

Reforming supply chain for entrepreneurship development in fisheries

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Entrepreneurship development in fisheries

Absorbing educated and skilled human resource would contribute towards utilizing the fish towards fisheries development and thereby contributing towards income generation (Mohapatra and Jha, 2020). Fisheries identified as a key sector that has the potential for entrepreneurship development, absorb skilled manpower, generate income and earn foreign exchange (Kumar et al., 2003), not only in India, but in other developing countries as well. The business ecosystem has improved over years: in terms of capital availability, legal & institutional facilitations in licenses and permissions, and political supports (Chaudhary and Sinha, 2021). The fisheries-based activities are labour intensive throughout the value chain which enables to distribute the benefits of value chain over a large number of persons, making it suitable for rural development in a labour abundant society. This chapter documents options for reforming supply chain for entrepreneurship development in developing countries, focusing marine fisheries in India.

Supply chain of fish in India

Fish is an important source of livelihood for about 14 million people in India. The fisheries sector in India constitutes 6.3 per cent of the global fish production and contributes to 1.1 per cent of the GDP (CPPR, 2019). It also contributes to 5 per cent of the agricultural GDP. India is the fourth largest sea food exporter in the world (Sivanandam et al, 2020). In this article, we examine the imperfection in supply chain of fish in India. For illustrative purpose we use the case of marine capture fisheries of Kerala, a state in the Western Coast of India.

Supply chain in Kerala

In Kerala, fisheries sector plays a major role in terms of assuring food and nutrition security, income generation and sustainable economic growth. In total marine fish production of India, Kerala occupies fourth position (4.75 lakh tonnes) after Gujarat, Tamil Nadu and Andhra Pradesh. Kerala is the largest fish consuming state and the state's overall fish consumption is about 9.12 lakh tonnes per year, or about 2000-2500 tonnes per day (GOK, 2021). It is evident that there exists a demand-supply gap for fish in Kerala which is filled by importing from other states or countries.

Kerala's contribution in marine products export from India is about 13 and 12 per cent in terms of quantity and value respectively.

Fish marketing system: Emerging dualism and dominance of traditional marketing

The growth and development of fishery sector is heavily reliant on an efficient fish marketing system (Sathiyadhas and Kumar, 1994). CMFRI (2020) reported that the more than half of the total marine fish landed and almost all the inland fish produced in Kerala were marketed domestically. States' fish marketing structure is highly complicated with large number of intermediaries. Fish marketing system of the state can be broadly classified into two such as traditional and modern system of fish marketing. The traditional fish marketing system is more common in the state, even though modern and digital marketing models have recently emerged. In the case of marine fishes, marketing starts from the fish landing centres whereas, in the case of inland fishes, marketing starts at farm gate.

Traditional fish marketing systems

Fish landing centres are the primary fish markets from where fishes are transported to the wholesale or retail markets and these centres had the maximum number of intermediaries like auctioneers, commission agents, retail traders and export agents (Aswathy *et al*, 2014). In the traditional marketing system, a large number of intermediaries are involved. Various marketing channels involved in the marine fish marketing system is given below, almost similar marketing channel exist in inland fisheries (CMFRI, 2020). On many levels, inland and marine fish marketing are nearly comparable (Sathiyadhas and Kumar, 1994). The number of intermediaries between the fishermen and the final consumers varies in different marketing channels, based on the quantum of landings and the effort required to perform various marketing functions such as assembling, cleaning, grading, processing, storing and transportation (Sathiyadhas *et al*, 2011).

Channel 1: Primary market/landing centre → Auctioneer → Agents of freezing plants → Freezing plants → Fish stalls/ Exporters → Consumers

Channel 2: Primary market/landing centre → Auctioneer → Processors (curing) → Wholesalers (dry fish) → Retailers/ Exporters → Consumers

Channel 3: Primary market/landing centre → Auctioneer → Wholesalers (primary market) → Wholesalers (retail market) → Retailers → Consumers

Channel 5: Primary market/landing centre → Auctioneer → Commission agent → Wholesalers (interior market) → Retailers → Consumers

Channel 6: Primary market/landing centre → Auctioneer → Retailers/On-line retailers/Bulk purchase → Consumers

Fish from the distant landing centres were able to reach, wholesale and retail markets due to the technological advancements in marine fish transport and processing. The perishable nature of fish, on the other hand, necessitated its prompt disposal at each point of transaction, resulting in the involvement of many intermediaries in the marketing channel, leading to high marketing costs and margins (Aswathy *et al*, 2014). Auctioneers form the first level of marketing intermediaries, they fix price based on the demand and supply of fish (CMFRI, 2020). The fisherman brings his catch to the auctioneer, who auctions it to different traders at the landing centre. The auctioneer sometimes advances money to the fishermen in turn he receives the right to auction his fish (Kumar *et al*, 2008). Fish is sold by auctioning the lots at the primary market or landing centres and weighing is a rare occurrence (Sathiyadhas *et al*, 2011). Fish are usually sold in measures of heaps or lots of different sizes, not sold in weight at the primary market, because of the practical challenges involved in handling and the highly perishable nature of the commodity (CMFRI, 2000). Auctioneers also provide market tying loans to the fisherman for the purchase of boat or other fishing equipments, for fishing activities or both. The net price received by the fishermen includes the price at which fish is auctioned at the primary market after deducting the auction charges, trader's discounts and other deductions. Aswathy *et al*, (2014) reported that the auction charges ranged from 1 to 5%, based on whether the fishermen had availed loan from the auctioneer.

Other intermediaries involved in the supply chain undertake various activities such as cleaning, grading, sorting, processing, icing, packaging and transporting at various levels of marketing. Several other intermediaries like local fish collectors, vendors and fishermen cooperatives also exist in the marketing system. The wholesalers at next level buy fish in bulk from the auctioneers and sell it to retailers or other traders. They also perform some value addition in terms of sorting, grading, cleaning, icing and packing fish before sale. Wholesalers keep a higher margin than the auctioneers, as they assume the risk of selling the fish. Based on the consumer demand, preference and purchasing power, retailers sell the fish directly to the consumers. They grade, clean, ice, pack, display and dress fish for the consumers and maximum level of value

addition happens. Retailers keep a marketing margin of 20 per cent, sometimes group of retailers also participate in auction. Fish vendors also sell fish directly to the consumers at door step and most of the fish vendors are women. Fishermen cooperatives are also involved in fish marketing system. In Kerala, MATSYAFED (Kerala State Cooperative Federation for Fisheries Development Ltd.) regulates auctions at fish landing centres through primary fishermen cooperative societies, in the non-mechanized sector (Kumar *et al*, 2008).

Almost in all the marketing channels fishermen's share in consumers' rupees (%) is more than 50 percent (CMFRI, 2020). Primary market auctioneers and secondary market commission agents are involved in the marketing system without taking possession of the fish (CMFRI, 2000). The percentage share of fishermen in the consumer rupee is a key indicator of the marketing efficiency (Sathiyadhas *et al*, 2011). In an efficient marketing system, the share of fishermen is higher due to the lesser involvement of the middlemen. Kumar *et al* (2008) had reported that the fisherman's share in consumer's rupee has shown variations among different species of fish, marketing channels and markets. The marketing cost and margin also varies with respect to the type of fish marketed and the marketing channel (CMFRI, 2020).

Modern fish marketing systems: Online and digital platforms

Fish consumers had become more conscious, about the quality and safety of the fish they consume this had led to the emergence of online fish marketing in urban areas of Kerala (Sajeev *et al*, 2019). Online fish marketing is an innovative approach in the fish marketing system, trying to meet the increasing demand and delivery of high-quality fresh fish at an affordable rate within shortest time period (Salim, 2018). Vishal (2015) reported that the rise of e-groceries and latest cost-effective freezing technologies had increased online fish retailing. Sajeev (2021) reported that availability of different varieties of fish from the local cost at consumers' doorstep in curry cut, steak, fully cleaned or as whole at affordable price had promoted the online fish marketing in urban Kerala. They also ensure quality and safety of the fish. Online fish retailers were able to sell their fish directly to their consumers, which had reduced the market intermediaries and increased the profit of the retailer (Sajeev *et al*, 2021). Since, Kerala is a predominantly high fish consuming state of India there is huge chance for online marketing of fish. Online fish marketing helps the producers to get a deserving legitimate share in the consumer's rupee and on the other hand, it safeguards consumer's rights against excessive prices (Salim, 2018).

As per Gupta et al., (1983) fish marketing aspects can be categorized into four such as fish products and cold chain, price spread, retail markets and market regulations. Fish product and cold chain includes improvement of economics of boats, eradicate seasonality's in fish landings, make deep sea operation viable and ensure availability of marine fishes at all locations. Price spread indicates the fishermen's' share in the consumer rupee and it varies with the number of market intermediaries and distance between the landing center and consuming centres. Retail markets could be easily accessible, clean, increase income and accommodate all existing retailers. Market regulations include classification of landing centres based on turnover, licensing to traders and a good market information system.

Supply chain deficiencies

Major problems in the fish marketing system are greater uncertainty in fish production and supply, highly perishable nature of the commodity, assembling of fish from many landing centres, too many varieties and demand patterns, wide variations in market arrivals and prices, demand and supply disequilibrium, difficulty in maintaining quality of fish and lack of market information (CMFRI, 2000). The Indian domestic fish marketing system is neither efficient nor modern and is mainly carried out by private traders with many intermediaries between the fishermen and the consumer, which in turn reduces the fisherman's share in consumer's rupee (Kumar *et al*, 2008). Most of the fish markets lack physical facilities and infrastructures (FAO, 2001). Large numbers of intermediaries are involved in the marketing of fish from the primary market to the consumers. They perform various activities such as loading and unloading, processing, storing, grading, packaging and transportation, which in turn increase the marketing cost at each stage of fish marketing (Bishnoi, 2005). The major deficiencies can be grouped under: infrastructure, market intermediaries and high price spread, credit and tying of credit and market, limited quantity of fish processing, poor functioning of cooperatives.

a. Deficiency in infrastructure development

Ravindranath (2008) stated that highly perishable nature and bulkiness of fish, heterogeneity in terms of both size and weight among different species, high cost of storage and transportation, no guarantee of quality and quantity of commodity, low demand elasticity and high price spread as the problems of the fish marketing system. Creation of storage infrastructure, capacity creation of ice production, refrigerated transportation system and fish processing capacity are pre-requisite

for addressing the perishability issues. Uncertainty in marine fishing in terms of excess supply leads to price crash of fish in case it is not supported by infrastructure development. CMFRI (2020) reported that for ensuring efficient handling of fish, the harbours or the landing centres should have the following facilities such as mooring area, utilities such as water, ice, fuel and workshops, fish handling infrastructures such as cold storage, sorting area, etc., other modern facilities such as slip ways, conveyor belt systems, auction hall, digital recording and data archiving systems, price display boards, sewage or effluent treatment plants, digital weighing balance, net repair sheds, diesel outlet, solar power generator, gear shed, drinking water supply, rest rooms, administrative buildings, fire protection, power supply technology unit, internet connectivity, cyclone warning systems, surveillance cameras, ATM, parking facilities and canteen. They also suggested the above facilities in wholesale and retail markets

b. Market intermediaries and price spread

About three-fourths of total marine fish landed in Kerala is marketed domestically. . The fish marketing system in the state is highly complex, involves multiple stakeholders, intermediaries and benefactors with high level of diversity in market structure and conduct. Though modern and innovative marketing models are emerging in recent years, marketing practices followed are predominantly old and traditional in many areas with inefficiencies pervasive across the value chain.

The major market imperfection in fish supply chain emerges in the stage of auctioning. Fish auctioning is highly unorganised and is rooted in traditions. The market charges and operations are unregulated, and is characterized by monopoly elements. There is barriers to entry as a fish auctioneer (Kumar *et al*, 2008). Other than performing the function of auctioning, their activities are both horizontally and vertically integrated: they serve as a major agents for informal credit to the fishing sector, financing both capital requirements for acquiring fishing vessels and daily fishing operations, supplying of axillary inputs like ice, providing fuel (diesel, kerosene) on credit etc. The credit offered to the fishermen is tied with output marketing operations. The real interest rate charged by the auctioneers is much higher than the market interest rate. However, one useful function is that the auctioneers shoulder the risks in financing fishing operations as fish catch depends on an element of probability, and therefore the repayment is a risky affair. Further, there are several irregularities persist in the structure, conduct and performance of the marketing system, as is observed in case of price determination, weighing and quality checking, payment,

large element of reduction in quantity of fish on several pretexts etc. In that sense the fish auctioning system has large element of imperfections and exploitative elements. On the other end, consumers are charged high for their fish purchase. Over a period of time, the retail price of fish has increased at a higher rate compared to several other food commodities, resulting in large price spread. Further, this renders several consumers inaccessible to fish. An account of price spread reported by Aswathy (2014) is provided here:

Marketing costs and margins for major marine fish species in Kerala

Particulars	Seer fish	Tunnies	Pomfrets	Mulletts	Mackerels	Oil sardines
Marketing channel I: Fishermen (Kerala)-Auctioneer-Commission agent-retailer-consumer (Kerala)						
Marketing costs as share of landing price (%)	2.9	16.7	4.4	10.0	5.1	11.4
Marketing margins as share of landing price (%)	33.7	31.7	37.3	34.0	38.5	45.7
Fishermen's share in consumers' rupee (%)	70.0	63.8	67.1	65.9	66.3	59.5
Marketing channel II: Fishermen (Kerala)-Auctioneer-Women vendors-consumer (Kerala)						
Marketing costs as share of landing price (%)			1.0	2.4	3.0	5.8
Marketing margins as share of landing price (%)			41.5	49.4	48.5	27.5
Fishermen's share in consumers' rupee (%)			70.2	65.9	66.0	75.0
Marketing channel III: Fishermen (Karwar)-Auctioneer-Commission agent (Wholesaler)-wholesaler-auctioneer-retailer-consumer (Kerala)						
Marketing costs as share of landing price (%)	8.1		9.3	20.9	26.9	77.9
Marketing margins as share of landing price (%)	69.7		29.5	66.6	60.7	108.1
Fishermen's share in consumers' rupee (%)	56.8		53.2	42.6	29.1	15.0

Source: Aswathy, et al. 2014

c. Financing fisheries

Fishing and aquaculture are a capital-intensive activity, which is catered to by both formal and informal sector. The formal agencies in delivery of credit for fisheries include scheduled commercial banks (CBs), regional rural banks (RRBs), cooperative societies, and private sector banks. These agencies lend credit for several activities in fisheries sector private banks and regional rural banks (RRBs) as well as the cooperative banking institutions and societies. In case of traditional fishers (artisanal fishers), the Kerala State Co-operative Federation for Fisheries

Development Ltd. (Matsyafed) provides credit to a diverse set of activities. The data from NABARD indicates that the ground level credit (GLC) to the fisheries sector has increased steadily over years. Even though, the penetration of formal sector in priority sector has increased, its penetration was quite low and could not emerge as an alternative to informal financing. This is because, fishing and aquaculture is highly capital-intensive activities, and the credit needs are of a different nature. Further, the probability of making a profit depends heavily on several factors including weather changes as in case of marine fishing. There is lack of credit products suitable for the needs of fisheries and aquaculture. The penetration of the formal sector is largely limited to the working capital requirements, whereas the credit requirement for capital acquisition is met from informal sources including money lenders. Bonding practice and oligopolistic market are prevailed due to the dependence of fishermen on money lenders for working capital (Gupta *et al.*, 1983)

Microfinance

There are several attempts to channelize credit to fisheries sector through (SHGs) for formation of micro enterprises. For example, in Kerala, Society for Assistance to Fisherwomen (SAF), an agency functioning under the Department of Fisheries, GoK provides micro credit to fisherwomen to initiate micro enterprises, and cultivate thrift among fisherwomen. There are several other agencies in India that disburse credit to fisherfolk through SHG platforms.

Informal credit options

In the absence of the formal sector financing, the credit requirement is met through informal means, the major ones being private money lenders, auctioneers, friends and relatives. The most prominent among them is the auctioneers' who usually enters into an output-market tying credit transaction, as described earlier. In this situation, the fishermen get access to quick credit with less procedural difficulties for a multitude of purposes, but a very high real interest rate. This is an arena where the informal relations and trust operates in delivering credit, with unwritten contracts, verbal assurances and peer pressure. It warrants deliberate interventions to develop credit products suitable for the sector. Of late, the fishing sector has seen emergence of entrepreneurs without having relations with fishing/ fisheries, with capital support from outside the sector. While, it brings competition and efficiency, it could lead to several un-sustainability issues and conflicts.

d. Reforming processing facilities

Development of processing infrastructure is a necessity to earn higher value from fish harvested, and to provide employment and bring in efficiency in the supply chain. The major fish items processed are shrimps, fin fishes, squids and cuttlefishes. There are two broad strands of fish processing industry: that serves domestic market and those catering to export markets. The export targeting processing firms are generally well-developed in terms of facilities and quality assurance mechanisms. However, the processing activities currently undertaken are at lower level, and does not address the need for value addition. It warrants establishment of high-end processing facilities, quality assurance mechanisms and skilled human capital to take the processing industry to higher level of value addition so as to cater to the niche markets. Fish processing sector needs to graduate to higher level value addition involving quick frozen, battered and breaded items. Towards this, the processing sector has to add capacity in terms of introduction of technologies like high pressure processing, irradiation, pulsed light technology, and technologies like modified atmosphere, active intelligent packaging and other advanced kind of packing technologies. Development of processing facilities would help absorb fish, establish specialised supply chain and bring in efficiency in the supply chain ultimately benefiting the whole actors in the supply chain.

Year-wise Disposition of Fish Catch (In Lakh Tonnes)										
Year	Marketing Fresh	Frozen	Curing	Canning	Reduction	Miscellaneous	Offal for reduction	Unspecified	Others	Total
1991-92	27.06	2.65	6.13	0.3	3.33	0.47	0.47	0	0	40.41
2001-02	47.77	2.64	3.46	0.53	3.08	0.16	0.43	0.72	0.47	59.26
2011-12	53.64	7.61	4.72	0.39	2.98	0	73	0.63	1.71	144.68
2019-20	91.43	16.81	5.2	0.36	3.38	3.04	0.08	0.05	1.44	121.79

Source: GOI, 2020

e. Collectives in entrepreneurship development in Fisheries

Cooperatives, self-help groups and Fish Producer's Organisations are some of the examples of collectives in fisheries development. There were several attempts all over India to organise both inland and marine fishermen through cooperative movement. Matsyafed in Kerala is one such example. Though the cooperative initiatives were successful on certain areas, it could not live up to the expectations. Self-Help Groups are another major agency to start. The fishers and aquaculturists still depend on informal credit system and exploitative marketing. One key reason is the lack of transparency in operations due to undemocratic tendencies.

f. Fish safety, quality and traceability and certification

Safety and quality issue is a major concern that affects the efficiency of the supply chain of fish. Since fish is a highly perishable commodity, it starts spoiling within a short period of time (about half an hour from harvest). The quality of fish marketed domestically is not certified. There are reports on the rampant use of chemicals for fish preservation. Fish with assured quality fetches higher prices, as is noted in case of several online fish selling portals. Quality maintenance requires attention at all the nodes of value chain, including supply of chilling media at affordable price. Ice is the major material used for chilling purpose. One major issue is the lack of awareness about need to use ice, non-availability of good quality ice and affordable prices. The institutional mechanism to assure quality and safety of fish is limited to occasional inspection by the authorities, but is quite inadequate and doesn't serve as a deterrent. Development of quality certification of fish helps targeting niche markets and create consumer confidence. Some quality certification system is in vogue which cater to this need.

g. Lack of market information and deficient statistical system.

The actors in the whole supply chain need information on various dimensions- arrival of fish (inland and marine, in various markets), varieties of fish available in various markets and fish prices. However, market intelligence system on fish is highly under-developed, which hinders policy development and best-informed consumer decision making.

Further, the deficiency in the statistical system in fisheries in terms of fish production (particularly inland capture fisheries), fish utilisation, household consumption, demand forecast, market arrivals and prices affect the entrepreneurship development in fisheries.

f. Support system

Entrepreneurship development needs development of support system in terms of technology, finance, quality assurance, business development and overhead capital. There are public and private research institutions catering to the need of technology development. The support towards business development are necessary to nudge the investors, handhold them and develop. Some of the initiatives in this direction are venture capital support, business incubation centers, start-ups, creation of special economic zones, business hubs, and tax incentives.

Lessons during COVID times

GOK (Government of Kerala) had taken several measures to protect the fishermen from the effect of lockdown during the period COVID-19. One of the major initiatives taken by the GOK was fishing relaxation for the traditional or artisanal fishers. A new model of fixed price system was implemented. Fisheries Department, MATSYAFED and Kerala police took initiatives for implementing this system. This system also ensured fish supply to the regular consumers during the lockdown period. Even though this marketing system was introduced during the pandemic period, it can be further scaled up and continued, as it protects the fishermen from the over exploitation by the auctioneers (CMFRI, 2020).

Entrepreneur development support system in India

The Union and state governments have initiated programmes to facilitate entrepreneurship development. Some of them include Agri-Business Incubation (ABI) centers, startups and direct supports. ABI centers handhold the emerging business units, and help them to establish (Arakkal et al., 2020). ABIs in fisheries are hand-held by public sector institutions- Indian Council of Agricultural Research (ICAR) and state fisheries universities. The major activities of these ABIs include preparing business plans, linking with credit and marketing systems, facilitating product development, and providing facilities for business establishment (Suresh and Ravishanakar, 2022). Financial support is given to such firms through venture capital, angel funding, and credit from banks at certain relaxed conditions. Experience indicates that most of such initiatives are of information technology (IT) enabled services. As of 2021 there were about 38815 active startups, including both funded and bootstrapped (Inc42.com, 2021). In the real sector, fish and fish related business opportunities stand a good stead. Fisheries startups can be in the domain of fish management, aquaculture, analytics, diseases surveillance and management, package of practices, farm and pond management, marketing, real-time weather dissemination, export systems, fish processing, export management, by-products industry, to mention some broad areas. Under public sector, Marine Products Export Development Authority (MPEDA), National Fisheries Development Board (NFDB), and Central and State departments provide supports of various kinds. Fisheries Departments, Universities and Institutions under Indian Council of Agricultural Research (ICAR) provide assists by technical supports in starting businesses and expanding them. Private sector supports are also emerging in recent times (Suresh and Ravishanakar, 2022). To boost the sector, the Government of India has announced a comprehensive package of INR 2000 billion in 2020 under Prime Ministers Matsya Sampada Yojana (Press information bureau, 2020). The government

of India gives supports in the form of initiatives like *Mudra Loans*, venture capital supports, fish producer organisations etc., to mention a few. Further, initiatives are being undertaken towards undertake sustainable fishing and aquaculture practices, traceability and certification.

Suggestions for Modernization of supply chain

The supply chain of fish can be improved by a slew of measures. Some of them, as suggested by a committee appointed by the Government of Kerala (CMFRI, 2020; Salim *et al.*, 2018; Kumar *et al.*, 2010) include:

- Permanent state wide state-wide and centralized digital registry: A digitalized registration mechanism can be developed at the landing centres or harbour, for streamlining the auction system.
- Fish marketing and auction can be monitored by government or cooperatives
- Standardized weight measurement may be introduced at all harbours
- Measures for ensuring food safety and quality can be introduced
- New marketing co-operatives can be introduced for small vendors and retailers
- Good market infrastructures can be provided
- Formal credit facilities can be ensured for fishermen
- Establishment of market management committee at all wholesale markets
- Mandatory licensing for marketing
- Establishment of centralized market intelligence, strengthening market intelligence, Fish Market Information System could be developed
- Efficient storage and processing facilities
- Online marketing facilities can be ensured
- Policies for promoting digital marketing of fish in the lines of e-NAM (National Agricultural Market) can be introduced by the government for protecting the fishermen from the exploitation from the middleman. This will also add transparency and accountability in the fish marketing system, benefiting both producers and consumers.
- Norwegian model: Fisherman societies can be established at each landing centres or harbours as an agency for fisherman, for ensuring reasonable price to fisherman (Jentoff and Finstand, 2018).
- Self Help Groups, producer associations, fishermen and fisher women cooperatives and private companies can be formed. The primary activities of these institutions in efficient fish marketing such as inbound logistics, operations, outbound logistics, marketing and sales promotion and support activities such as infrastructural facilities, technological backstopping, price information and procurement. Through these advantages, the fishermen could achieve economies of scale, technological innovations, capacity development, linkage

across activities, degree of vertical integration, timing of market entry, product differentiation, market access, credit access, etc. (Kumar et al, 2010).

- Government should take necessary steps for regulating and monitoring the market price and the market system (Salim *et al*, 2020).
- Modernising markets with revolutionary infrastructures and facilities, it can minimise post-harvest losses, improve revenue, increase employment opportunity and offer hygiene and sanitation leading to food safety. (Salim *et al*, 2020)
- Regulate the involvement of many marketing intermediaries, as it can reduce the producers' share in consumers' rupee (Upadhyay *et al*, 2017)

Conclusion

Fisheries have been the traditional minor occupation of the coastal fishing communities and it is a major source of income for coastal population. Fish marketing is oriented in traditions, but with the infusion of capital, emergence of newer technology in fishing / aquaculture and related value chain, fisheries sector is gradually attaining newer entrepreneurial ecosystem. This sector also plays a major role in poverty eradication and attaining Sustainable Development Goals (SDGs). However, the supply chain faces several challenges. They fall mainly in the category of insufficient infrastructure, informality in financing fisheries, credit and output market linkage (tied loans), weak structure-conduct and performance of the marketing systems, safety and quality issues, unutilisation/ under-utilisation of fish discards, inadequate human resource, weak extension system and issues in market information/ intelligence system. The fish marketing system in India is still unorganized and unregulated, but it holds a huge potential. The improvement in fish marketing system and distribution would not only reduce the demand-supply gap of fishes across country, but would also contribute to food and nutritional security to a large population. The export potential of marine products can be utilized more for the development of the fisheries sector. Streamlining marketing and credit facilities can improve the standard of living of fishermen. Fish marketing and auction system can be improved by usage of ICTS and reforms in the operations of the institutions. Revising and strengthening the fishermen co-operative societies can also help the fishermen to cope up with the existing marketing difficulties.

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