Value Chain Analysis of Marine fish Species in Ganjam District of Odisha

Conducted by: VIEWS, Odisha
Supported by: ICCo, India

Acknowledgement

At the outset I would like to extend my gratitude to VIEWS for giving me an opportunity to undertake the Value Chain analysis of Marine Fish products in Ganjam district of Odisha. I also tender my sincere gratitude to the ICCo team members for their support in the study. I am grateful to Mr. S. Bheema Rao, Secretary, VIEWS for sharing his valuable insights and in-depth knowledge regarding the study. Mr. Udit Babu, Project Director, VIEWS, Mr. Sunil Kumar Ghadei, Program Manager, VIEWS and their colleagues, Mr. Saroj Kumar Satpathy, Mr. Mangaraj Nag and Mr. Krishna Murthy provided an enabling environment to undertake the study. The report benefited from their critical observations during field work, discussions and report preparation. I really feel immense gratitude to acknowledge the cordial cooperation provided by the villagers of Markandi, Golabandha, Venkatraipur, Bandara and (the list goes on) etc.I am also thankful to the traders, godown owners and agents involved in the terms of trade.

Mr. Sumanta Banerjee
Principal Investigator

Executive summary

The clear shift from an approach of ñfind the market for your produce to understanding the market through value chain-in terms of its participants, value added by each and financing mechanisms. Thus, understanding the value chain is an important element of working with the markets. For effective management of markets, small and marginal fisher folk need to be organized. Besides, the product, price, promotion, place, physical evidence, people and process, which is considered to be important in marketing. But, getting community organizations processes right-from mobilization to institutional systems is as critical as developing market themselves. The objectives of the study are:

- Understand the context and production status,
- Understand the market and scope of marketing,
- Identify the opportunities and constraint faced by players placed at different location/nodes of the chain
- Understand the institutional arrangements, and
- Suggest suitable areas of intervention along with strategy

The key constraints with reference to value chain of Marine Fisheries are as follows:

- Resource constraints: The threats facing the coastal fishing communities, particularly in the Ganjam district is the issue of resource constraints. The declining catch per effort, credit crunch as well as overall decline in fish landings are the most critical issues plaguing the livelihoods of the fishers.
- Credit constraints: Credit relationships with traders and middlemen affecting the prices they receive for their fish in the short term and the profitability of operations in the medium-to-long run. The traders/middlemen charge exorbitant interest rate, the interest rate varies from 36% per annum to 50% per annum.
- Access to Critical Input: The most critical input in the post-production stage is access to ice timely and adequately. The access to ice is controlled by traders, thus making the fishers dependent upon them and forcing them to settle for lesser prices than they deserve.
- Inaccessibility and dependence on transport systems reduce the fishermenôs bargaining power
- High production costs: The high production costs is due to the fact that, at the start of the season the fisher class is already debt ridden and at the same time, they are not

sure whether the expedition to the sea would yield results in commensurate with the cost. The reason being dwindling fish stocks and seasonality of the fish catch.

- Losses due to spoilage in production transport and markets are so common that the wholesalers in the urban chains and the processing plants in export chains habitually deduct 20-25 percent of the material obtained as being spoiled. Although some of these systems have shown improvements over the last decade, the tradition of deductions for spoilage has become strongly rooted and is reflected in the earnings of the fishermen.
- Price control by traders forming cartels, which effectively works on the hope that increased competition amongst the buyers would lead to better incomes for the producers. When the sale is made through middlemen, obviously the boat owner receives a lower price than if sold directly to the company. However, the systems are largely formalized in such a way that a fisherman cannot take his shrimp directly to the company bypassing the local traders. He is often advised by the company to take his catch to its agents in his village for sale even if that means loss of time and increased spoilage. All traders and commission agents have cartels at every level which ensure that the fishers receive more or less uniform prices.
- The supply of the fishes from the landing center is through the middleman via agents / auctioneer to the wholesaler or the commission agent at the regional market. The international market takes up the value chain of exporters via commission agent to the international market directly or through buyer arrangement.
- The present value chain for fishery is concentrated mainly into few regional markets that include Barhampur, Cuttack and Bhubaneswar. There is some movement of product to Delhi, Mumbai and Vishakhapatnam market as well. The potential of other markets is yet to be explored which may be lucrative and profit yielding. The limitation of the present value chain in terms of marketing intelligence is immense. The market information to the players of the value chain is limited. The middleman of the present chain is the link to the domestic market. The price information is limited to him and is normally not shared with the players lower in the value chain.
- The present value chain of fishery does not practice promotion and pricing strategy for the product. The marketing of the product is done under the generic brand value that is highly associated with the species in trade. The branding of the source is not prevalent in this trade, except for the prawn coming from Chilka, which has an association with the place of origin; no other variety has any specific branding to

segregate the product from other available offer in the market. Thus, this particular gap in product positioning and branding hampers the profit margin, which it would have generated otherwise.

- Lack of market and price information is reported by many fishers to be a serious shortcoming in their dealings with the traders. If they knew how much their product was worth when it reached the final link in the chain (within the country), so the argument went, they would be able to bargain with the traders for a better price. While the lack of information is indeed a major shortcoming, it is difficult to see how the availability of mere information is going to be of much use to the fishermen, without them being in anyway empowered to address the other issues discussed here. Still, improved market information flows will still be a worthwhile area to explore further, particularly when considered in conjunction with programmes to enhance the fishermenôs access to the more basic and important necessities.
- Too many intermediaries in the market chain not only take away the profit margins that the fishers that they could reasonably expect, but also make the market chains fertile grounds for all kinds of mischief. Under the circumstances, it is possible that the intermediaries hurt not only the producers but also the processing and export industries as well as the wholesalers in urban trade.
- As there are no standards for weighing or counting the fish or shrimp, many different systems are in vogue and every one of the systems is equally problematic.. When counting shrimp in Ganjam district, it is reported that the traders often resort to fraudulent counting under dubious pretexts.
- In the context of fluctuations in prices, a majority of fishermen have no idea whether the changes are occurring at the international markets or whether it is a ploy by local traders to make money, but considering that the traders practically stop purchasing shrimp for extended periods whenever a crisis approaches, they assume this to be an outcome of factors beyond the tradersô control. Lack of direct links with the processing factories and market information allow the traders to get away with paying very low prices for shrimp even after the markets have recovered.

Based on the study of marine fisheries, the following recommendations are made:

Procurement

- The fisher folk need to follow standard package of practices in the context of sustainable harvesting.

- The fishing communities need to improve the post-harvest storage technology at the local level to prevent quality and quantity deterioration before processing
- Providing adequate and timely Credit is the most important intervention because it has the potential to make the most significant difference to all categories of people in the fishing sector. While this fact is fairly well accepted, the problems of operationalizing the credit programs along sustainable lines continue to be a serious problem for the development agencies. By looking at the needs of the producer communities and the way their needs are reflected in access to credit, disbursement and recovery mechanisms in the formal and informal sectors, a proper credit plan is the call of the day.
- Education and training in the context of Financial Literacy are to be undertaken, so that they internalize and practice savings and banking habits and are not exploited by middlemen in terms of rendering credit at exorbitant rates of interest.

Processing

- To strengthen their bargaining power with the middlemen and powerful traders the fisher folk organization need to develop a standard process for post-harvest primary processing and quality assurance systems
- Technological infrastructure need to be improved. In this context**,** lobbying with the government for improving facilities at the landing centres and at markets will be an important area of work to benefit the target groups.The governmentôs role also becomes important considering the large outlays involved and the common property nature of the investment, although the communities can be made to share a part of the cost or pay user fees.
- Setting up an efficient ice procurement and storage system ï at the individual and community levels ï is considered one very option to reduce losses and increase the confidence of the producers to deal with markets. Reducing losses due to engine repairs in the fishing operations will considerably enhance the fishersô share in their gross earnings. Improved access to transport will enhance the capacity of the fishers to reduce the time to reach their markets and thus avoid spoilage.
- The cooperative needs to be supported with necessary logistics infrastructure and cold storage infrastructure to remain competitive in the market

Policy and Institutions

- Setting up community-based cooperatives will help the fishers to bargain for better prices and bypass the intermediate links. Cooperative marketing activity has three main components: one, the actual process of marketing itself, which involves

sending fish from one place to another and earning income from it; two, a support system which enables the marketing system to function without hitches by providing the necessary services (such as ice, transport systems, access to credit and infrastructure); and three, an efficient credit management system. The previous efforts at cooperative marketing have tried to make the cooperative in the villages to undertake all three activities on its own. Here it is proposed that these three activities be segregated and kept with three distinct ï but well integratedï entities at the village level.

- Development of robust business plan for marine fishery should be in place.
- The linkages among institutions of innovation triangle comprising processing facility, R&D organizations/academic establishments and market should be strengthened.
- Considering the fact that, fisheries is a sun-rise sector and small scale fishermen are the most vulnerable sections of the society, 90% of the small scale fisher folk population are poor and perpetually indebted. In this context, government may be requested to provide incentives in form of the VAT waiver and loans for investment and working capital at favorable terms and conditions.
- A network of fishermen and processors can be developed.
- The network can lobby with the government for support of exclusive modern retail outlets in prominent locations for the raw and processed produces direct from the sea;
- The network can help development of local databases regarding various species available, indigenous knowledge systems, amount of procurement, processing and selling. So, information dissemination at the local level is the call of the day.
- The network can undertake process documentation.
- The network can also develop community based institutions, strengthen their capacity and support in meeting the market demand in a competitive and sustainable manner
- Create a Federation of Fisher folk Cooperatives to lobby with the government for support for retail outlets in prominent locations.
- Develop Resource Centre for information on prices, package of practices and inputs.
- The Fishermen cooperatives and peopleôs Institutions is at a very nascent stage of development and the solidarity needs to be inculcated by the supporting NGOs. The culture of the members and institution needs to evolve from the existing SHG mode to Cooperative mode.
- Systems should be in place to enhance member allegiance, stregthen member centrality and

member patronisation.

- Regular training for cooperative members to increase cooperation, and enhance governance and management system is essential.
- Secondary Cooperatives should be promoted for post-production service delivery to members.
- Innovation triangle covering linkage and flow of resources among cooperative, academia and research and Development and other support service organisations need to be strengthened.
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Marketing

- The gap in the value chain lies in decreasing production of marine fishes, initial processing and quality issues, large supply and demand gap and distribution channel. Thus in this context, product and process innovation need to be the key areas of intervention.
- Management Information & Intelligence Systems for Information flows would strengthen the gap which is due to asymmetry in information. Considering the diversity of factors that characterize marketing in different villages, each village has its own requirements of information and the purpose of the information it generates is suited to these requirements. Thus, it is necessary for each village to set up a market information system of its own, and in such a way that people can update the

information on a regular basis. At the same time, it is also essential to fill in the gaps in the knowledge about the producers, processors and traders themselves. There is no good data on their numbers, function, and scale of operation, their needs and the general socio-economic context in which they operate. The diversity of their occupations and their geographical isolation has meant that many of them have slipped through the systems completely. A good database on the people and their socio-economic conditions will help establish a link with funding agencies on a surer footing.

- Adequate output facilities (storage, transportation, marketing and selling, etc.) services to members at a fair price should be provided.
- Since there is adequate market demand for marine fish, steps need be taken for enhancing production and productivity at the members' level through technology intervention and resource mapping, increase membership of cooperative, strengthen service delivery to members in a cost-effective manner, improve sales through both direct and indirect marketing.

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CHAPTER I

1.0 Background

Fishery is the oldest, important as well as most dangerous occupation livelihood option for the inhabitants of the coastal line of the country in general and Odisha in particular. The natural resource along with the marine environment has not only been the custodian of livelihood security of the coastal population but also supports the productive and protective habitats. This gift of nature is wedded to the customs and traditions of the coastal society, which understands that this vast natural resource is the key to their prosperity and social development. Fisheries, marine fisheries in particular, constitute an important subsector of the primary sector of the Indian economy both at the national and subnational levels. This segment makes immense contribution to the economy in terms of employment and livelihood, provision of protein and food security, net domestic product and foreign exchange earnings. It has a huge linkage effect in the economy with the backward linkage operating through investment, employment and growth in boat, trawler and net making units and the forward linkage working through those in ice plants, cold storage, processing, transportation, marketing and other related activities.

1.1 Introduction

Over the years, there has been a clear shift from an approach of ñfind the market for your produce to understanding the market through value chain-in terms of its participants, value added by each and financing mechanisms. Thus, understanding the value chain is an important element of working with the markets. For effective management of markets, small and marginal fisher folk need to be organized. Besides, the product, price, promotion, place, physical evidence, people and process, which is considered to be important in marketing. But, getting community organizations processes right-from mobilisation to institutional systems is as critical as developing market themselves. This also includes building competencies of the community based organisation. Finally markets are related to production levels. If production is at a subsistence or marginal level, markets will be different, as in development sector one often deals with resource poor fishers, so, in this context it is important to keep focus on enhancing production and developing appropriate technologies for the same, along with market linkage. Odisha has historically witnessed higher incidence of poverty. In recent years Odisha has been able to reduce poverty at faster rates. As per estimates made by the Planning Commission based on the Tendulkar

Committee methodology, poverty in Odisha declined by 24.6 percentage points from 57.2 percent in 2004-05 to 32.6 percent in 2011-12.But still, the incidence of poverty in southern and northern regions as well as among ST and SC communities still continues to be high and remains a matter of concern.

The new poverty line as per Rangarajan committee report thus work out to monthly per capita consumption expenditure of Rs.972 in rural areas and Rs.1,407 in urban areas in 2011-12. For a family of five, this translates into a monthly consumption expenditure of Rs.4, 860 in rural areas and Rs.7, 035 in urban areas[1]

Odisha has a small but diverse coastline with estuarine, coastal and offshore fish resources. It also has substantial inland water resources that provide freshwater fish from aquaculture and the capture fisheries. A large part of the oceanic stocks however are totally protected or only fished for part of the year due to fishing restrictions imposed for protection of Olive Ridley turtle while the national seasonal ban on mechanized vessels also severely restricts the fishing, processing and marketing income. These restrictions and the relative light exploitation of deeper oceanic waters means the stateôs fishing and seafood industry is less developed than those in other Indian states.

Marine and coastal resources

There are six maritime districts in the state: Balasore, Bhadrak, Kendrapara, Jagatsinghpur, Puri and Ganjam, with Puri district covering more than a third of the coastline. These six districts cover 14.5% of the total land area in the state, but nearly 30 percent of the population in the state resides in the coastal districts. Nearly 89 per cent of the coastal population resides in rural areas. The state has a continental shelf area of 24,000 Km^2, of which about 65% is in the 0-50 m depth range (Table 1), and the shelf is widest off the northern district of Balasore (nearly 120 km in width), narrowing toward the south (extending up to 40 km). The availability of a large shelf area up to 50 metres depth gives rise to rich shrimp fishing grounds and facilitates the operation of non-motorised boats in the near shore waters.

The fisheries sector incorporates a diverse range of livelihood activities, from production and processing to marketing and ancillary functions, but many of the people engaged in these activities remain unrecognized as fish workers. This is a serious situation, as a majority of these people are very poor and extremely vulnerable The seasonal availability of

[1]Report of the Expert group to review the methodology for measurement of poverty ,Government of India ,planning commission ,june,2014

different varieties of fish has become uncertain. Increased population and market demand on the shore have resulted in the spreading of catches more thinly across a larger number of people and/or increasing prices to very high levels and thereby reducing access to fish. For, many stakeholders, the current level of wages or earnings from fishing and trade leaves very little surplus. Majority of fishers are perpetually indebted.[2]

Importance of Fishery in Odisha

The state has been gifted with abundance of natural water resource in form of fresh water, brackish water and marine water. All the water resources are major contributors to the economy of the state. The total production of the aquatic produce has been varying over the years. The fresh water production and the brackish water production have been on the rise after the year 2006 owing to the intensive efforts of the state and other institutions to promote the culture of these. On the other hand, the production of the marine fishes has been falling down. The important reason for this decline is the over exploitation of the ócapture resourcesô, increased pressure on the limited coastal marine resources, underutilization of the oceanic marine resources, conservation policy of the state and central government and the illegal fishing by the neighbouring states of West Bengal and Andhra Pradesh

1.2 About the Implementing Organization

Voluntary Integration for Education and Welfare of Society (VIEWS) is a registered non-profit organization bringing integrated transformational development through innovative solutions for a better society. Founded in 2002 by a group of development professionals, academics and social workers, VIEWS works to create lasting changes in the lives of the poor and transform communities. We visualize building healthy transformed societies where people live with self-dignity, peace & social justice. The organization aspires to improve the living conditions of the marginalized by adopting strategies through collective community initiative and people's participation.

About the project

VIEWS implementing Sustainable Livelihood initiatives in Odisha in partnership with ICCO, India in 30 villages of Ganjam district, working towards ensuring livelihood security at household and community level. The value chain analysis of marine fish products is one of the key component of the project.

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[2]Trends in poverty and livelihoods in coastal fishing communities of Orissa State, India by **Venkatesh Salagrama** Integrated Coastal Management Kakinada, Andhra Pradesh, India

1.3 Rationale of the study

The term value chain describes the full range of activities which are required to bring a product or service from conception, through the different phases of production (involving a combination of physical transformation and the input of various producer services), delivery to final consumers, and final disposal after use (Kaplinsky and Morris, 2001). It is relevant to conduct value chain study to have an understanding of markets, the participation of different actors, their relationships, and the critical constraints that reduce the growth of fish production and subsequently the competitiveness of small scale fisher folk.

1.4 Objective of study:

The objectives of the study are:

- Understand the context and production status,
- Understand the market and scope of marketing,
- Identify the opportunities and constraint faced by players placed at different location/nodes of the chain
- Understand the institutional arrangements, and
- Suggest suitable areas of intervention along with strategy.

1.5 Scope and Methodology

The contextual study and value chain analyses are based on data from primary and secondary sources. Secondary sources include policies, plans and programs and reports of government and private agencies. Data from primary source include focus group and individual discussion with key stakeholders. The key stakeholders are fishers, traders, processors, government officials, academicians, PRI members and members of civil society. The tools such as Environmental analysis, SWOT analysis, Value chain analysis for comprehensive activity identification, and resource analysis for identifying strength and weakness will be used for conducting the study.

1.6 Limitation of the study

- Most of the times the primary respondent are not aware of the price, quantity and other variables in the trade.
- The stakeholders due to their time constraint and other obligations relating to their work, could not spend enough time with the investigator for the discussions pertaining to the study

- Due to time and resource constraints the investigator could not visit major trading and landing center outside the state
- Limited source of secondary data

1.7 Organization of the study

The study has four chapters. The first chapter discussed about the introduction, rationale of the study, objective of the study, scope of the study and limitation of the study. The second chapter discussed about the context and environmental analysis. The chapter also covers key drivers of change with reference to marine sector in Odisha and the various actors and factors affecting it. The second chapter also stresses on the strength and weakness of the fishery sub-sector and opportunities and threat in the external environment. The third chapter focuses on outlining the major findings and gaps in Value addition stages. At the same time it also studied marketing systems prevailing in the sub-sector. The third chapter also talks about supply chain of marine species in Ganjam district of Odisha. The fourth chapter deals with the recommendation at the procurement, processing, policy and institution and at marketing level interventions.

CHAPTER II

2.0 Context Analysis-

Fish is an important source of protein and its harvest, handling, processing and distribution provide livelihood for millions of people as well as providing valuable foreign exchange earnings to the country. It is a highly perishable food, requires proper handling, processing and distribution, if it is to be utilized in a cost effective and efficient way. According the Fishery survey of India (FSI), the fishery potential of Odisha is 5, 13,667 MT. About 4 % of the population depends upon fisheries for their livelihood. Of them, 8.78 lakhs depend on inland fisheries and 7.48 lakhs on marine fisheries. The fisheries sub-sector contributed about 6 percent to the GSDP share of the agriculture sector for the year 2012-13.

Fish production and Consumption (in the context of Odisha Economy)

Fish is a popular food item in Odisha. The state ranks 9th in terms of fish production. During 2012-13 Odisha produced 410.14 TMT of fish of which 291.83 TMT came from inland sources and 118.31 TMT from marine sources. During 2012-13 about 116.41 TMT fish has been exported from odisha to the other states and foreign countries of which 69.45 TMT (59.7%) were exported from marine sector. Generally, marine products like frozen shrimp, frozen promfret, ribbon fish etc., exported to foreign countries like Japan, China, USA,UK,UAE,Indonsia,Hongkong. The export of frozen shrimp constitutes the major portion and about one-third of the total marine products exported every year. During 2012-13 about 20,368 MT of frozen shrimp worth Rs 878.04 crore has been exported to foreign countries.

The marine fish production in Odisha is represented in the table 1, it illustrates that there is a considerable decline in fish catch which reflected in terms of negative growth rate in year 2009-10 and 2011-12 subsequently in percentage terms. Thus, the negative growth rate of marine fisheries in Odisha has adversely affected the livelihood security of all stakeholders, especially the small scale fishermen, fisher women and boat owners.

Table 1: Fish production in Odisha from 2004-05 to 2012-13

Year	Marine	
	Marine (‘000 tons)	Growth rate (%)
2004-05	121.93	4.32
2005-06	122.21	0.23
2006-07	128.14	4.85
2007-08	130.77	2.05
2008-09	135.49	3.61
2009-10	129.33	-4.55
2010-11	133.48	3.21
2011-12	114.30	-14.37
2012-13	118.31	3.51

Source: Department of Animal Husbandry Dairying & Fisheries (DADF), Govt. of India

Table 2: Export of Marine Products to Foreign Countries

Year	Quantity (In 000 MT)	Value (Rs. in Crore)
2004-05	9.54	241.20
2005-06	9.80	259.39
2006-07	10.52	304.46
2007-08	14.16	351.52
2008-09	14.13	357.88
2009-10	14.53	428.28
2010-11	19.73	606.41
2011-12	21.08	792.76
2012-13	23.69	908.48
2013-14(P)	30.98	1817.07

Source: Directorate of Fisheries, Odisha (Provisional)

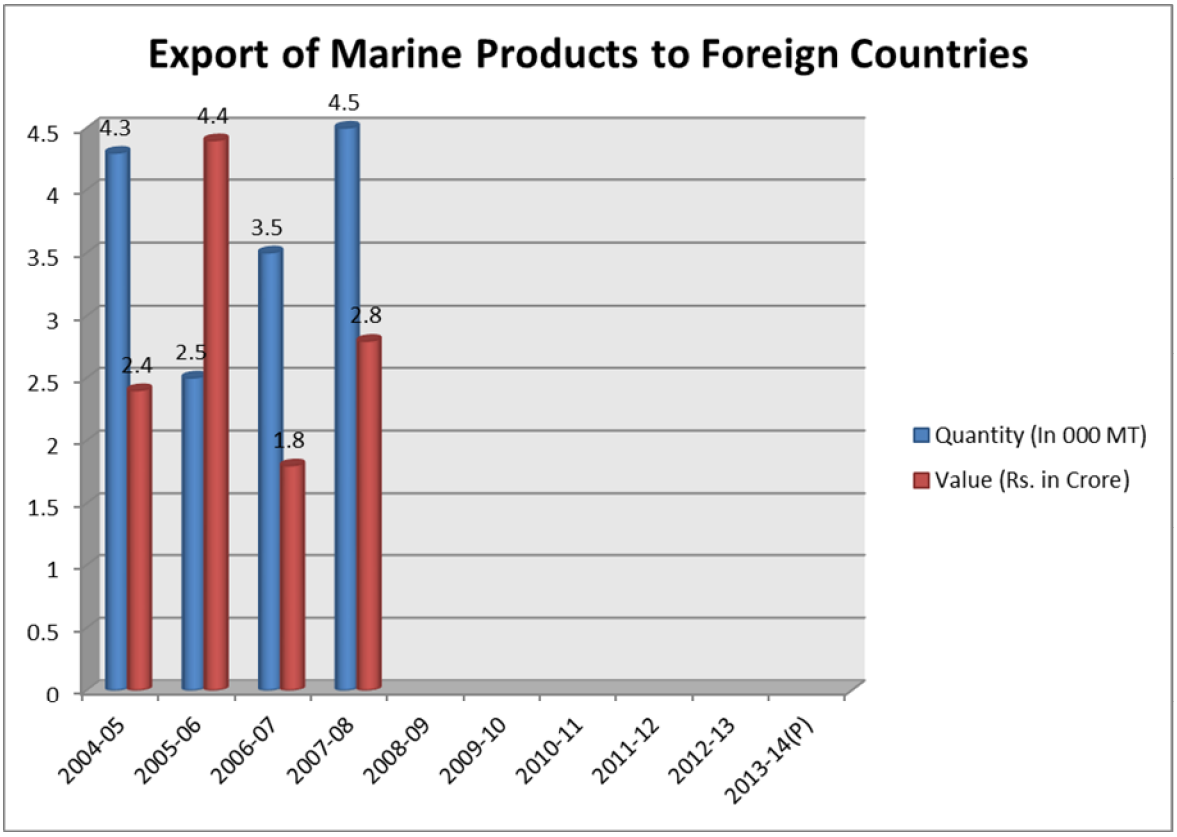

Figure 1: Export of Marine Products to Foreign Countries

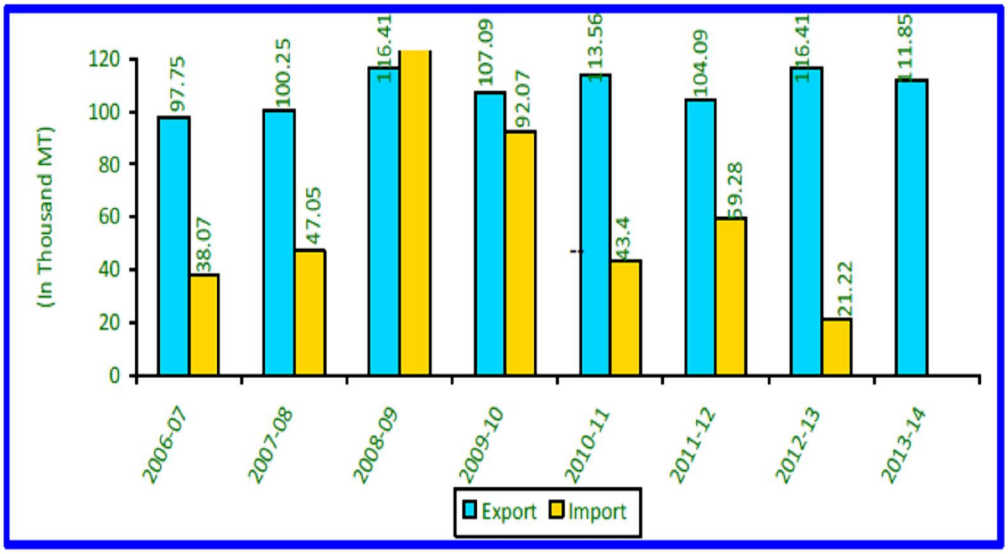

Figure 2: Export & Import Status

2.1 Characterization of Marine Species Market in Odisha

The market is characterized on the basis of consumer preferences,volume of trade,demand and supply conditions.There is a wide range of value products from low value to high value depending on the species,quality and size.Therefore, these species can be clustered into market segments based on uniqueness and demand of the species in the concerned market.The product segregation helps both product and its market to create two distinct segments and provides insights to understand value chain.The segregation of species has been done on the basis of the demand, price and availability of the various species in different markets.

Table 3: Product Segment Category of Marine Species

Sl.No.	Product Segment	Average Price/kg
1	Export Value Product	800-1400
2	High Value Product	600-1200
3	Average Value Product	100-600
4	Low Value Product	Less than 100

Table 4: Product and Demand Segment Category

Sl.No.	Name of the Species	Product Segment	Demand in the type of Market	Average Price
1	Pomfret(White) (According to size)	Export & High Value product	Export & Regional Market	Rs 600/- Rs 1400/-
2	Prawn (Tiger)	Export & High Value Product	Export & Regional Market	Rs 800/- to Rs 1000/-
3	Crabs (Large)	Export & High Value products	Export & Regional Market	Rs 1000/- to Rs 1200/-
4	Lobsters	Export & High value Products	Export & Reigonal Market	Rs 1200- Rs 1400/-
5	Koni	Export & High value products	Export & Regional Market	Rs 600/- Rs 800/
6	Ribbon Fish	Export & High Value products	Export & Regional Market	Rs 600/-Rs 800/-
7	Pabta	Export & High	Export &	Rs 600- Rs

		Value Products	regional Markets	750/-
8	Bhekti (Big)	Export & High Value Products	Export & regional Markets	Rs 600/-Rs 800/-
9	Panikhiya	Average Value products	Local & Regional Markets	Rs 300-Rs 350/-
10	Black Promfret	Average Value Products	Local & Regional markets	Rs 300-Rs 350/-
11	Khanga	Average value products	Local & Regional markets	Rs 300- Rs 320/
12	Kurandi	Average Value products	Local & regional markets	Rs 250- Rs 350/-
13	Crabs (Small)	Average value products	Local & Regional markets	Rs 350-Rs 400/-
14	Kanakurda	Low Value products	Local market	Rs 80-Rs 100/-
15	Kockle	Low Value Products	Local Market	Rs 50- Rs 80/-
16	Magur	Low Value products	Local market	Rs 120/- Rs 140/-

Source: In Discussion with traders, retailers and wholesalers in Bhubaneswar Market.

Thus, in the context of demand for species, product segment and prices of species, the markets are characterized. The features of all the three markets are given below as follows:

Export Market (International market)

- Large number of buyers and seller exist and the markets are very competitive in nature.
- The competition in this market is very high and the demand is of very specific nature limited to few species only. Demand and price of the species are highly volatile
- Quality is the utmost concern in this type of market

Regional market

- The regional market are generally located in state capital, large cities and metropolitan cities.
- It acts as a channel between the retailer, end user and the producer
- Demand is very robust and competitive
- Price Fluctuation is a certain phenomenon as demand varies due to larger market of the product.
- The cost of operation is higher than local market, due to logistical factors
- The regional market are Bhubaneswar, Cuttack, Hyderabad, Chennai, Vishakhapatnam, Mumbai and Delhi.

Local Market

- Local markets are the markets essentially the markets nearby the landing centres. It includes village haats, haat of sub-divison or tehsils.
- The villages along the coastline within the periphery of 25-30 Km of the landing center. The local market are Huma Haat (Dry Fish), Berhampur, Balugaon, Ganjam, Puri, Astrang, Pipli, Brahmagiri, Kakatpur, Konark, Aska, Khalikot and Patrapur.

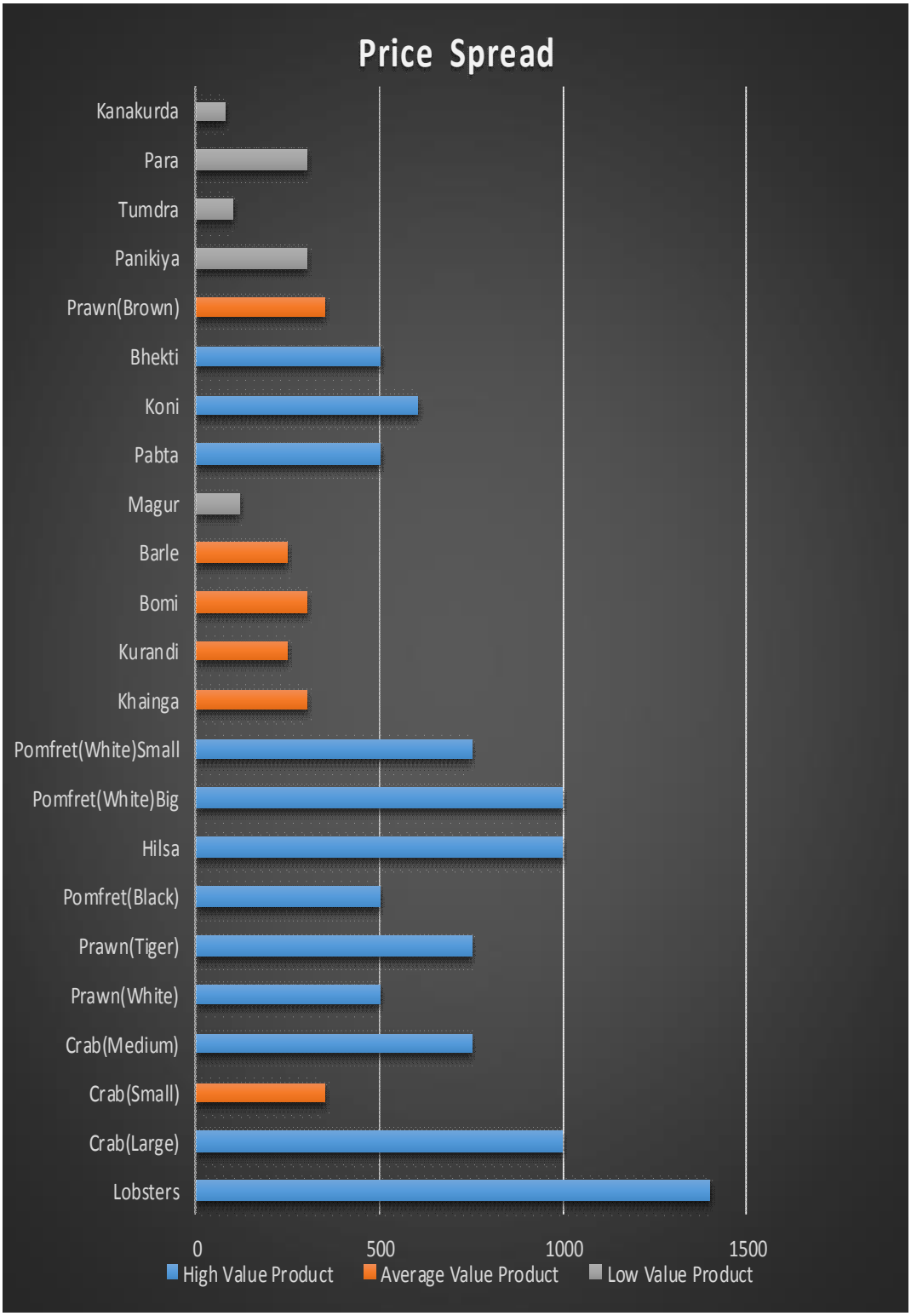

Figure 3: Price Spread of Different Species

2.2 Environmental Analysis

PESTLE ANALYSIS

PESTLE analysis is a tool for understanding and analyzing the macro environment in which the sector is operating and understanding of external environment will bring the advantage of encasing the opportunities and minimizing the threats. The main elements in PESTLE analysis are: political, Economic, Social, Technological, Legal and Environmental. The following table represents the factors, which was being understood and analysed by the investigator, after interaction with the fisher folk community and also from the study and analysis of review of literature on livelihood security of fisher folk community.

Political Factors

The subject matter of fisheries is in the state list under article 21 of the Indian constitution and hence the management and control of fisheries up to the territorial waters and is vested with the state/union territory government. Though the state government has taken some positive initiatives in strengthening the asset base of fishers i.e., replacement of wooden country crafts with FRP boats, motorization of the country craft, assistance for fish marketing infrastructure for fishermen in terms of providing cycle with ice box, motor cycle with ice box, auto- rickshaw with ice box and also assistance for nets.. But the coverage of schemes in the context of small scale fishermen is inadequate, considering their numbers. According to the planning commission reports 2011, 90% of the fishermen population belongs to category of small scale fishermen. The small scale or artisanal fishermen are perpetually indebted and also lack awareness about the welfare schemes that are operational in the state. Lack of data exists in the context of their geographical spread and numbers.

In this particular context, in Ganjam there has been financial fraud in the schemes meant for small scale fishermen, who were completely deserted aftermath the cyclone phailin which hit the Gopalpur coast in 2013. This type of financial fraud, where the intended beneficiaries are being duped by the traders. The traders were selected by the government to supply the boats and nets to the affected households. But, neither the bank, nor the government had any clue initially about it. It came into the notice of the bank authorities when the beneficiaries approached the bank and subsequently bank manager lodged a complaint against the traders.

The state government efforts are noteworthy in terms of providing low cost housing to the fisher folk community, with all, the basic amenities. The project coverage is satisfactory, but more needs to be done in the context of time of completion. The coverage of the scheme has

increased for award of scholarships to meritorious students of the fishermen community and around 3, 20,000/- was disbursed to the students in this financial year 2014-15.

But, the expectation from the government is to strike the balancing act in the context of coastal conservation and management programmes which is currently operational under various state and central government initiatives, involving the department of fisheries, environment, Industries, revenue, coast guard and tourism. The fact of the matter is that various government departments have countervailing agendas and overlapping roles and responsibilities. For instance, one department aims to promote growth and development, while other deals with conservation and management and lack of coordination between them results in loss of livelihoods. The fisher folk community in New Golabandha village is very

much affected by firing practices conducted during trainings in military establishment. Along the military establishment in Gopalpur, almost all adjoining villages are affected during such trainings.

Economical Factors:

- **Declining production**: The decline in catch affect fishermen income and availability of capital to invest in improvements and it result in reduced share of crew members. The dwindling fish stocks have been due to the implementation of conservation measures and climatic change which results in loss of many species. According to DOF, around 17,546 families, comprising of one lakh people are subjected toloss of livelihood for several months a year because of the ban. The Odisha traditional Fish workers union and **Samudram** (2003) put the number of families affected at 27,825.

- **Cost of operations and Subsidies:** The important concern in the sector is the growing cost of operations brought on by increasing cost of fuel which become aggravated by the diminishing fish catches. As the boats travel farther out in seeking fish, each fishing trip costs a lot more than previously while the returns do not always keep up with the costs as there is no certainty that every trip will ensure a reasonable amount of fish. But, certainly there is a drop in the net profits made. For the motorized boats, the cost of operations is further aggravated by the constant need for maintenance of the engines.

  Apart from fishing fleet owners, the downward effects of the cuts in subsidies are felt by several categories of people (even if they were not direct recipients of subsidies at any time) who depended on the sector for trade or employment and now find that the access to both has become dearer. While the overall economic performance of the sector may improve as a result, the capacity of a large number of people to cope with the changed conditions becomes weaker and their livelihoods less sustainable. Thus, for example, the most important subsidy the fishers receive ï i.e., tax rebate on HSD oil ï has remained relatively static while the cost of HSD oil has grown manifold in the meantime. Under the circumstances, the subsidies do not serve the intended purpose, and could be wastage of the scarce resources available to the sector.

- **Transactions Cost and Vicious cycle of credit:** The market arrangements are centered on the system of advances and credit, and those who could not afford to compete in the open auctions with the large scale traders from outside, particularly people in the traditional marketing systems, were marginalized. The monetization of transactions on the beaches has meant a dependence upon moneylenders for meeting production needs, and loan repayments take away a sizeable proportion of their income. The need to service their loans and to finance the next cycle of operations requires that they sell their produce even at a loss, just to keep the activity moving. The cost of credit, i.e. the interest rate is very high and often varies between 36% to 45% on a yearly basis.
- **Institutional credit supply mechanisms:** Inadequate credit delivery and recovery mechanisms to suit the needs of the fisheries sector, bureaucratic & procedural hurdles, lack of banking habits among the credit recipients, failure to reach the needy fisher folk, and several other factors reduced the scope, performance and effectiveness of the formal credit systems in Ganjam. The transaction costs of lending to the poorer people were considered disproportionately high (compared to the actual

amount lent), which contributed to a majority of stakeholders in the sector (fishing crews, petty traders and dry fish processors) being left out of the formal credit systems.

- **Lack of trade data and price information.** The lack of trade data and price information on the species landed in Orissa impedes market research and makes business and government planning difficult, a situation that needs remedying without delay given the need to maximize the value of the limited fish stocks available.
- **Marketing Orientation & Facilities:** The state is a major consumer and exporter of fish, but there are few established marketing facilities even in the urban areas. Most fresh fish markets have only rudimentary facilities which constrain rather than facilitate the traders in carrying out their activities. In the dried fish markets, the lack of good storage systems at markets is one reason for resorting to distress sale. The absence of the government control and supervision affects the marginal stakeholders and it has allowed the proliferation of vested interests at the markets leading to exploitation of both processors and buyers. In major wholesale dried fish markets like Humma, many market intermediaries between the producers and the traders (who often do not speak the same language) collect sizeable commissions from both sides for the service. Further, the lack of lacking proper systems of weighing, pricing and supervising makes things worse for them.

Sociological Factors

- **Acceptance of low quality fish:** The fisher folk community generally receives the low quality fishes for their consumption at home. It reflects upon the low nutritional value intake of households. The fishes consumed by the householdsô lacks the required protein intake as recommended by the world Health Organization (WHO).

- **Education as a curse among fishermen communities:** Fishing communities tend to suffer from very low levels of literacy. However, it appears that the situation is changing for the better. Although literacy rates in the coastal villages of Ganjam continue to be below the state and national average, many people have begun taking an active interest in education and in sending their children to school. The reason given by fishers was that literacy opens doors for diversifying out of fisheries and at the same time inviting miseries. Most of the youth who are educated but are unemployed often take the jobs that have negative impact on the society, such as working as agents in fraudulent companies or working as intermediary in the fish value chain. Though there

is enhanced access to government schools, but still some resource poor fishers believe that if their children do not go to school and take up some odd work, that would fetch more income to the family.

- **Marginalized and diminished role of women:** The contemporary marketing systems increasingly take over the fishing economy, large numbers of poorer people who depend upon traditional fish marketing find themselves marginalized and vulnerable to factors they can hardly understand. The local fresh fish market and the traditional processed fish market are under increasing pressure because of the high cost of credit, greater competition amongst a growing number of participants as well as increased competition from the distant urban and overseas markets for limited volumes of fish; the rising fish prices and limited income of their customers seriously constrain net margins. Women are a major casualty in the contemporary marketing chains because their role declined from critical links in the supply chains to being ancillary workers.
  - **Attitude of fishermen towards other occupation:** Though the fisher folk community has exhibited tremendous adaptation capability towards diversification towards other economic activities away from home. But, in their native place they consider other occupation, apart from fishing as disgraceful and looked down upon in the community. But, it is observed that there is a break in these types of barriers as far as the youths of the community are concerned.
  - **Lack of Voice and problem of mute participation:** On interaction with community leaders, it was found that there is a lack of collective approach among fisher class in voicing their demands and trying to solve the issues plaguing their own communities. The rise of nuclear families and living in isolation is probably the main causes for mute participation. There is a general unwillingness to step into a common platform and sort out the issues of the society as a whole. The approach has been more individualistic, self- centered and narrow.

Technological Factors

- **Efficient/cheaper fishing technologies:** The cost of operations being the single most important determinant of the profit or loss of fishing operations, there is a valid demand from the fishers for more efficient or cheaper technologies to be developed and/or promoted. However, the focus on development attention remains on the conventional motorization programs (supplemented very recently ï and inadequately ï by a small subsidy for fuel). The fishers themselves have been

increasingly trying to move away from the motorized boats and developed simpler, low-cost, alternatives like *katla teppa* in the south zone, which marks the return to the old days of sailing with oars and sails, but such innovations are not standardized to more technically robust standards.

- **Motorization of traditional boats:** Motorization certainly reduced drudgery and enabled the fishers to travel farther out and stay at sea for longer duration. The engines are prone to frequent complaints as their ability to withstand the rough and saline sea conditions is remains suspect and are a major drain on the incomes of the fishers. The fact that the fishers have no more than rudimentary knowledge about the engines and their operation. The location of trained mechanics at a few centralized places along the coast of purirequires the fishers to forego fishing and carry their problem engines over long distances to get them repaired and this adds to costs significantly. The fishersô poor knowledge of the engines also allows the mechanics to take them for a ride.

- **Technological Infrastructure:** A comprehensive survey (CRISIL 2006) found that more than half of the stateôs landing centers had no ice plants and that cold storage, chill rooms and processing plants were available at few places only, often at some distance from the seaside. At the same time, some FLCs have underutilized assets because only a few boats with low landings operate there, while some FLCs lost their usefulness due to siltation and other factors. The existing facilities for water supply (for drinking as well as for processing and washing) and sanitation leave a lot to be desired in most fish landing centers (FLCs).

Legal Factors

Lack of monitoring and Enforcement*:* The Orissa Marine Fishing Regulation Act came into force in 1984 (DOF, 1997). The act defines the natural coastal resource as the state property with all the management and usages right defined by the state. It negates the common ownership of the resource by the community and the management rights thereof. The act was formulated mainly to protect the interests of the traditional fishermen, by restricting the fishing operations of the mechanized trawlers to within 5 km from the shore and also prohibits fishing activities of the trawlers from neighboring states entering into the marine zone of the state. The act makes mandatory the registration of all the craft operating in the state against the prescribed registration and license fee for different types of vessels. The act gives discretionary power to the government to regulate the fishing operation along the

coastline of the state. The state holds the power to regulate the number and type of vessel, area for fishing, period of fishing, species of fishes and the types of fishing gear permissible for fishing.

The OMFRA reportedly controls the entry of new mechanized boats into the sector, based upon the carrying capacity of each fishing harbor in the state, the fact that the numbers of mechanized boats have been constantly growing from year to year would indicate that the implementation of the provisions of OMFRA remains weak, or the penalties for flouting the provisions is not sufficient enough to deter fresh entry into the fleets.

Environmental Factors

- **Climatic change and dwindling fish stocks:** The destruction of fish habitats like mangroves and coral reefs, ocean acidification, sea-level rise, erosions, recurrent and severe cyclones and floods, unpredictable weather changes resulting from global warming are decimating fisheries and endangering the life and livelihood of the fisher people. A study conducted by TERI (Tata Energy Research Institute) and Ministry of Environment and Forest projected that a one metre sea-level rise could put as many as

7.1 million people including all the coastal communities whose livelihood is directly linked to the sea- at the risk of displacement. In other words, the coastal fishing communities stand the risk of being worst affected.

- **Sustainability of fish stocks:** The very high proportion of juvenile fish currently being taken jeopardizes the future sustainability of the sector. Mesh sizes of all major gears will need to be increased (actual mesh sizes not the regulations). This will need

a national public awareness plan to highlight the damage the lack of effective regulations concerning mesh size is causing. Again through a co-management approach, optimal mesh sizes for different gears will have to be agreed and harmonized across states and new regulations notified.

2.3 Key Drivers of Change

- **Changing Consumer Demand and Demographics**

  Price, quality, availability, variety, nutritional concerns, safety and hygiene are principal determinants of consumer demand on fish. Population growth rate and age distribution are key important factors affecting the demand function of fish and fishery products.

- **Sustainability & Safety**

  The consumers now a days, place more concern over the safety of the products, especially in high value markets such as European union and united states market. Dwindling fish stocks all over the world and degradation of their ecosystem due to overexploitation, capitalization and effects of climatic change has resulted in unsustainability and fluctuation in the level of production. In this context, consumer and fisher awareness on sustainability will help to reduce the threats on fish stocks and make it available for future generations. Consumer of high value markets place more attention on products from sustainable resource base and they are ready to pay extra for the conservation measures.

- **Functional Literacy & Education**

  Functional Literacy rates and education has the power to create knowledgeable society which places more concern on food safety and quality. Food safety and hygiene are the key concerns in develop markets compared to developing nations. Moreover, consumers of developed country markets are willing to pay extra premiums for fish and fishery products from sustainable base.

- **Ease of Use products**

  The ease of use (convenience) is an important factor determining the fishery product marketing. Especially, in the nuclear family context, where both the couples are working, so they are reluctant to buy fish due to its time consuming initial preparatory work. Clean, cut and ready to cook or ready eat forms of fish is more demanding in the market and consumers are willing to pay extra premiums on it. Thus, in this context, product development can play a great role in redefining the market for marine fisheries in particular.

- **Availability & Trade Volume**

Seasonality is common with many marine fish species and which makes consumers to search substitutes. Many developing country fish suppliers are supplying seasonal species to the high value and export markets which lead to change in the consumer base from time to time. Value addition will help to bring the different forms of fish products to the market place while reducing post-harvest losses. The volume of trade differs according to the type of buyer, whether individual or institutional. Seasonality, economic status, cultural aspects and purchasing power of the consumers affects the trade volume.

- **Packaging & Communicating the value through Promotion measures**

  Presentation style appeals and attracts the consumers and especially important for fish and fishery products. Fish and its nature of fresh produce with odour and perishability makes consumers away from the products. Good packaging materials will improve the handling and shelf life of the products. Clean cut ready to cook or eat fishery products attracts more consumers than the raw whole fish. Fish is rich in Omega 3 fatty acids and which make fish more popular in modern markets.

- **Certification & Labelling**

  Food labeling is intended to provide information on product composition and safety. Country of Origin Labelling, meaning all fish and has to carry labels saying where they came from and whether they are farmed or fresh. The labelling regulation is intended to strengthen traceability - the ability to trace fisheries products from sea to market and allow consumers to choose their seafood according to specific criteria that might be of concern to them. Certification and the labeling of certified products aim to identify products that follow certain minimum standards or regulations, such as standards for quality, organic production, fair trade, or sustainability (Green peace, 2010).

- **Technology & Market Information Systems**

  This includes marketing information systems, progress in supply chain management, transport and handling advances. Market information systems, often based on simple mobile phone and local-center web access, help poorer groups make smarter decisions.Flexible local networks connecting producers, traders, NGOs, the public sector and consumers help them quickly find and use the information they need. Artisanal fishers have rapidly caught on to using mobile phones to find out where they can get the best prices for their catch. 'One Stop Shops' in Bangladesh, and similar networks in Laos, Cambodia, and Vietnam, also offer fishers cheap local access to

market information (Research Into Use, 2010). Small-scale fishers around the world are the losers of market ignorance. Middlemen and traders are the winners with high profit margins and ultimate end of poverty.

- **Transport and handling advances**

  Reliable temperature maintenance is the key important feature in fish and fishery product transport. All people involved in the handling and transporting of perishable commodities are responsible for their part in the cool chain. Breaks in the cool chain can result in irreversible damage to the quality of foods. In the transport of perishable products into remote regions ideal procedures may not always be possible and so in these instances early planning will allow products to be delivered as efficiently as possible.

2.4 Actors and Factors

Fishermen without Boats

This category constitutes the largest number of actors in the sub sector. It comprises of people who are capable of fishing but cannot take up the operation as they are poor and vulnerable and do not have the resources to undertake fishing on their own. The main role of the labourers is to support and assist the boat owners in the fish capture. The cost of operation for this segment is negligible as no capital investment is required on their part to enter the trade. The payment to them is made on the basis of percentage/part of the catch per voyage. The total cash generated through fishing is distributed equally among the members participating in the operation after deducting the variable cost of operation. The remaining cash is distributed equally among the members including the boat, net and machine as one part respectively. The average monthly earning for this segment is Rs 2000-Rs 2,250/- per month during the peak season and the tentatively average annual income accruing to this segment is Rs. 24,500/-.

Fishermen –Share Boat and Net Owners

Here, the fisher need to share asset with group of fishermen and their source of income is share of fish catch. Normally the actor in this segment has boat but the asset is owned not only by one owner but multiple owners, as the boat is purchased in partnership and most of the times the owner who is also the partner and he also operates as crew member. Thegroup of fisherman is generally tied up with traders because of the credit linkages and other accessory facilities provided by them. It is also observed that many fishermen in groups had availed the schemes for creation of assets like boats and fishing gear from banks and other financial institution, with support from government. The cost of operation for this segment is high. The capital investment in this segment is mainly inthe fishing gears. Another major expenditure is the variable expense in terms of operating cost of the trade. The average monthly earning for this segment is Rs 3,300 ï Rs.3,600/- per month during the peak season and the tentatively average annual income accruing to this segment is Rs. 40,000- Rs 43,000./-.

Auction agents

The actors of this segment do not trade in fish themselves, but only arrange for the sale through an auction or bargaining system and determine the value of the fish. The auction agents have arrangement with traders and processors. The source of income for auction agents is fixed sum or a percentage of sale. The auctioneers generally belong to the fishing community and often come from the same village and are attached to traders. The auctioneers sometimes take the role of an agent for the boat owners also and have the responsibility of ensuring the realization of money from the buyers. They donôt have any cost of operation in terms of fixed or variable cost. Tentatively average annual income accruing to this segment is Rs. 90,000/-.

Commission/Collection agents

They act as agents of either the large export houses or external traders for defined fish species. Their role is confined to participating in the auctions, procuring fish and handing it over to the traders. They donôt have any cost of operation in terms of fixed or variable cost. The operations costs and accessories like cell phones etc are borne by the principal.Tentatively average annual income accruing to this segment is Rs. 1,08,000/-.

Godown owner

They are the dominant players in the fishery sub-sector. They provide backward and forward linkages, undertake sorting, packing and transportation and financial support to boat owners and creating linkages for hiring of crew. They have the ability to take risk and have better market access and information. They generally govern the prices at the landing centers through their agents and the auctioneers. The capital investment in the business normally ranging from Rs. 1, 00,000 to Rs. 2, 50,000 in terms of infrastructure and other fixed investment. But the capital required to meet the operational cost like purchases of the fish, transportation and storage, credit supply to the fisherman (capital employed in the business) is high with an average daily requirement of Rs.50,000 to Rs. 2, 00,000 depending on the size of operation and the quantum of business undertaken by them.

Wholesaler

They take up the responsibility of arranging for the products i.e. create backward linkages to the landing center through the middleman to meet the requirement of the buyers of the market -the forward linkages. The wholesaler also frequently acts like an agent to the middleman in this trade.

Exporters

The actors of this segment are the big business houses, which are at the top of chain. The segment allows very few players, as the volume of trade is very high for the high quality products. The segment has an access and control over the production resources both legally as well as by taking gratuitous advantage of their position in the value chain. This control over the resource is linked with the credit supply, which is pumped in the value chain by them. The major roles and responsibility of the players is to make the huge capital investment in terms of the fixed capital like machinery, building, transportation, ice plant, refrigeration, etc and the variable cost in terms of purchases of the raw product, salary, transportation overhead, etc is high.

Transporters

The actors in this segment are the private operators who transport the shipment to the larger country markets. The operators are normally linked to the traders for their business who hire them in large volumes. The capital cost employed in the business is high on the vehicle and other assets.

Ice Providers

The ice providers are the ólifelineô to the supply chain of the fishery. The service is normally taken up by the factory owners / private entrepreneurs who are linked to them. The ice providers are directly linked to the middleman in the sense that the middlemen are the most important customers and hence their business relies on them heavily.

Head loaders and Ancillary service providers

In Ganjam, women head loaders constitute the largest number of petty traders seen at the beach, although overall they are accounted for the purchase of only a small percentage of the catches landed. They are a major source of supply of fish for the communities within and close to the coastal areas. Also another important activity of salting and drying of fish is taken by the women folk. They are the most vulnerable group among all the stakeholders and their average annual income is less than Rs.25,000/-

Factors (affecting the actors)

Pre- Production	Production	Post-Production	Market Linkage
• Inadequate Credit facilities from formal Sources leading to credit trap • Lack of Assets • Subsistence Level living • Lack of social safety nets and conflicts among communities • Lack of Functional and Financial literacy among fisher folk • Increasing Migration and changing Occupational structure	• Low yields • Overexploitation of resources due to lack of enforcement mechanism on the part of government • Production scattered over many small scale fishermen, farms • Inadequate harvesting technologies • Inadequate information and market ignorance on prices, trends and customer needs	• Inadequate post-harvesting facilities (ice, cold storage and cooler wagons) • Traditional, agent-driven, inefficient procurement system • Extremely poor transportation (roads, harbours, auction halls, market places and logistics) • Infrastructure (lack of ice production, very limited cold storage facilities) • High degree of wastage (poor handling and grading)	• Species inconsistent with Quality standards norms adopted by developed countries • Low Price realization due to consortium of middlemen • Unorganised market for procurement, processing and marketing • Limited knowledge of potential market size and market mix. • Pricing not properly linked to the grade. • Due emphasis is not given to the quality parameter • Outdated, inadequate distribution of infrastructure • Limited organized fresh produce retailing • High degree of wastage • Exports constrained by inadequate cold storage infrastructure and high costs

2.5 SWOT Analysis of the Fisheries Sector in Odisha (With focus on Ganjam District in Odisha)

Strength

- Indigenous knowledge system and skill set associated with the occupation
- Existence of organizationôs coordinating with the interests of fisheries.
- Adequate processing capacity which could be upgraded to meet EU/ISO 9000/HACCP standards.
- Research and Development back up from ICAR Fisheries Research Institutes.
- Adequate trained manpower to develop and manage fisheries in the State and Dissemination and extension services of the technologies among the grass root level stakeholders.
- Adequate work force to take up fishing, fish processing, marketing and other ancillary activities.

Weaknesses

- Low women literacy and no formal participation of women in community decision making process.
- In the case of fisheries sector, a white paper on public reforms in Odisha has placed the average per capita annual income at Rs.6,787/- compared to the all India average of Rs.10,204/-.Thus, from this data and from the observations of the field visit in Rangeilunda block, we can infer that the fisher folk community in Ganjam district of Odisha has relatively weak in mobilizing financial resources to expand its operation and the communities are having high credit absorption but low skill of financial resource mobilization thus leading to low level of income.
- The networking capabilities of the communities own institutions are relatively weak, because of which it finds difficulty in soliciting support from government and other private agencies and very high dependence on donor agencies.
- Lack of proper storage facility at the village level results in spoilage and losses.
- The governance structure of the people own institutions is not pro-active enough to promote policies, procedures and quality criteria which can help in acquiring and utilizing the physical, financial, technological and human resources for achieving maximum efficiency.
- The innovative capability of the peopleôs institutions and the organizationôs supporting people institutions with reference to marine species conservation, procurement, product development, new market development and institutional development is low.

- The processing capability (at the village level) need to be enhanced through incorporation of effective quality management system, training of manpower, sound operation and maintenance of equipment. The inventory management and working capital management are other areas requiring intervention.
- In the context of the procurement capability, there is a drastic reduction in procurement of many varieties of fish due to decline in production because of unsustainable fishing practices.
- Excessive fishing capacity that spawns over-fishing, resource usersô conflicts, and intractable disputes among fishermen deploying different types of gears.
- The fishery sector is faced internally with overcapacity, under-employment and low per capita earnings, and externally by the lack of alternative occupations, low levels of literacy and relatively high levels of debt.
- Inadequate infrastructure facilities, information and communication channels, Unreliable resource base and statistics,
- Lack of proper fisheries management and legal mechanisms with the community participation, etc., in the State, are some of the limiting factors in promoting cost-effective and environmentally sustainable methods of harvesting and production; spread of know-how for maintaining high standards of storage and processing of produce for value addition; and effective linkages and networks for profitable marketing of products. The majority of small fishing boats lack modern fishing facilities and equipment.
- Lack of professional management in the area of production, operation and processing as well as institutional building

Opportunities

- Increasing awareness about fish as rich source of protein supplement and demand from high end consumers of society, both within and outside the country.
- Up gradation and modernization of fishery harbours, fish landing centers, post-harvest and market infrastructure, to cater to the need of the International hygiene and safety standards.
- The fisher folk communities have acknowledged the fact of problems of habitat degradation and fish stock depletion; thus this understanding is important to the introduction of a more stringent management measure.
- Utilization of the technologies for minimizing the adverse environmental impacts.
- Creation of alternative employment, livelihood and food security options to the fisher community.

Threats

- Implementation of OMFRA and CRZ act not in its true spirit
- No Minimum support price policy for fish and marine products.
- Fast Depletion of Marine species because of sea degradation, overexploitation of resources
- Unorganized market for procurement, processing, distribution and weak market linkage. Thus, in this context the bargaining power is low and often exposed to low price realization and distress selling.

CHAPTER III

3.0 Value Chain Analysis

Michael Porter (1985) in his book óThe Competitive Advantageô introduced the concept of the Value Chain and highlighted that the activities within the organisation add value to the service and products that the organisation produces, and all these activities should be run at optimum level if the organisation is to gain any real competitive advantage. Michael Porter suggested that the organisation is split into óprimary activitiesô and ósupport activitiesô.

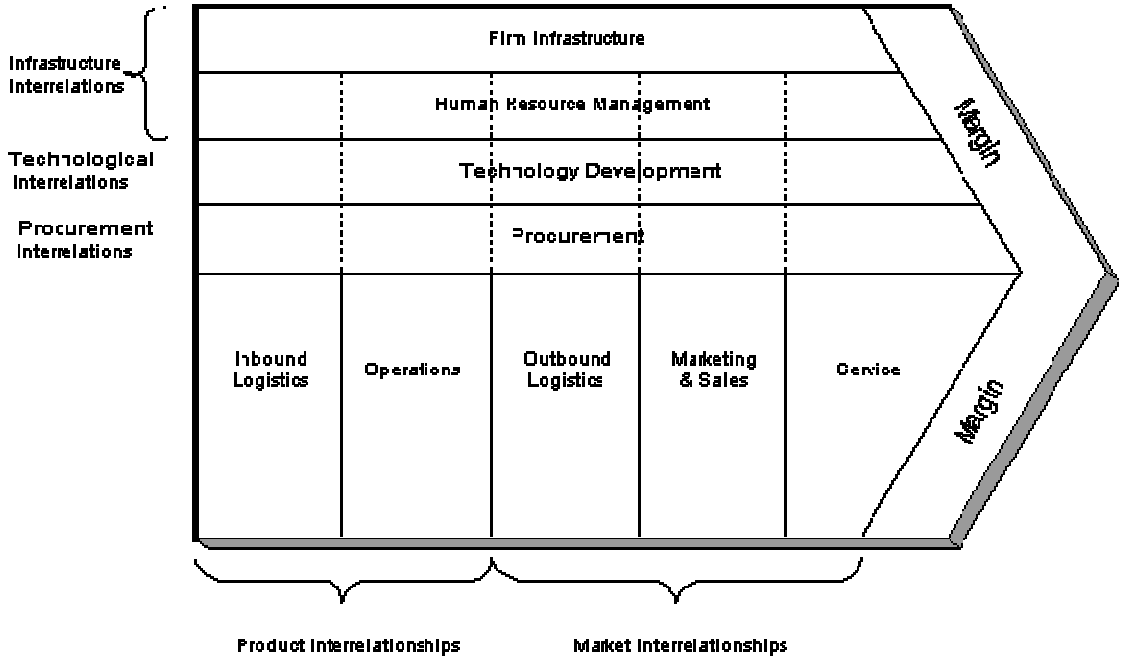

Figure 4: Basic Framework of VCA Analysis

Value is what the buyers pay for the offerings of the firm. Value addition is the difference between the price of the output and cost of the input. Value addition activity is a physically and technologically distinct activity that a firm performs. Value addition stage is a set of sequential value addition activities in a given function. Value chain is a set of value addition stages undertaken by the firm. Value system includes supplier's value chain, firm's own value chain, channel value chain and the customer's value chain. The purpose of value chain analysis is to comprehensively identify the activities undertaken by a firm, undertake make/buy decision, understand and enhance competitive advantage and for resource planning.

Cost of Operation:

Cost Heads	Traditional Boat Owners	Boat Owners with Motorised Engine
Fixed Costs		
(a) Boat/Craft	17000	1,35,000
(b) Net	70,000	1,28,740
(c) Motor	NA	57,500
(d) License Fees	130	270
Sub total	87130	3,21,510
Variable costs		
(a)Fuel	0	5,000 (depends upon Voyage, the figure quoted here is the normal fuel expenditure per expedition)
(b) Repair	5,550	27,450
(c)Insurance	150	550
(d)Renewal of License	0	0
Subtotal	5,650	40,000
Total	92,780	3,61,510

Source: From the field study, all the costs are averages from the field study

From the interaction with the different livelihood groups in the marine fisheries sub-sector in Ganjam district of odisha, especially traditional fishermen and fishermen with boats, the cost of operation has increased two fold times due to more number of voyage and less number of fish catch. The decline in marine fish capture is attributed to numerous factors ranging from overexploitation of resources to climatic change. Thus, in this context the value chain of marine fisheries, the small and marginal players like fishermen without boat (crew members) and ancillary participants(women head loaders and women fisher folk) in the trade are the most affected and they deals mostly with the low value products. In the context of product and market interrelationships the marine products are divided into three categories, high value, average value and low value products. The detailed analysis of the criteria for categorizing into three heads and subsequent product movements was analysed in the previous section. Though, tentatively the margins associated with the various levels of intermediaries are mentioned in the supply chain of marine species in Ganjam context.

3.1 Findings and Gaps in the Value addition stages

Key gaps in the value chain with focus on livelihood and modern marketing systems

The key constraints with reference to value chain of Marine Fisheries are as follows:

- Resource Gap: The threats facing the coastal fishing communities, particularly in the Ganjam district is the issue of resource constraints. The declining catch per effort, credit crunch as well as overall decline in fish landings are the most critical issues plaguing the livelihoods of the fishers.
- Credit Gap: Credit relationships with traders and middlemen affecting the prices they receive for their fish in the short term and the profitability of operations in the medium-to-long run. The traders/middlemen charge exorbitant interest rate, the interest rate varies from 36% per annum to 50% per annum.
- Access to Critical Input: The most critical input in the post-production stage is access to ice timely and adequately. The access to ice is controlled by traders, thus making the fishers dependent upon them and forcing them to settle for lesser prices than they deserve.
- Inaccessibility and dependence on transport systems reduce the fishermenôs bargaining power
- High production costs: The high production costs is due to the fact that, at the start of the season the fisher class is already debt ridden and at the same time, they are not sure whether the expedition to the sea would yield results in commensurate with the cost. The reason being dwindling fish stocks and seasonality of the fish catch.
- Losses due to spoilage in production transport and markets are so common that the wholesalers in the urban chains and the processing plants in export chains habitually deduct 20-25 percent of the material obtained as being spoiled. Although some of these systems have shown improvements over the last decade, the tradition of deductions for spoilage has become strongly rooted and is reflected in the earnings of the fishermen.
- Price control by traders forming cartels, which effectively works on the hope that increased competition amongst the buyers would lead to better incomes for the producers. When the sale is made through middlemen, obviously the boat owner receives a lower price than if sold directly to the company. However, the systems are largely formalized in such a way that a fisherman cannot take his shrimp directly to the company bypassing the local traders. He is often advised by the company to take his catch to its agents in his village for sale even if that means loss of time and increased spoilage. All traders and commission agents have cartels at every level which ensure that the fishers receive more or less uniform prices.
- The supply of the fishes from the landing center is through the middleman via agents / auctioneer to the wholesaler or the commission agent at the regional market. The

international market takes up the value chain of exporters via commission agent to the international market directly or through buyer arrangement.

- The present value chain for fishery is concentrated mainly into few regional markets that include Barhampur, Cuttack and Bhubaneswar. There is some movement of product to Delhi, Mumbai and Vishakhapatnam market as well. The potential of other markets is yet to be explored which may be lucrative and profit yielding. The limitation of the present value chain in terms of marketing intelligence is immense. The market information to the players of the value chain is limited. The middleman of the present chain is the link to the domestic market. The price information is limited to him and is normally not shared with the players lower in the value chain.
- The present value chain of fishery does not practice promotion and pricing strategy for the product. The marketing of the product is done under the generic brand value that is highly associated with the species in trade. The branding of the source is not prevalent in this trade, except for the prawn coming from Chilka, which has an association with the place of origin; no other variety has any specific branding to segregate the product from other available offer in the market. Thus, this particular gap in product positioning and branding hampers the profit margin, which it would have generated otherwise.
- Lack of market and price information is reported by many fishers to be a serious shortcoming in their dealings with the traders. If they knew how much their product was worth when it reached the final link in the chain (within the country), so the argument went, they would be able to bargain with the traders for a better price. While the lack of information is indeed a major shortcoming, it is difficult to see how the availability of mere information is going to be of much use to the fishermen, without them being in anyway empowered to address the other issues discussed here. Still, improved market information flows will still be a worthwhile area to explore further, particularly when considered in conjunction with programmes to enhance the fishermenôs access to the more basic and important necessities.
- Too many intermediaries in the market chain not only take away the profit margins that the fishers that they could reasonably expect, but also make the market chains fertile grounds for all kinds of mischief. Under the circumstances, it is possible that the intermediaries hurt not only the producers but also the processing and export industries as well as the wholesalers in urban trade.
- As there are no standards for weighing or counting the fish or shrimp, many different systems are in vogue and every one of the systems is equally problematic.. When

counting shrimp in Ganjam district, it is reported that the traders often resort to fraudulent counting under dubious pretexts.

- In the context of fluctuations in prices, a majority of fishermen have no idea whether the changes are occurring at the international markets or whether it is a ploy by local traders to make money, but considering that the traders practically stop purchasing shrimp for extended periods whenever a crisis approaches, they assume this to be an outcome of factors beyond the tradersô control. Lack of direct links with the processing factories and market information allow the traders to get away with paying very low prices for shrimp even after the markets have recovered

3.2 Marketing Systems

There are four important channels of fish marketing in Ganjam district of Odisha which frequently coexist, but each is a distinct entity with its own set of characteristics. These are Local fresh fish trade, processed fish trade, Export trade and urban trade. Of these, the first two belong to what can be called as the ótraditionalô marketing systems and the latter two to the ómodernô category. Local fresh fish trade is the simplest kind of marketing operation while export trade stands for the most complex.

3.2.1 Traditional fish marketing systems

Traditional marketing systems are largely informal, subsistence-based transactions, dominated by women in fishing communities. The market chains mainly catered to rural markets and had a predominantly poorer class orientation. The trade is adapted to ólarge volume-small marginô operations, while processed fish trade is an advance over local fresh fish trade and its evolution gave rise to new systems ï trader advances to the fishers, informal credit networks, market intermediaries and long distances between production and consumption areas ï that would strengthen in due course and form the foundations of modern fish production and marketing systems. The modern fish trade might earn many times more than the traditional trade, but the traditional fish trade could be providing employment for a much larger number of people, many of them from the very poor category.

The main problems in traditional marketing chains refer to lack of capital to invest in procurement, production and marketing activities. As modern marketing systems increasingly take over the fishing economy, large numbers of poor women who depend upon traditional fish marketing find themselves marginalised and vulnerable to factors they can hardly understand. Monetisation of transactions on the beaches has meant a dependence upon moneylenders for meeting production needs, and loan repayments eat up a sizeable proportion of their income. Poor processing and preservation systems ï problems that can be

addressed with little investment that they often do not have ï lead to regular losses in production chain. The need to finance one cycle of operations from the previous one means that they are often forced to sell a part of their catch at a loss, just to keep the activity moving. Lack of emphasis on traditional marketing systems in the government programmes has meant poor infrastructure at the traditional landing centres and the traditional markets, lack of facilities for transport and preservation and inadequate credit assistance.

3.2.2 Contemporary fish marketing systems.

In terms of production, the emphasis of fishing operations has shifted to a very few specific species topped by shrimp that have a big market demand. The stateôs support in terms of new boats and fishing systems to increase production has meant, on the one hand, that the technologies were accessible to those who could afford to invest in them (in spite of sizeable subsidies in financial terms), and on the other, overcapitalization of the fishing activities that made the activities risky. The location of markets at long distances from the fish landing centres gave rise to: a number of intermediaries, transactions involving credit, use of ice for preservation and rapid transport systems. The basic infrastructure, preservation and transport systems developed in such a way that the access for the producers to them has come to be mediated by the market intermediaries.

As new intermediaries entered the marketing chain, the share of the producers decreased. The market arrangements have come to be centered on the system of advances and credit, and those who could not afford to compete in the open auctions with the large scale traders from outside, particularly people in the traditional marketing systems, were marginalized. Initially, óadvancesô were a simple mechanism to ensure regular supplies of fish to the traders. As the relationships between the traders and the producers strengthened, this gave rise to ever increasing investment being made by the traders in fishing. The advances they provided the fishers helped finance the acquisition of new boats, repairs and maintenance and also to pay the crew an advance as well. This resulted moving into credit trap, and few had the capacity to repay or recover the loans.

Women are a major casualty in the modern marketing chains because their role climbed down from being the most important economic entities in the economy to ancillary workers. Over time,as the uncertainties in the sector increase unemployment among men, the women seek work outside the sector and are increasingly the main earners in many households. As the market chains proliferated and elongated, the influence of the intermediaries on the fishing economy increased, and alongside, there was a corresponding decline in access to market information for the producers, who thus came to depend on trader-intermediaries for meeting

most of their production and consumption needs. The possibilities for the producers to take control of the markets were also effectively thwarted by the monopolization of market access by the traders and the failure of systems such as cooperatives to function effectively. The governmentôs enabling role in the sector is confined largely to the production side, while the post-harvest systems have been allowed to be taken over by the ómarket forcesô. Thus, while the growth of export and urban markets has certainly led to a growing prosperity in many fishing villages, this is confined to a few people who have the access to technology and markets.

3.3 Supply Chain of Marine species

In the following sections the detailed supply chain of the product movement is analysed, from fishermen to the final consumers with reference to traditional boat owners and motorized boat owners. The traditional boat owners generally deal with low value fishes and are demanded in the local market, where as average and high value fishes are generally demanded in the regional and export markets. The motorized craft or the motorized boat owners generally deal with the species of high value.

Traditional Boat Owners

The traditional boat owners have a defined and distinct chain due the nature of the catch. This can be related to the species caught, size of the species, availability of the species, etc. Normally the non-motorized boats operate on the coastal water in a periphery of 5 Km. The catch is smaller in size and is generic in nature. Another point worth mentioning is that due to the biological nature of some of the species, the craft owners are able to catch few high value species. The supply chain from the point of origin moves the product as per their segment attributes.

Fishermen (with Motorized Craft)

The species caught by the motorized craft are different from the coastal fisherman as the distance traversed by them is normally from 25- 50 Km. The available species in the deep water is different due to different ecological conditions. The major catches are in high demand in the regional market and hence follow the attribute of the average and high value products. The destined market is the upfront country market where these species are sold on a premium price

The following flowchart representation explains the supply chain or the movement of product from fishermen to the final customer and in the process the number of intermediaries involved. The following pictorial representation is in the context of high value products.

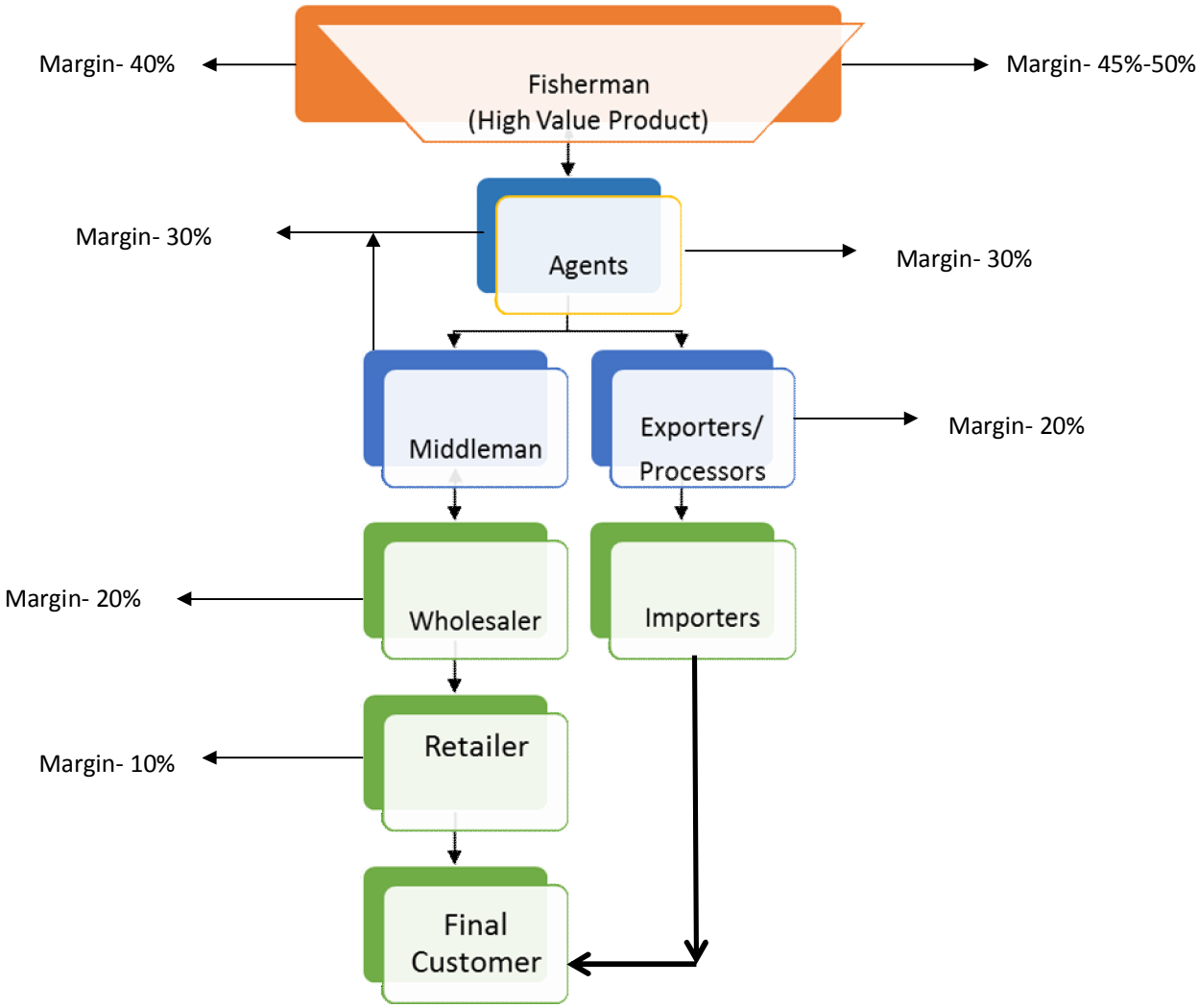

Figure 5: Product Movement in the context of high value products

The following flowchart representation explains the supply chain or the movement of product from fishermen to the final customer and in the process the number of intermediaries involved. The following pictorial representation is in the context of average value products. The price range defines the value of the product which is already defined in the previous chapter.

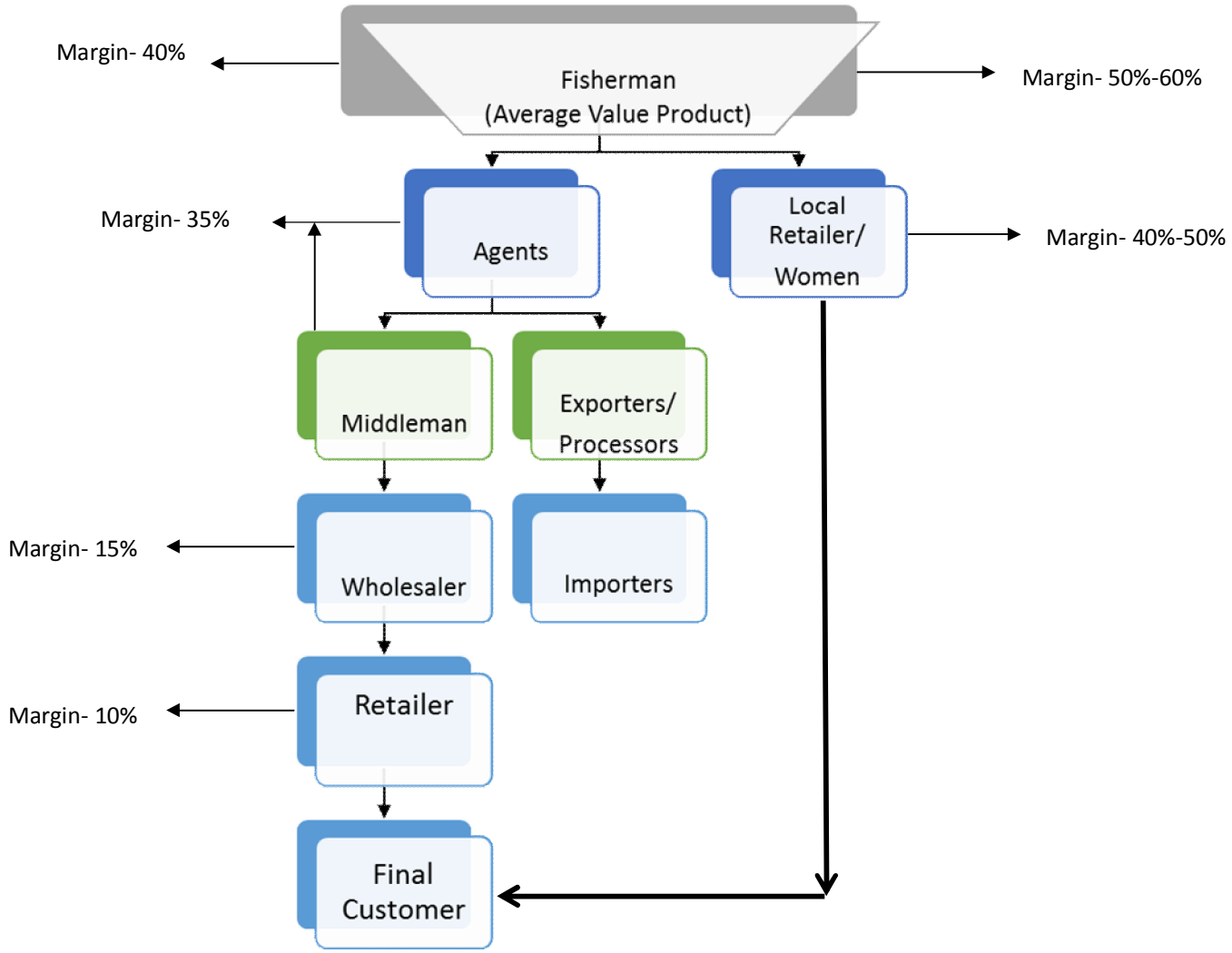

Figure 6: Product Movement from Fishermen to Final Customer (Average value Products)

The following flowchart representation explains the supply chain or the movement of product from fishermen to the final customer and in the process the number of intermediaries involved. The following pictorial representation is in the context of dry fish products.

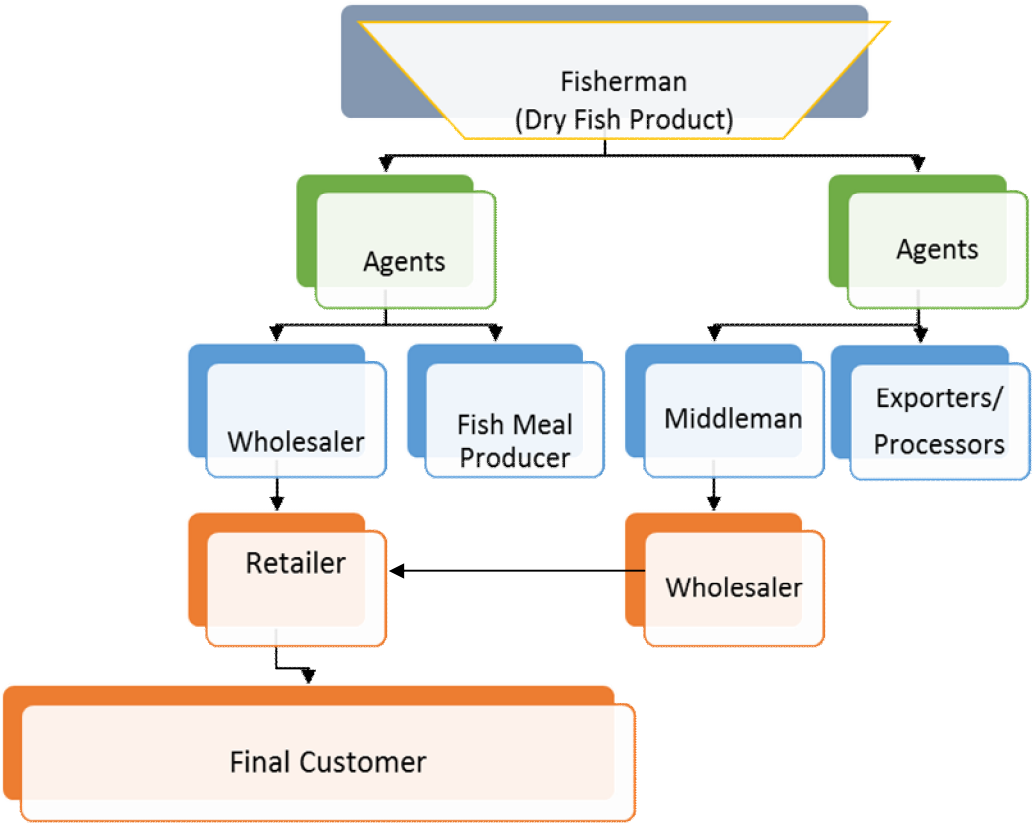

Figure 7: Product Movement along the supply chain for dry fish products

The following pictorial flow diagram explains about the traditional boat owners and their defined and distinct chain due the nature of the catch. The species caught and the sizes of the species are generally low in value and generally are marketed locally.

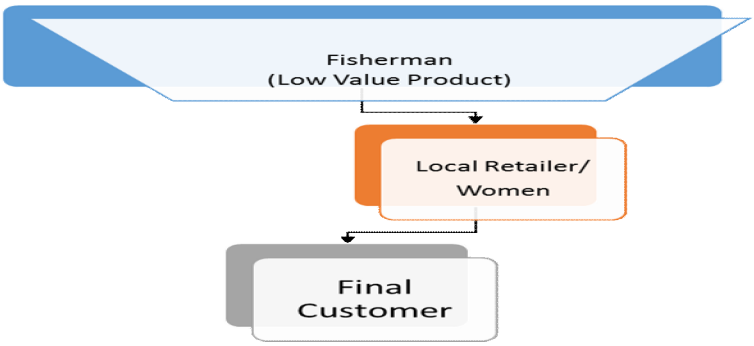

Figure 8: Product Movement from Fishermen to Final Consumer in Low Value species

CHAPTER IV

4.0 Recommendations

Based on the study of marine fisheries, the following recommendations are made:

4.1 Procurement

- The fisher folk need to follow standard package of practices in the context of sustainable harvesting.
- The fishing communities need to improve the post-harvest storage technology at the local level to prevent quality and quantity deterioration before processing
- Providing adequate and timely Credit is the most important intervention because it has the potential to make the most significant difference to all categories of people in the fishing sector. While this fact is fairly well accepted, the problems of operationalizing the credit programs along sustainable lines continue to be a serious problem for the development agencies. By looking at the needs of the producer communities and the way their needs are reflected in access to credit, disbursement and recovery mechanisms in the formal and informal sectors, a proper credit plan is the call of the day.
- Education and training in the context of Financial Literacy are to be undertaken, so that they internalize and practice savings and banking habits and are not exploited by middlemen in terms of rendering credit at exorbitant rates of interest.

4.2 Processing

- To strengthen their bargaining power with the middlemen and powerful traders the fisherfolk organization need to develop a standard process for post-harvest primary processing and quality assurance systems
- Technological infrastructure need to be improved. In this context, lobbying with the government for improving facilities at the landing centres and at markets will be an important area of work to benefit the target groups.The governmentôs role also becomes important considering the large outlays involved and the common property nature of the investment, although the communities can be made to share a part of the cost or pay user fees.
- Setting up an efficient ice procurement and storage system ï at the individual and community levels ï is considered one very option to reduce losses and increase the confidence of the producers to deal with markets. Reducing losses due to engine

repairs in the fishing operations will considerably enhance the fishersô share in their gross earnings. Improved access to transport will enhance the capacity of the fishers to reduce the time to reach their markets and thus avoid spoilage.

4.3 Policy and Institutions

- Setting up community-based cooperatives will help the fishers to bargain for better prices and bypass the intermediate links. Cooperative marketing activity has three main components: one, the actual process of marketing itself, which involves sending fish from one place to another and earning income from it; two, a support system which enables the marketing system to function without hitches by providing the necessary services (such as ice, transport systems, access to credit and infrastructure); and three, an efficient credit management system. The previous efforts at cooperative marketing have tried to make the cooperative in the villages to undertake all three activities on its own. Here it is proposed that these three activities be segregated and kept with three distinct ï but well integratedï entities at the village level.
- Development of robust business plan for marine fishery should be in place.
- The linkages among institutions of innovation triangle comprising processing facility, R&D organizations/academic establishments and market should be strengthened.
- Considering the fact that, fisheries is a sun-rise sector and small scale fishermen are the most vulnerable sections of the society, 90% of the small scale fisher folk population are poor and perpetually indebted. In this context, government may be requested to provide incentives in form of the VAT waiver and loans for investment and working capital at favorable terms and conditions.
- A network of fishermen and processors can be developed.
- The network can lobby with the government for support of exclusive modern retail outlets in prominent locations for the raw and processed produces direct from the sea;
- The network can help development of local databases regarding various species available, indigenous knowledge systems, amount of procurement, processing and selling. So, information dissemination at the local level is the call of the day.
- The network can undertake process documentation.
- The network can also develop community based institutions, strengthen their capacity and support in meeting the market demand in a competitive and sustainable manner.

4.4 Marketing

- The gap in the value chain lies in decreasing production of marine fishes, initial processing and quality issues, large supply and demand gap and distribution channel. Thus in this context, product and process innovation need to be the key areas of intervention.

- Management Information & Intelligence Systems for Information flows would strengthen the gap which is due to asymmetry in information. Considering the diversity of factors that characterize marketing in different villages, each village has its own requirements of information and the purpose of the information it generates is suited to these requirements. Thus, it is necessary for each village to set up a market information system of its own, and in such a way that people can update the information on a regular basis. At the same time, it is also essential to fill in the gaps in the knowledge about the producers, processors and traders themselves. There is no good data on their numbers, function, and scale of operation, their needs and the general socio-economic context in which they operate. The diversity of their occupations and their geographical isolation has meant that many of them have slipped through the systems completely. A good database on the people and their socio-economic conditions will help establish a link with funding agencies on a surer footing.

Questionnaire

Study on value chain analysis of Marine Fishing Communities in Ganjam district of Odisha

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Personal Identification

Name:

Age:

Education:

Village:

Caste:

Language:

Primary Occupation (Fishing) : Boat Owner/Crew Member/Fish Collector/ others

1. Mention the source of procurement of Fresh marine fish.
2. What is the tentative amount of fish handled?
3. What are your logistics arrangements and what is the cost of logistic arrangements?
4. Whether exporting/local consumption and in what kind of species? Mention the name of the species.
5. To which market the fish is being supplied? (Name of the Markets)
6. Who are the customers (which strata)?
7. Where do you export generally? Please mention the name of the countries.
8. What is the commission rate involved in the terms of the trade?
9. Please mention about the intermediaries involved in the trade.
10. What are the possible credit sources for different actors in the value chain?
11. What is the profit margin at different value addition stages?
12. In your view what are the gaps in the value chain and what sort of intervention would minimise these gaps?

13. **Details of Marine Fish species traded in the survey area:**

Marine Fresh fish

Name of species	Rate

DRY FISH

Name of species	Rate

14. In the context of pre-production, production and post-production stages, what are the constraints faced by the players in the chain?
15. What are the different entry and exit barriers with respect to the trade of marine species?
16. What are the different factors affecting the terms of the trade and how these factors affect the actors in the entire value chain?

17. Details of the Samples surveyed for conducting Value Chain analysis of Marine Fish products:

Focussed Group Discussion with key Members of Divya Jyoti Mahila Vikash (DJMV) and key Members of Mahadarshi SHG

Sl.No.	Name of the Members	Village
1	B.Gopama	Markandi
2	R. Lakshmi Soudari	Markandi
3	M. Lachama	Markandi, President of Mahadarshi SHG

Focussed Group Discussion with Members of Fisher Women in Patisonapur

Sl.No.	Name of the Members	Village
1	K.Yamabati	Patisonapur
2	B. Urvasi	Patisonapur
3	D. Mahalaxmi	Patisonapur
4	W.Korlama	Patisonapur
5	B.Korlama	Patisonapur
6	G.Sundarama	Patisonapur
7	B.Mahalaxmi	Patisonapur
8	K.Chandrama	Patisonapur

Focussed Group Discussion with Members of Fisher Women in Ramaiyapatna

Sl.No.	Name of the Members	Village
1	G.Parvati	Ramaiyapatna
2	G. Gunama	Ramaiyapatna
3	R.Mohanama	Ramaiyapatna
4	P.Potama	Ramaiyapatna
5	R.Khorlama	Ramaiyapatna
6	S.Nilama	Ramaiyapatna
7	G.Shantama	Ramaiyapatna
8	B.Chittama	Ramaiyapatna

9	N.Shantama	Ramaiyapatna
10	B.Dahama	Ramaiyapatna
11	B.Chandrama	Ramaiyapatna
12	R.Bairama	Ramaiyapatna

Focussed Group Discussion with Fisherman

Sl.No.	Name of the Members	Village
1	K.Kashi	Sana Arjipalli
2	D.Kamaiya	Sana Arjipalli
3	P.Guraiya	Sana Arjipalli
4	P.Eraya	Sana Arjipalli
5	B.Jairaju	Sana Arjipalli
6	G.Devdas	Sana Arjipalli
7	K.Narayan	Sana Arjipalli
8	K.Ramdu	Sana Arjipalli
9	K.Mohan Rao	Sana Arjipalli
10	K.Batasu	Sana Arjipalli
11	B.Damburu	Markandi
12	M.Jungmaya	Markandi
13	B.Tulisaya	Markandi
14	D.Korlama	Markandi
15	B.Bairagi	Gopalpur Beach
16	G.Kamaraju	Arjipalli
17	D.Mangala	Podempeta
18	L.Jagga	Podempeta
19	N.Sanyasi	Podempeta
20	B.Eraya	Podempeta
21	B.Ramamurthy	Podempeta
22	J.Mukudu	Podempeta

Interaction with other players and key informants in the chain

Sl.No.	Name of the Members	Profession
1	Mr.Krishnamurthy (Popularly known as Puri Krishna)	Godown Owner
2	Mr.Mangaraj Panda	Secretary, United Artist Association
3	Mr.Narendra Behera	Fish Trader and Commission Agent
4	S.K. Kudus	Fish Trader and Commission Agent
5	Mr.Prabhakar Behera	Godown owner of Rashmita Fish Company and Trader
6	Mr.Debi Prasad Parida	Wholesaler, Odisha Fish Company
7	Mr.Behera	Ice Factory Owner
8	Mr.Kalia	Ex-Sarpanch, Nolia, Nuagaon

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