location-specific interventions to strengthen market infrastructure, improve handling and distribution facilities, and address operational constraints in Kerala’s domestic fish marketing system.

Keywords: Market structure, Market Turnover, Market Channel, Species Diversity, Demand and supply gap, Market concentration

JEL Classification: L11, Q22

INTRODUCTION:

Fish marketing is an efficient economic production system that depends on several multi level market functionaries from producers to

consumers. The ideal fish marketing system ensures a continuous flow of goods and services with a high level of customer satisfaction (Salim et al., 2020). Kerala is one of India’s major fish-consuming states, with a coastline

of about 600 km, nine coastal districts and 204 marine fish landing centres supporting a large marine fishing population (Government of Kerala, 2024; Ministry of Ports, Shipping and Waterways, 2025). Kerala's total fish production, including marine and inland fisheries, was about 9.21 lakh tonnes in recent years, while marine fisheries continue to play an important role in meeting the state's fish requirements (Department of Fisheries, Government of Kerala).

Fish forms an important component of the state's diet, with per capita consumption estimated at around 27–30kg. However, domestic production is insufficient to meet the growing demand, and an estimated 30–40 per cent of the state's fish requirement is met through supplies from other states such as Tamil Nadu, Karnataka, Andhra Pradesh and Gujarat (Salim, 2020).

Marine fish marketing in India is characterized by uncertainties in supply, species availability, demand patterns, marketing channels, intermediaries and price fluctuations. (Sathiadhas *et al*, 2012, Vijayan *et al* 2025). Kerala exhibits a distinct demand and supply pattern in the fish sector, characterized by high and increasing consumption levels with prices fluctuating and insufficient local production, resulting in growing dependence on interstate fish imports to bridge the demand and supply gap. (Mathew, 2024). The demand and supply relationship are influenced by

the doctrines of availability, accessibility and affordability.

Kerala's fish distribution system includes cooperative and government-supported initiatives such as Matsya fed, alongside private wholesale and retail trading networks. However, a substantial share of daily fish trade continues to take place through conventional markets, where buying and selling are primarily undertaken by wholesalers, retailers and other private market participants. Municipal and local authorities generally perform administrative and infrastructural functions, including the management of market spaces and collection of relevant charges. Similar variations in institutional and market arrangements exist across Indian states.

Despite the fact that marine fish marketing has a varying importance in ensuring supply stability and livelihood security, the studies on the structure and functioning of domestic fish markets in Kerala remains limited. In this aspect, there is a need to understand how the domestic fish market functions, and how spatial location influences market organization, supply channels, and vulnerability to external shocks.

Against this background, the present study examines selected fish markets in Thrissur, Palakkad and Pathanamthitta, representing different spatial positions within Kerala's fish distribution network. Thrissur has relatively better access to nearby marine landing centres, whereas

Palakkad and Pathanamthitta are inland districts dependent substantially on supplies from coastal Kerala and other states. The study examines market characteristics, concentration of trade, arrival and disposal channels, trading practices, infrastructure, market turnover, price spread and operational constraints to understand how spatial location influences market structure and performance. (Upadhyay and Roy, 2016)

METHODOLOGY:

Study area and market selection

The study examined the structure, conduct and performance of selected domestic fish markets in Kerala, with particular emphasis on the role of spatial location in shaping fish supply channels, market organization and price formation. Three districts, namely Thrissur, Palakkad and Pathanamthitta were purposely selected to represent markets occupying different positions within the state's domestic fish distribution network. Thrissur represents a relatively coastal-proximate market system with access to nearby marine landing centres, whereas Palakkad and Pathanamthitta represent inland market systems that depend on fish transported from coastal districts within Kerala as well as from other states. (Bassett *et al* ,2022). Seven market segments comprising wholesale, retail and wholesale-cum-retail operations were selected for the study. These included Sakthan and the wholesale and retail segments of Kunnamkulam in Thrissur district;

Pattambi and Palakkad town markets in Palakkad district; and Kumbazha wholesale market and Pathanamthitta retail market in Pathanamthitta district. The markets were selected to facilitate a spatial comparison of market organization, supply channels and price formation across coastal-proximate and inland locations.

Data collection

Primary data were collected during 2025–26 using a pre-tested structured schedule through interactions with wholesalers, retailers and other market functionaries. Information was collected on market characteristics, infrastructure, market participants, auction and trading practices, species-wise quantity and prices, sources of fish arrivals, disposal destinations, intermediaries, and operational constraints.

Theoretical framework

The analysis was guided by the Structure–Conduct–Performance (SCP) framework, which provides a framework for examining the relationship between the organization of a market, the behavior of market participants and the outcomes generated by market operations.

In the present study, Market structure was assessed using market type, location, accessibility, number of market participants, supply sources and measures of market concentration and distribution of trade. Market conduct was examined through auction arrangements, price determination, bargaining, buying and selling

practices, sorting, grading, handling and other trading activities, based on interactions with market participants (Mebrate, 2019). Market performance was assessed using the quantity and estimated value of fish traded, species composition and price spread between the producer/landing-Centre and retail stages.

The analysis also considers the organization of supply and disposal channels to examine how the spatial position of markets affects the movement and pricing of fish.

Estimation of market turnover

The daily market turnover was estimated by aggregating the value of fish traded across sellers in each market.

Market Turnover is calculated as following

$$MT = \sum_{i=1}^k N_i Q_i P_i$$

Where:

i=Market segment

k=Total number of segments

where Q_i is the estimated total quantity traded in market i, n_i is the number of sellers where p_i represents the corresponding selling price.

Market concentration and distribution of trade

Market concentration was assessed using the Herfindahl–Hirschman Index (HHI) (Shelby B White, 2024) while the distribution of trade among market participants was examined using the Gini coefficient.

The HHI was calculated as:

$$HHI = \sum_{i=1}^n s_i^2$$

where s_i is the percentage market share of the i th trader and n is the total number of traders. A higher HHI indicates greater concentration of trade among a smaller number of participants, whereas a lower value indicates a more dispersed market structure.

The Gini coefficient was estimated from the cumulative distribution of traders and their corresponding cumulative market shares using the Lorenz curve approach:

$$G = \sum_{i=1}^n (y_i + y_{i-1})(x_i - x_{i-1})$$

where X_i represents the cumulative proportion of traders and Y_i represents the corresponding cumulative proportion of market share. The coefficient ranges from 0 to 1, with values closer to zero indicating a more even distribution of trade and higher values indicating greater inequality in the distribution of market shares. (Foluso Osundare, 2018)

The HHI captures the degree of concentration, while the Gini coefficient indicates the extent to which trade is unevenly distributed among participants.

Price Spread and Market Performance

Price spread was estimated as a quantitative indicator of market performance. Since the study observed prices at the landing-centre and consumer stages, the analysis measures the price differential between these two stages rather than the complete producer-to-consumer marketing margin. The absolute price spread was calculated as:

$$PS = P_c - P_p$$

where P_c is the consumer price and P_p is the corresponding landing/producer price (₹/kg). The price spread was subsequently expressed as a percentage of the retail consumer price:

$$PS\% = \frac{P_c - P_p}{P_c} * 100$$

A higher percentage indicates that a larger proportion of the retail price represents the price differential between the landing-centre and retail stages. The indicator therefore provides a basis for comparing price transmission across markets and species, while recognising that the

spread may reflect transportation, handling, perishability, market margins and other costs associated with moving fish from landing centres to retail markets.

Analysis of market constraints

The constraints faced by market participants were analysed using Garrett's ranking technique. Respondents were asked to rank the identified constraints according to their perceived severity.

RESULT AND DISCUSSIONS:

Market Structure

The market structure of these markets covers the major dimensions, namely location, market type, year of establishment, area, administrative control, market access (nearest landing centre, railway station, bus stand, airport and seaport), market timing (hours of operation) and market conduct (number of wholesalers, retailers, commission agents and brokers). The market structure of the surveyed markets was analyzed and the details are given in Table1.

Table 1: Fish Market structure - Thrissur, Palakkad and Pathanamthitta

Market Dimension	Sakthan	Kunnamkulam	Kunnamkulam	Pattambi	Palakkad	Kumbazha	Pathanamthitta
District	Thrissur	Thrissur	Thrissur	Palakkad	Palakkad	Pathanamthitta	Pathanamthitta
A. Location							
Type of market	Wholesale & retail	Wholesale	Retail	Wholesale & retail	Wholesale & retail	Wholesale	Retail
Year of Establishment	1986	1994	1961	2017	1901	1995	1986
Area of market (Acres)	1	1	0.5	0.75	0.5	0.5	1.5
Lat/Long position	10.5149348°N - 76.2164°E	10.653406N, 76.0668 E	10°39'12.5" N - 76°04'13.3" E	10.8096°N - 76.1865°E	10.7730°N - 76.6498°E	9.264408°N - 76.808455°E	9.263141°N - 76.786932°E
Market control	Thrissur Municipal Corporation	Kunnamkulam Municipality	Kunnamkulam Municipality	Pattambi Municipality	Palakkad Municipality	Pathanamthitta Municipality	Pathanamthitta Municipality
B. Market access							
Nearest landing centre (km)	Chettuva (25)	Chavakkad (13)	Chavakkad (13)	Chavakkad (45)	Chavakkad (89.5)	Neendakara (58.6)	Neendakara (58.6)
Nearest railway station (km)	Thrissur	Guruvayoor	Guruvayoor	Pattambi (1.4)	Palakkad (3.9)	Chengannur	Chengannur (31)
Nearest bus station (Km)	Sakthan (0.2)	Kunnamkulam (0.5)	Kunnamkulam (0.5)	Pattambi (1.7)	Palakkad (1)	Kumbazha (0.2)	Kumbazha (0.2)
Nearest airport (km)	Cochin International Airport (48.9)	Cochin International Airport (75)	Cochin International Airport (75)	Cochin International Airport (93.3)	Coimbatore International Airport (70)	Trivandrum International Airport (106)	Trivandrum International Airport (106)
Nearest sea port (km)	Cochin Seaport (52)	Cochin Seaport (85)	Cochin Seaport (85)	Cochin Seaport (129)	Cochin Seaport (140)	Cochin Sea Port (125)	Cochin Sea Port (125)
C. Market timing							
Timing (Hrs)	16	2	12	3	9	3.5	14
D. Market conduct							
Wholesalers	18	9	-	6	9	5	-
Retailers	33-35	-	5	2	11	-	22
Middlemen	-	-	-	-	-	-	-
Commission agents	-	-	-	6	9	5	-
Brokers	-	-	-	-	-	5	-

The ranks assigned by the respondents for different factors are converted into scores.

$$\text{Percent position} = \frac{100(R_{ij} - 0.5)}{N_j}$$

where,

R_{ij} = Rank given for the i th variable by j th respondent.

N_j = total number of constraints ranked by the j th respondent.

The corresponding Garrett score was obtained using the standard Garrett conversion table, and the mean score for each constraint was used to derive its final ranking

The selected fish markets differed in their organizational characteristics, accessibility and scale of operation, reflecting their spatial position within Kerala's fish distribution network (Table 1). Sakthan and the Kunnamkulam markets in Thrissur, were relatively closer to marine landing centres, whereas the markets in Palakkad and Pathanamthitta were located farther from landing centres and depend more on fish transported from coastal districts and other states influencing the sources of supply, transportation requirements and the role of the market within the wider distribution network. Sakthan Market, established in 1986, functions as a wholesale-cum-retail market with 18 wholesalers and approximately 33–35 retailers, indicating its importance as a regional distribution centre. Kunnamkulam had nine wholesalers in its wholesale segment and five retailers in the retail segment, reflecting distinct wholesale and retail functions within the same location. In contrast, the markets in Palakkad and Pathanamthitta function primarily as secondary distribution and consumption centres, depending on external fish supplies.

Fish marketing generally involved auctioneers, wholesalers, retailers and other traders, with their roles varying across markets. Wholesalers purchased fish in bulk and undertook activities such as sorting, grading, cleaning, icing and packing before resale to retailers or other traders. In some cases, groups of retailers also

participated directly in auctions to procure fish from auctioneers. Retailers subsequently sold fish to consumers, either directly over the counter or through vendors. Thus, the marketing chain was not uniform across markets, with the involvement of different market participants depending on the organization and supply channel.

The spatial difference is also reflected in the market accessibility. The relatively shorter distance of the Thrissur markets from landing centres facilitates access to multiple sources of marine fish, while the greater distance of the Palakkad and Pathanamthitta markets make transportation a more important component of the supply chain. Thus, the selected markets demonstrate a spatially differentiated distribution system. Thus, geographical distance is not merely a physical characteristic of the market; it influences the organization of supply, handling requirements and the costs associated with moving a highly perishable commodity.

Market arrivals and disposal

Market arrivals refer to the inflow of fish in a market from landing centres or other sources. It indicates the supply side of the market, showing different type of species arrival, quantity of fish and source of arrival. Market disposal refers to the quantity of fish that is actually sold or cleared out from the market through wholesale, retail, or other channels during the same period. It reflects the demand side and market clearance.

Table 2: Market arrivals and disposal of various fish species in selected markets

Market	Arrival	Disposal
Sakthan	Chettuva (Kerala), Azhikode (Kerala), Koorikuzhy (Kerala), Munambam (Kerala), Ponnani (Kerala), Vypin(Kerala), Tamil Nadu, Karnataka, Andhra Pradesh, Gujarat	Thrissur
Kunnamkulam	Ponnani (Kerala), Munambam (Kerala), Thanoor (Kerala), Chavakkad, (Kerala) , Tamil Nadu, Mangalore (Karnataka), Andhra Pradesh	Thrissur, Palakkad
Kunnamkulam	Kunnamkulam Wholesale Market	Thrissur
Pattambi	Cochin Fisheries Harbour (Kerala), Tamil Nadu, Karnataka, Gujarat	Pattambi
Palakkad Fish	Tamil Nadu, Andhra Pradesh, Kerala	Palakkad
Kumbazha	Tamil Nadu, Andhra Pradesh	Pathanamthitta
Pathanamthitta	Pazhakulam (Kerala), Adoor, (Kerala) Neendakara (Kerala), Kollam (Kerala), Thoothukudi (Tamil Nadu)	Pathanamthitta

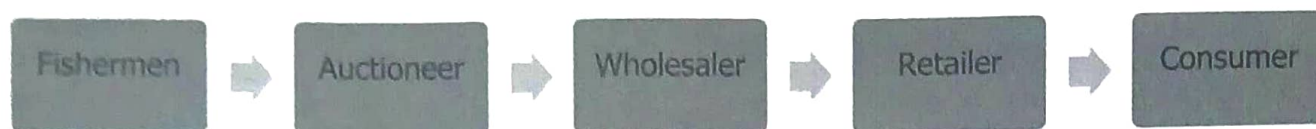
The markets in Thrissur receive fish mainly from neighboring landing centres in Kerala, and are also sourced from the states such as Tamil Nadu, Karnataka, Andhra Pradesh and Gujarat. Its diversified supply base and distribution of fish indicate its role as an important aggregation and redistribution centre within the regional fish marketing network, with fish being distributed within Thrissur and to Palakkad. In the case of Palakkad and Pathanamthitta markets, the arrivals are from different coastal districts of Kerala and other states, including Tamil Nadu, Karnataka, Andhra Pradesh, Karnataka and Gujarat. The supply chain therefore involves greater spatial movement of fish before it reaches the final

consumer. These patterns reinforce the role of Palakkad and Pathanamthitta as an inland consumption and distribution market that is connected to both coastal Kerala and interstate sources (Table.2).

Overall, the arrival pattern demonstrates a clear spatial differentiation in the organization of fish supply. Thrissur markets have access to a relatively diversified set of nearby and external sources, whereas Palakkad and Pathanamthitta rely more strongly on fish transported over longer distances.

The identified supply chain operational across the markets in Kerala is as follows

Fishermen Auctioneer Wholesaler Retailer Consumer



The marketing channels generally involved the movement of fish from producers or landing centres through auction and wholesale transactions to retailers and, subsequently, consumers. Depending on the market and the nature of the transaction, fish was also supplied to vendors, hotels and catering establishments. In the case of interstate marketing channels, the number of intermediaries increases, often involving additional agents and traders from the participating states. The composition of market participants and intermediary functions changes according to the supply route and market function rather than following a uniform intermediary structure across all seven markets. Therefore, the study establishes the existence of longer and geographically dispersed supply channels. Although the selected markets operate under the administrative control of the respective municipal bodies, the municipalities do not directly participate in fish trading or price determination. Their role is primarily associated with the provision and management of market space and basic facilities, including regulation of

entry, loading and unloading, sanitation and maintenance, along with the collection of applicable market charges. The actual trading activities, including procurement, wholesale and retail transactions, are undertaken by market participants such as wholesalers, retailers and other traders. Thus, municipal control primarily shapes the physical and administrative environment within which fish trade takes place rather than directly influencing individual trading decisions.

Species Diversity

The species diversity across the markets indicated that around 20-25 marine species were marketed, and the most common species traded included sardines, mackerel, shrimps, tuna, anchovy and seer fish, while inland species such as tilapia and pearl spot were also marketed. Price variations were observed across different fish species in different markets influenced by changes in demand, availability and consumer preferences. The details regarding the market price and the quantity of the major species traded in the markets are explained in Table 3.

Table 3: Species diversity and market turnover across markets

Market	Major Marine fish species traded	Quantity traded (tonnes)	Daily Turnover value (Lakh)
Sakthan (Thrissur)	Sardines, Mackerels, Tuna, Trevally, Mullet, Seer, Shrimp, Snapper,	10.55	22.4
Sakthan (Thrissur)	Sardines, Mackerels, Anchovy, Shrimp, Trevally, Mullet, Seer, Silver Pomfret.	10.01	22.13
Kunnamkulam	Sardines, Mackerels, Anchovy, Tuna, Shrimp, Trevally, Mullet, Seer, Silver Pomfret, Tilapia	10.98	21.78
Kunnamkulam	Sardines, Mackerels, Shrimp, Trevally, Mullet, Seer, Silverbelly	0.75	1.63
Pattambi Fish Market	Sardine, Mackerel, Shrimps, Anchovy, Sole fish, Tuna, Seer Fish	10	21.46
Palakkad Fish Market	Sardine, Mackerel, Sole fish, Tuna, Tilapia, Anchovy, Seer Fish	7.11	14.82
Kumbazha	Sardines, Mackerel, Shrimp, Pomfret, Seer Fish, Tuna, Anchovy, Cobia, Tilapia	6	17.7
Pathanamthitta	Sardines, Mackerel, Shrimp, Pomfret, Seer Fish, Tuna, Anchovy, Cobia, Tilapia	6.05	22.08

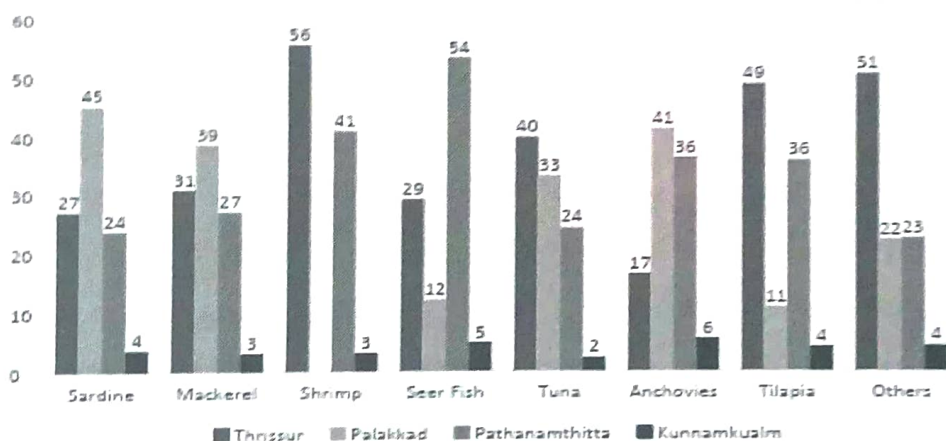


Fig 2: Common Species traded across the selected retail markets

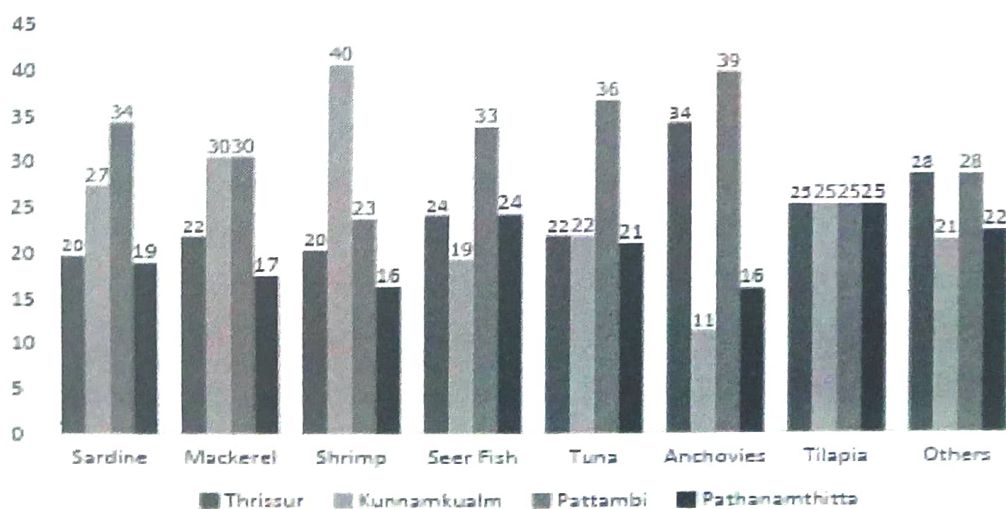


Fig 3: Common Species traded across the selected wholesale markets

The widespread presence of sardine and mackerel reflects their regular availability, affordability and established consumer demand in Kerala. Consumption studies have consistently indicated the importance of marine fish in the diet of Kerala households, with consumer preferences and affordability influencing the demand for different species. The species diversity indicates the spatial distribution of a particular species across markets (Salim et al., 2021), and varies across markets according to the availability of supplies, consumer preferences and the ability of traders to source fish from different regions. Apart from the above mentioned major species traded, other fishes such as Threadfin, Squid, Bullseye, pearl spot and inland fishes like catfish, carps are also traded in the surveyed markets. Palakkad and Pathanamthitta also trades fish from inland fisheries and reservoirs. The Figure 2 and Figure 3 shows the common species traded across the selected markets and their composition in each market. The quantum of fish traded and price are analysed in the markets. The average quantity of fish traded in the selected market of the three districts is 15 tonnes ranging from 12 tonnes at Pathanamthitta and Kunnamkulam to 21 tonnes at Sakthan. The average market turnover in the selected markets is Rs. 35 Lakhs ranging from 21.78 lakhs (Kunnamkulam) to 44.5 lakhs (Sakthan). The species traded at Thrissur Market is 21 tonnes followed by Palakkad 17 tonnes followed by

Pathanamthitta with 12 tonnes traded. In addition to live fish there is a section for dried fish with 10 stalls in Sakthan market with only 2-3 varieties dried up. Overall, usage of dried fish is diminishing day by day due to the lack of consumers and low product diversity.

The decline of the dried-fish segment at Sakthan is associated with changes in both market demand and supply conditions. On the demand side, the increasing preference for fresh fish and the availability of a wider variety of fresh fish may have reduced the relative demand for dried fish. On the supply side, the widening demand-supply gap for fresh fish in Kerala implies that a larger share of available fish is absorbed by the fresh-fish market, leaving relatively less surplus for drying. Consequently, traders may have greater incentives to sell fish in fresh form when market prices are remunerative rather than incur additional processing and storage costs. The limited diversification of dried-fish products and declining consumer demand further reduce the attractiveness of this market segment

Market concentration and Distribution of trade

Market concentration and the distribution of trade among traders were assessed using the Herfindahl-Hirschman Index (HHI) and the Gini coefficient. While the HHI measures the extent to which market activity is concentrated among traders, the Gini coefficient indicates the degree of inequality in the distribution of trade.

Table 4. Market concentration and distribution of trade in selected fish markets

Market	HHI	Gini coefficient	Interpretation
Kunnamkulam	955.56	0.33	Relatively dispersed market structure with moderate inequality in trade distribution
Pattambi	1697.76	0.33	Moderate concentration
Palakkad	617.65	0.28	Relatively dispersed trade distribution
Kumbazha	2035.23	0.07	Relatively higher concentration
Pathanamthitta	604.86	0.33	Relatively dispersed trade distribution
Thrissur (Wholesalers)	647.25	0.24	Relatively dispersed trade distribution
Thrissur (Retailers)	443.48	0.39	Relatively dispersed trade distribution

Note: The HHI and Gini coefficients were calculated based on the respective market shares of traders in the surveyed markets.

The results indicate variation in the distribution of trade across the selected markets (Table 4). Kumbazha recorded the highest HHI, indicating a relatively greater concentration of trade, with a small number of traders followed by Pattambi. In contrast, Palakkad, Pathanamthitta Retail market and Thrissur recorded comparatively lower HHI values, suggesting a more dispersed distribution of trade among market participants, reducing the relative dominance of individual participants. Kunnamkulam also exhibited a relatively low level of concentration based on the HHI.

The Gini coefficient was estimated using the cumulative distribution of traders and their respective market shares. The Gini coefficients further highlight differences in the distribution of trade among traders. Kunnamkulam, Pattambi and Pathanamthitta recorded (0.33) showed moderate inequality. Palakkad (0.28) and Thrissur (0.24) (0.39) had

relatively more even distributions among wholesalers and shows inequality among retailers, whereas Kumbazha recorded the lowest Gini coefficient (0.07), indicating a highly even distribution of trade among the traders included in the analysis.

The results show that market concentration and inequality in trade distribution do not necessarily move in the same direction. Kumbazha, for instance, recorded a relatively high HHI but a low Gini coefficient, reflecting the different aspects captured by the two measures. Overall, Pattambi and Kumbazha showed relatively greater concentration according to the HHI. These differences may reflect variations in the number of active traders, their scale of operation and market organization.

Challenges and Constraints Analysis

The constraint analysis of markets was done based on the opinion of the

different marketers. The major constraints perceived by 15 marketers from each market were analyzed using the Garrett ranking, and the ranks with scores are presented in Tables 4, 5 and 6, respectively, for Thrissur,

Palakkad, and Pathanamthitta. Garrett's ranking technique is usually used to rank the preference indicated by the respondents on different factors.

Table 4: Constraints faced at the markets of Thrissur

Items	Sakthan		Kunnamkulam Wholesale		Kunnamkulam Retail	
	Rank	Score	Rank	Score	Rank	Score
High Marketing Cost	VI	21.43	VI	21.43	VI	21.43
Lack of infrastructure	I	92.86	II	78.57	I	92.86
Lack of consumer	II	78.57	IV	50	IV	50
High Transportation cost	IV	50	I	92.86	V	35.71
Cut Throat Competition	III	64.29	V	35.71	II	78.57
Lack of species diversity	V	35.71	III	64.29	III	64.29
Others	VII	7.14	VII	7.41	VII	7.14

Table 5: Constraints faced at the markets of Palakkad

Items	Pattambi		Palakkad	
	Rank	Score	Rank	Score
High Marketing Cost	III	64.29	III	64.29
Lack of infrastructure	I	92.86	I	92.86
Lack of consumer	IV	50	IV	50
High Transportation cost	II	78.57	II	78.57
Cutthroat Competition	VI	21.43	V	35.71
Lack of species diversity	VII	7.14	VII	7.14
Others (Rent)	V	35.71	VI	35.71

Table 6: Constraints faced at the markets of Pathanamthitta

Items	Kumbazha		Pathanamthitta	
High Marketing Cost	II	78.57	II	78.57
Lack of infrastructure	I	92.86	I	92.86
Lack of consumer	III	64.29	IV	50
High Transportation cost	V	35.71	III	64.29
Cut Throat Competition	IV	50	VI	21.43
Lack of species diversity	VI	21.43	V	35.71
Others	VII	7.14	VII	7.14

In Thrissur, lack of infrastructure emerged as the major constraint, particularly due to inadequate market space, drainage, parking, and organized trading facilities. High transportation costs were identified as another major issue, ranking first in the Kunnamkulam wholesale market. High transportation costs, cut-throat competition, and lack of consumers were other major concerns, while lack of species diversity and high marketing cost were relatively lower-ranked constraints across these markets. The emergence of short stint night fish markets, informal retail shops, setting up roadside stalls, street vendors, increasing the competition for the traders in the organized markets, affecting their sales.

In Palakkad district, lack of infrastructure was consistently ranked as the major constraint in both Pattambi and Palakkad markets, followed by high transportation costs, reflecting their dependence on fish supplies from coastal areas and other states. High marketing costs, lack of consumers, rent, and operational expenses were also reported as concerns indicating their influence on trading activities.

Similarly, in the markets of Pathanamthitta, lack of infrastructure and high marketing costs again represents a primary constraint in both the Kumbazha wholesale and Pathanamthitta retail markets, followed by lack of consumers and transportation costs. Issues such as

competition and lack of species diversity relatively has a lesser impact.

Overall, the analysis clearly shows that inadequate infrastructure and high operational and transportation costs were the dominant constraints across the surveyed markets. Addressing these issues through the provision of well-coordinated, multi-faceted government interventions, including improved infrastructure and maintenance, cold storage facilities, proper waste management systems and institutional support is essential to enhance the efficiency, hygiene, and sustainability of fish marketing systems.

Overall, the findings suggest that the major challenges differ in intensity across markets but are primarily associated with inadequate infrastructure and the costs of maintaining fish quality and moving a highly perishable commodity through the distribution system. The findings point to the need for market-specific improvements in basic trading infrastructure, sanitation, waste management, icing and preservation facilities, rather than a uniform intervention across all markets.

Price Spread and Market Performance

The species-wise price spread for commonly traded fish show spatial variation across the selected markets, with relatively lower spreads generally observed in Thrissur and higher spreads in the inland markets of Pathanamthitta and Palakkad.

The spread for sardine increased from 30.30% in Thrissur to 34.05% in Pathanamthitta and 37.80% in Palakkad. A similar pattern was observed for mackerel, seer fish, tuna and anchovies. Anchovies recorded spreads of 31.25%, 35.05% and 39.10%, respectively, while seer fish recorded 22.33%, 25.75% and 29.05% across Thrissur, Pathanamthitta and Palakkad. Tilapia showed relatively higher spreads in all three locations, at 34.03% in Thrissur, 36.66% in Pathanamthitta and 37.50% in Palakkad.

For sardine, the percentage price spread increased from 30.30% in Thrissur to 34.05% in Pathanamthitta and 37.80% in Palakkad. Similar patterns were observed for mackerel, seer fish, tuna and anchovies. For example, anchovy recorded spreads of 31.25%, 35.05% and 39.10%, respectively, while seer fish recorded spreads of 22.33%, 25.75% and 29.05%.

The relatively lower spread observed in Thrissur is consistent with its closer spatial linkage with marine landing centres and access to multiple coastal sources. In contrast, Palakkad and Pathanamthitta are inland markets and depend substantially on fish transported from coastal districts and other states. The higher price differential in these markets may therefore reflect the additional transportation, handling and

distribution requirements involved in supplying a highly perishable commodity over longer distances.

The species-level differences also indicate that price transmission is not uniform across commodities. Differences in availability, consumer demand, perishability and handling requirements can influence the retail price and consequently the observed spread. Thus, the price-spread analysis provides an additional quantitative dimension to the SCP assessment by linking the observed market structure and supply channels with differences in prices between the landing-centre and retail stages.

SUMMARY AND CONCLUSION:

The study shows that domestic fish markets in Kerala are strongly influenced by their spatial position in the distribution network. Thrissur, being closer to marine landing centres, functions as a major trading and redistribution hub, while Palakkad and Pathanamthitta depend more on fish transported from coastal districts and other states.

Market turnover and price-spread analysis confirm these spatial differences, with generally higher landing-to-retail price spreads in inland markets due to additional transportation, handling and distribution costs. These higher spreads should not necessarily be viewed as lower marketing efficiency,

as they partly reflect unavoidable logistical costs of handling a highly perishable commodity.

The markets also depend on multi-source supply chains, making inland markets more vulnerable to transport and external supply disruptions. The prominence of infrastructure and transportation constraints therefore highlights the need for location-specific interventions addressing key bottlenecks rather than generic infrastructure expansion.

Policy implications

First, location-specific and financially sustainable ice and cold-chain infrastructure should be developed through PPP or cooperative-management models, aligned with existing PMMSY provisions.

Second, transparent digital auction and price-information systems could improve price discovery and reduce information asymmetry without presuming exploitative market power.

Third, stronger cold-chain support is needed for interstate fish movement, including insulated/refrigerated transport, adequate icing and temperature monitoring. Targeted support could strengthen Kerala's resilience to external supply disruptions.

Fourth, the dried-fish segment should be promoted through hygienic drying, packaging, product diversification and market development, providing an alternative channel when fresh-fish disposal is difficult.

Overall, Kerala requires a differentiated supply-chain strategy: efficient aggregation and auction systems in coastal markets, and stronger transport, ice and cold-chain linkages in inland markets. The policy focus should shift towards commercially sustainable infrastructure, transparent price discovery, targeted interstate cold-chain support and value-added marketing to improve efficiency, reduce losses and strengthen market resilience.

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