CHAPTER - VII

TRADE AND MANAGEMENT
7.1 INTRODUCTION

Marketing or trade is the process of planning and executing the conception, pricing, promotion, distribution of goods, services and ideas to create exchanges with target groups that satisfy customer and organisational objectives.

The term fish trade was used previously to denote simply the buying and selling of fish at a landing centre or the beach side. With the onset of industrial development that had emerged after the Second World War, the concept and functions of fish trade have assumed new dimension. The present trade system not only thinks of meeting the effective demand for products but also creating demand in the market by converting some of the basic needs of society into specific wants. An efficient fish marketing system developed on modern methods is the lever to bring rapid changes in the functions of production and consumption needs of a society.

Prawn trade as an important segment of fishery economics conjures up dollar spinning images in the minds of the people to-day. Prawn fishery has created a sensation in the world of non-vegetarian food items because of its universal appeal, taste, flavour, high unit value and persistent demand in the world market.

In recent years, India has witnessed a steady growth of fishing industry in general and prawn trade in particular with regard to the value addition, technology upgradation, modernisation of processing plants and others as a result of which the export of fishery products from the country has substantially increased. India, today, is exporting more than 100 varieties of fishery products to the developed and quality conscious markets.
like USA, Japan, Australia, European and Gulf countries. Prawn and prawn products stand on the top of the fish related export items in view of its enriched taste, high demand and much higher prices.

Prawn continues to dominate the fishery products export industry in Orissa contributing as high as 90 percent both in terms of quantity and value compared to 35 percent and 70 percent for quantity and value respectively at the national level.

The study of prawn trade is an essential part of fisheries economics. This chapter discusses prawn trade and trade management in Orissa in some detail.

7.2 PRAWN TRADE

Unlike the trade of agricultural and manufacturing goods, the fish or prawn trade has to face many peculiar and special problems at various stages of production and trade management. Uncertainties in fish production, the high perishability of product, assembling of fish from too many scattered places, presence of too many species and therefore too many demand patterns, wide fluctuation in prices and transportation of fish in specialised means of vehicles are major bottlenecks which often make fish marketing more difficult.

There have been rapid changes in the system of fish or prawn trade all over the world. Under the traditional system of trade, all methods and practices in trade dealings are based on some customs and no scientific procedures are followed in maintaining the quality. But in recent years, fisheries have become highly industrialised in all advanced fishing nations and the new techniques of trade have been adopted so as to sell more fish.
not only in local markets but also in outside markets. Thus, modern fish trade system envisages meeting the existing demand for fish besides tapping the potential demand in the important markets. Prawn as a valuable product for export requires additional care and treatment in the trade practices. Therefore, handling of prawn for the maintenance of its quality, initial grading and processing, packing and sorting from amalgamated catches on board and finally processing them are taken care of in the modern methods of trade.

Due to high unit value of prawn and the enormous scope for its exports, the method adopted for prawn trade in particular is different from the methods of fish trade in general. Unlike the other species which are mostly sold at the landing sites in auction, prawns are graded separately according to counts and sold by weight system.

7.2.1 TRADE CHANNELS

Prawn produced in Orissa has three principal trade channels, viz.
(a) trade in Orissa (b) trade in other states and (c) export

(a) TRADE IN ORISSA

That part of prawn production which is not exported is left both for domestic consumption and for trade in other states. It becomes difficult on the part of middlemen and agents to collect prawns from remote rural pockets and to transport them with modern devices of preservation and packaging to the processing plants for export. Lack of proper communication facilities to many of the production centres is the unavoidable obstruction on the way of quick disposal of precious prawns to the outside state markets. These prawns along with prawns of inferior
quality are, therefore, available for trade inside the state. Local markets in Orissa consume about 20 percent of the prawns produced in the state.

Head load or cycle retailers mainly trade cheap and smaller varieties of prawns locally from door to door or in village markets and small towns. But the superior varieties of prawns are sent by lorries and trains to bigger wholesale markets like Cuttack, Bhubaneswar, Berhampur, Balasore and Rourkela from where it is channelled to consumers through retailers.

(b) TRADE IN OTHER STATES

About 10 percent of the prawns produced in Orissa is traded in other states of India. Calcutta is the biggest market for the sale of marine and inland fish in India. Calcutta with its higher purchasing power and insatiable demand due to its larger population, imports fish and prawn mainly from Orissa and Andhra Pradesh. The approximate market arrivals of both inland and marine fish/prawn in Calcutta is as follows:

<table>
<thead>
<tr>
<th>State</th>
<th>Share(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Orissa</td>
<td>40</td>
</tr>
<tr>
<td>2. Andhra Pradesh</td>
<td>27</td>
</tr>
<tr>
<td>3. Uttar Pradesh</td>
<td>10</td>
</tr>
<tr>
<td>4. Maharashtra</td>
<td>8</td>
</tr>
<tr>
<td>5. Tamil Nadu</td>
<td>6</td>
</tr>
<tr>
<td>6. Delhi</td>
<td>4</td>
</tr>
<tr>
<td>7. Madhya Pradesh</td>
<td>3</td>
</tr>
<tr>
<td>8. Punjab</td>
<td>1</td>
</tr>
<tr>
<td>9. Other States</td>
<td>1</td>
</tr>
</tbody>
</table>
It is revealed that Orissa dominates the Calcutta fish market with the highest share of 40 percent in the total arrivals of fish and prawn in the market.

The quantity of prawn despatched to other states for trade was 516 mt in 1985-86 which increased to 1420 mt in 1996-97 registering a rise of 175 percent over the years.

In terms of value, despatch of prawn to other states which was Rs 154.80 lakhs in 1985-86 reached Rs 1065 lakh in 1996-97 registering a rise of 588 percent.

(c) EXPORT TO OTHER COUNTRIES

In recent years, seafood industry has emerged as one of the most important export oriented industries in India. From among the varieties of seafood exported from the country, frozen prawns dominate the trade and they account for about 70 percent of the total seafood exports in terms of value.

Prawns, mostly in frozen, dried and canned forms, are exported from India to different countries of the world. Japan, USA, Australia and U.K. are the major markets for frozen prawns. The importing countries for the dried prawns from India are Belgium, Mauritius, Sri Lanka, USA, Germany and UAE and for the canned prawns are France, Netherlands and Russia.

Orissa started exporting prawns in the year 1969 when the volume of export was only 3 mt. Thereafter, prawn export from the state has been increasing year after year. The volume of prawn export was 3477 mt in 1985-86 which increased to 11,666 mt in 1996-97 recording a rise of more than 3 times. The value of exports which was Rs 2112 lakhs in 1985-86...
increased to Rs 22,360 lakhs in 1996-97 recording a rise of more than 10 times. In view of the tremendous rise in demand for prawn products in the global market, there occurs a sharp rise in the prices of prawn.

The whole spectrum of the trade channels of prawn in Orissa is presented in Table 7.1.

From Table 7.1 it appears that on an average 70 percent of the prawn production of the state is exported to foreign countries, 10 percent is marketed outside the state markets and 20 percent is left for marketing inside the state.

Prawn is marketed in headed condition in the internal markets but it is exported to foreign markets in begutted condition. Exports from the state are now made mainly through Vizag Port although they are also channelised through Calcutta and Madras ports.

7.2.2 ROLE OF INTERMEDIARIES

The functions of intermediaries vary within a country. The number of intermediaries involved depends on the level of communication and the availability of supporting infrastructure facilities, especially the landing facilities and approach roads to the landing sites of prawn farms. The distribution of prawn depends on the spatial distance between the producer and the consumer. The fishermen on account of their poverty and difficulties for storage and transportation dispose of their product as quickly as possible. This leads to the intervention of a large number of intermediaries in the process of prawn trade.
<table>
<thead>
<tr>
<th>Year</th>
<th>Total Prawn production</th>
<th>Domestic Trade</th>
<th>Outside States Trade</th>
<th>Foreign Export</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Qty</td>
<td>Percentage to production</td>
<td>Qty</td>
<td>Percentage to production</td>
</tr>
<tr>
<td>1985-86</td>
<td>5198</td>
<td>23</td>
<td>516</td>
<td>10</td>
</tr>
<tr>
<td>1986-87</td>
<td>6155</td>
<td>25</td>
<td>968</td>
<td>16</td>
</tr>
<tr>
<td>1987-88</td>
<td>5567</td>
<td>31</td>
<td>730</td>
<td>13</td>
</tr>
<tr>
<td>1988-89</td>
<td>6178</td>
<td>25</td>
<td>662</td>
<td>11</td>
</tr>
<tr>
<td>1989-90</td>
<td>8634</td>
<td>23</td>
<td>864</td>
<td>10</td>
</tr>
<tr>
<td>1990-91</td>
<td>7713</td>
<td>16</td>
<td>541</td>
<td>7</td>
</tr>
<tr>
<td>1991-92</td>
<td>8905</td>
<td>25</td>
<td>971</td>
<td>11</td>
</tr>
<tr>
<td>1992-93</td>
<td>10177</td>
<td>21</td>
<td>967</td>
<td>10</td>
</tr>
<tr>
<td>1993-94</td>
<td>8857</td>
<td>18</td>
<td>505</td>
<td>6</td>
</tr>
<tr>
<td>1994-95</td>
<td>11194</td>
<td>12</td>
<td>841</td>
<td>8</td>
</tr>
<tr>
<td>1995-96</td>
<td>13729</td>
<td>20</td>
<td>1344</td>
<td>10</td>
</tr>
<tr>
<td>1996-97</td>
<td>13944</td>
<td>6</td>
<td>1420</td>
<td>10</td>
</tr>
<tr>
<td>Average</td>
<td>Percentage</td>
<td>20</td>
<td>10</td>
<td>70</td>
</tr>
</tbody>
</table>

Source: Directorate of Fisheries, "Hand Book on Fisheries Statistics, Orissa, 1996-97", Govt of Orissa, Cuttack, p-14
TRADE CHANNELS OF PRAWN IN ORISSA (DOMESTIC, OUTSIDE STATES AND FOREIGN) FROM 1985-86 TO 1996-97.

Fig. 7.1  Ref. Table 7.1
There are broadly 5 main trading activities for prawn. They are:

1. Purchase of prawn at the landing site or farm side
2. Assembling of small quantities of prawn purchased at landing sites into larger consignments
3. Transport of consignments to a number of processors or wholesalers
4. Wholesaling of the product and
5. Retailing

In Orissa, there are six types of intermediaries involved in prawn trade. They are (1) collection agents (2) prawn assemblers (3) processors (4) exporters (5) wholesalers and (6) retailers.

Each intermediary has a specific role which is discussed below.

(a) COLLECTION AGENTS

The collection agents collect prawns directly from the producers at the production centres. Their role is most important as they collect the product from too many landing centres or prawn farms which are highly dispersed. They generally give the producers some money as advance in order to get the regular supply of prawn. If on a particular day there is no catch or less catch, the fisherman producer is in debt to the collection agent. In this case, the fisherman has no other option than to sell his product to the collection agent. Sometimes the collection agent buys on the basis of a previously negotiated price if he has given some advance. Thus, the price a fisherman will get depends entirely on the terms and conditions previously made with the collection agent. As the fishermen producers by and large are illiterate and do not have the day to day price information, they are often exploited by the collection agents.
(b) ASSEMBLERS

The prawn assemblers get supplies from the collection agents or directly from the producers or both which depends on the dispersal of the production centres, quantities handled and network of roads and communications. The assemblers work as the agents of the wholesalers. They operate on a commission basis. They have their own arrangements like icing, packing and storing before transporting to the wholesalers. The major task of the assemblers is grading the product according to varieties and sizes.

(c) WHOLESALERS (PURCHASE) / PROCESSORS / EXPORTERS

The wholesalers (purchase) / processors / exporters are the local wholesalers who engage agents to collect prawns from the landing or production centres or they may depend on the assemblers by paying some commission on the purchase. For the sale of prawn in the internal markets, the product is sent by the wholesalers (purchase) to the next wholesalers (sale) in urban centres. But when the product is meant for export to foreign countries, the wholesalers (purchase) are the different ones known as processors who have plants for freezing. Sometimes, the processing plants are the export houses for exporting the product to the foreign countries.

(d) WHOLESALERS (SALE)

The wholesalers (sale) operate their trading activities in important urban centres of the country. They collect the consignments from the wholesalers (purchase) on the basis of contract and pay them some commission. They send the consignments to various retail markets. They have their own storage houses and they break the bulk to send it in small
quantities to the retailers. The number of such wholesalers in a particular urban centre is very few who mostly dictate their own terms and conditions to the wholesalers (purchase). These wholesalers (sale) mostly pay lower prices to the wholesalers (purchase) but fix higher prices when sold to the retailers.

(e) RETAILERS

The retailers are the final link in the process to prawn trade. They purchase prawn from the wholesalers (sale) on a day-to-day basis. Retail trade is much varied, depending on the size of the market, consumer demand, fishing seasons, methods of retailing and the geographical dispersion of the market. Large urban retailers maintain refrigeration and storage and have an established route with a number of regular customers. However, their success depends entirely upon their ability to assess demand and supply conditions correctly.

Thus, there exists a long chain of intermediaries in the process of prawn trade. By the time the product reaches the consumers, it has to pass through five trading functionaries.

7.2.3 LEVEL OF EXPLOITATION

The structure of prawn trade is characterised by multi-functional intermediaries, multi-purpose use of product and diversity in the source of income and occupation of the fishermen involved. Thus, the level of exploitation of fishermen by traders is highly variable.

There are multi-functional intermediaries in the field of prawn trade. Some intermediaries operate both as financiers and also as trading agents. Some operate as collecting agents as well as assemblers. Some operate as
wholesalers as well as processors. Similarly, prawn may be used either for meeting the domestic needs or for meeting the export requirements.

The fishermen may have other sources of income outside the fishing industry. Even within the industry, they may be involved in fish trading, net and boat making and repairing and other occupations. This diversity in the source of income provides them security against exploitation by the intermediaries. When these sources of income are limited, the fishermen are subjected to exploitation by the intermediaries.

Another factor which may affect the traditional relationship between the fishermen and the trading agents is the requirement of finance by the fishermen. When the trading agents finance the fishermen, exploitation of the fishermen is bound to be more as they lose the freedom of selling their product to the prospective buyers. But when finance is drawn from other sources like the financial institutions, the fishermen benefit with less exploitation. This will reduce the monopsony of trading financiers to a great extent.

Unscrupulous dealings like underweighing, misquoting prices and wrong grading are the common occurrences in the prawn trading practices in Orissa. Exploitation of fishermen is the worst when prawn production activity is undertaken at a semisubsistence level. When the fisherman is ignorant and illiterate and his labour has a low opportunity cost and also when production activity is undertaken in remote areas with very poor communications, the exploitation of the fishermen is more.

The relationship between the fishermen and the intermediaries can be improved for the benefit of the poor fishermen by institutional developments.
such as prawn trading organisations, co-operative societies, governmental loan schemes for the fishermen and the like

7.3 PRICE AND PRICE DETERMINATION OF PRAWN

Fish or prawn is a highly perishable commodity and its production is also most unpredictable Therefore, the prices of prawn vary greatly even on the same day in a particular market Unlike the manufactured goods, the prices of prawn are not determined on the cost of production, but determined very much according to the demand and supply on a particular day Nevertheless, the functioning of demand and supply operates in case of one type of prawn sold at a particular point of time The prices of prawn may vary according to the nature of imperfection in the market or due to lack of communication between buyer and buyer, and seller and seller in a market

7.3.1 PRICES UNDER PERFECT COMPETITION

When the prawn markets are faced with competitive conditions, it is difficult for the fisherman to get a price higher than the prevailing market price and according to the economic theory, to maximise profit the fisherman has to adjust either by contracting or expanding his output to the point where the marginal cost equals the given market price at a particular point of time In other words, the cost of production would be just equal to the market price Thus, a producer working in a competitive market has to sell his product at a given market price In such market, the sellers would bargain asking for a high price and the buyers would bargain for a low price Bargaining would continue until they reach an equilibrium price which is determined by demand and supply
The demand for prawn is determined by a number of factors such as the price of prawn, the income level of buyers and the number of buyers, and the price of substitute goods. The supply of prawn may be affected by the conditions outside the fishing industry like weather condition, the cost of inputs, etc. As a general rule, the fishermen take to market as much as they produce. A large supply usually depresses prices.

Figure 7.2 below explains the price situation in a competitive market:

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Based on the demand and supply schedules given in Figure 7.2, it can be seen that supply remaining constant at OQ, if demand for prawn rises from \( D_1D_1 \) to \( D_2D_2 \), price would rise from OA to OB. However, in course of time supply will increase to meet the new demand and the new supply schedule \( S_2S_2 \) will bring price down again to OA.

### 7.3.2 PRICES UNDER IMPERFECT COMPETITION

The theory discussed above describes the operation of the law of demand and supply under hypothetically freely competitive conditions.
which rarely exist in fisheries. The assumptions of a perfect market are not universally valid. Exogenous factor may deliberately distort the free play of the market.

Thus, there is no fair and perfect competition in fish markets and it is usually these markets or producing centres which have monopsonistic or monopolistic methods of control over fish supplies.

Prawn traders and money lenders to the industry play a very crucial role to control the free movement of prawn in the market. Mostly prawn trading is tied to financing through the functioning of the trader/financier who is in some position to determine the price he will pay the fishermen. However, the ability of the trader/financier to determine price depends on his monopsonistic power, i.e., on the imperfection of the market.

The degree to which monopsonists can influence prices is shown in Figure 7.3.
In Figure 7.3, the supply curve SS is inelastic as it refers to the supply of prawn for immediate sale. If, however, the supply could be withdrawn from immediate sale by keeping it in the cold store, the supply curve would not be inelastic. The demand curve DD is highly elastic as the trader/financier is the monopsonist buyer who can vary the quantity to be purchased. At equilibrium, OQ₁ will be sold at OP price. If the trader/financier drops the price to OP₁, supply will fall by only QQ₁. Thus, the trader/financier will be able to get almost as large a quantity of prawn from the fishermen as before but will have a much smaller total outlay OQBP₁ instead of OQ₁.

7.3.3 PRICES OF PRAWNS

The seasonal mean prices of different varieties of prawns observed during the present study in 1996-97 at Paradeep and Chandipur landing centres are reflected in Table 7.2.

<table>
<thead>
<tr>
<th>SL No</th>
<th>Varieties</th>
<th>Paradeep</th>
<th>Chandipur</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Average price/kg (Rs)</td>
<td>Average price/kg (Rs)</td>
</tr>
<tr>
<td>1</td>
<td>P monodon</td>
<td>270/-</td>
<td>220/-</td>
</tr>
<tr>
<td>2</td>
<td>P indicus</td>
<td>175/-</td>
<td>160/-</td>
</tr>
<tr>
<td>3</td>
<td>Metapenaeus</td>
<td>110/-</td>
<td>100/-</td>
</tr>
</tbody>
</table>

Source: Field Study

Table 7.2 shows that the prices of prawns vary greatly between Paradeep and Chandipur landing centres. The seasonal mean price of prawns at Paradeep is Rs 185/kg, while it is Rs 160/kg at Chandipur. There is a significant difference in the price of *P monodon* in the two centres. It is observed that the prices of all the varieties of prawns are higher at Paradeep.
than at Chandipur. This has been due to more competition among the traders at Paradeep and also due to the presence of a large number of processing plants located nearby which are conspicuous by their absence at Chandipur.

7.3.4 COST OF MARKETING AND DIFFERENTIAL PRICES

Although the prices are low at the production centres, the retail prices are usually much higher. Not only the intermediaries appropriate high margin of profit but also there are some marketing charges which together inflate the retail prices to a high level. Marketing costs include preservation, processing, storage, transportation, commission and waste. Reduction in marketing charges would result in lowering the retail price and also enhance the producer price in the long run. Marketing costs generally go up when the market is far away from the producing centres.

Table 7.3 shows the price-spread of prawn between the producer and consumer.

**TABLE 7.3 AVERAGE PRAWN PRICES AT PRODUCTION CENTRES AND CONSUMING CENTRES.**

<table>
<thead>
<tr>
<th>Producing Centre</th>
<th>Producer price/kg</th>
<th>Wholesale price/kg</th>
<th>Consuming Centre</th>
<th>Retail Price/kg</th>
<th>Percentage increase over the producer price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paradeep</td>
<td>185/-</td>
<td>300/-</td>
<td>Calcutta</td>
<td>475/-</td>
<td>157/-</td>
</tr>
<tr>
<td>Paradeep</td>
<td>185/-</td>
<td>300/-</td>
<td>Bhubaneswar</td>
<td>400/-</td>
<td>166/-</td>
</tr>
</tbody>
</table>

*Source: Field Study*

It is seen in Table 7.3 that the average price of prawn which is Rs 185/- per kg the producer gets at Paradeep landing centre, rises to Rs 475/- kg when it is sold outside the state in Calcutta retail market and rise to Rs 400/- kg when sold inside the state market such as Bhubaneswar.
It is observed that the increase in price over the producer price is about 157 percent in case of trade outside the state while it is about 116 percent in case of trade inside the state. The producer receives only 38.9 percent of the consumer rupee when prawn is sold outside the state and 46.2 percent when sold inside the state. The rest of the consumer rupee is appropriated by the intermediaries at various stages of trade and also spent as marketing charges. Thus, it shows that there is no fair and perfect competition in prawn trade. It is only changing the pattern of distribution, the producer's income can be improved. A suitable policy of trade management has to be devised for achieving the twin objectives of attaining stable and uniform prices and ensuring steady income to the producers.

7.4 TRADE MANAGEMENT

Trade management is the process of planning and executing the conception, pricing, promotion and distribution of goods, services and ideas to create exchanges with target groups that satisfy customer and organisational objectives. In other words, it is a process involving analysis, planning, implementation and control that it covers goods, services and ideas, that it rests on the notion of exchanges and that the goal is to produce satisfaction for the parties involved.

Thus, the development of fisheries is very largely dependent on the efficient trade management. The effectiveness of any trade system can be established only when the producer gets an adequate return for his produce. The producer's profit or net income per unit of land or water area is mainly affected by production, cost of production, marketing and the price received. The basic equation to determine the profit of a prawn producer is
Y = QP - C

where,

Y = profit or net income per unit of land or water area
Q = production
C = cost of production and marketing
P = Price received

Therefore, increase in production, reduction in costs and increase in price are the major means of increasing profits

The various areas of trade management are discussed below

7.4.1 PRODUCT PLANNING

Product Planning may refer to all such activities of the producer and middlemen directed for making the product fetch maximum possible price

The most important aspect of product planning in the assembly centres is grading which includes division of product according to varieties, sizes and counts. A system of more scientific grading is required for exportable prawns as per their weights. The use of grading machines and the quotation of prices according to grades will ensure reasonable prices for the product. Grading of prawn by the processors/exporters, however, is done in accordance with the international market specification.

7.4.2 PRAWN PROCESSING

Fishery products need special attention during both pre-harvest and post-harvest handling as well as in processing and distribution. It is estimated that some 5 million tonnes of fish are lost annually in the world due to inadequate handling, processing and distribution.
There is considerable wastage of prawns due to traditional methods of processing. Therefore, improvements in prawn processing must be made in view of the nutritional requirements of a wider inland population and also the export requirements.

The different methods of processing are discussed below.

(a) **PRESERVATION ON BOARD**

Preservation is the vital need not only to maintain the quality but also to reduce the fluctuations in prices of a perishable product. Preservation on board is the first step in the preservation process. There is a time gap between the time a vessel leaves for fishing and the time it returns to the base with the catch. To ensure the freshness of precious prawn, some form of preservation is necessary on board without which the catch may be spoiled during hours of fishing.

In Orissa, there was no use of any scientific preservation technique in the past by the fishing vessels while fishing in the sea. They were using sea water in a natural way for keeping the catch in a cool condition, but this method could not prevent the spoilage of catch.

In course of time, preservation technique changed and the mechanised fishing crafts as well as some traditional crafts started carrying ice on board for preserving precious species like tilapia and prawns. In recent years, the MPEDA has introduced insulated ice boxes, but they are used only in limited numbers. The vessels do not have arrangements for brine chilling.

(b) **ICE AND COLD STORAGE SUPPLIES**

Preservation of prawn in ice is the most intense activity in the internal system of trade. Proper icing procedures would check the spoilage of prawn.
as well as the wastage of ice. In Orissa, the quantity of ice used is much less than the requirement.

A cold storage is an essential preservation unit to reduce the fluctuations in prices to a great extent. It is seen that the ice and cold storage plants have been established in some places in Orissa where the landings of prawns are not there. While installing these facilities, it must be kept in mind that they are located near the production centres so that unnecessary handling costs can be avoided.

(c) PACKAGING

Packaging is defined as the general group of activities in product planning which involves designing and producing the container or wrapper for a product. The function of packaging is to make possible the efficient and economic handling of fresh prawn from the production centres to the market. As prawns have to move through various stages of storage, auction, processing and distribution, they need proper packaging to retain hygienic standards. By proper packaging, prawns are protected from undesirable influences such as crushing, spoilage, pilferage and environmental pollution. Packaging facilitates easy storage, effective chilling and convenient transportation.

In the olden days, fish products were preserved by sundrying and pickling, and packaging was also poor particularly in relation to product safety. Modern method of packaging has developed at present with new process of preservation through freezing or freeze drying. The packaging requirements for maintaining the sterile conditions and extending the storage life of the product are more critical and are achieved by the use of layer films.
Packaging is known to have brought out a revolution in the marketing and distribution of food and food products in the world. Packaging can considerably enhance consumer acceptability and thereby enhance saleability of product.

One of the major problems faced by the prawn industry in Orissa is the non-availability of quality packaging. This often results in poor acceptability of their products in the markets of western world. It also restricts entry into super markets of Europe and USA.

Packaging of fresh iced prawns is one of the most neglected areas of prawn trade inside the state. Baskets made of split bamboo and similar plant materials are invariably used for packing fresh iced prawns. After packing, they are wrapped in gunny outside and stitched. They do not possess adequate mechanical strength and get deformed under stacking. Sharp edges of bamboo are also known to cause bruises on the body of prawn.

The CIFT developed packaging in bamboo baskets by providing additional lining of polythene and gunny or water resistant craft paper to enhance the shelf life of iced prawn. In Gujarat, the second hand tea chests are used with 2.5 cm thick foamed polystyrene slabs inside to improve insulation value. These containers are found extremely beneficial for transport of fishery products over long distances. For short distance transportation, insulated plywood boxes with 25 mm foamed polystyrene may be used. The CIFT recently developed insulated corrugated plastic container which is the lightest of all packages available in the country and it also keeps chilled fresh fishery products for 60 hours.
(d) FREEZING

Freezing is the latest technology accepted everywhere for the preservation of valuable fishery products. Preservation by freezing has the advantage in that the product so preserved retains its original appearance, texture, flavour and quality for a long time which the other methods are unable to ensure.

The freezing process consists of the following:

i) Heading and packing in ice at the production centre,
ii) Washing, grading and freezing in plate freezers, and
iii) Glazing.

Freezing of prawns may be done either in blocks or individually.

Block freezing is the conventional system of processing. Most often frozen blocks are thawed out at importer’s end which needs reprocessing and packing in consumer packs. Individual Quick Freezing (IQF) is the developed freezing technology. IQF adds value to the product by processing prawn as IQF product and packing in consumer packages. Thus, the IQF product needs no reprocessing while serving the consumers.

In Orissa, block freezing is mostly adopted, IQF has not been widely adopted in the State. For realising higher unit value from the export of prawn, IQF method should be developed and used by all the processing plants.

(e) DIVERSIFICATION OF PRODUCT

Diversification of prawn product is necessary to strengthen the trade position of a country by way of converting the cheaper varieties of prawns to convenient foods.
Prawn pickles, prawn soup powder, dry prawn pickles, battered and breaded prawns are some of the cases of diversification of prawn products. During sixties, the Fisheries Department of Orissa started diversification of fish for currying, canning and pickling. But in the later years, it was stopped due to uneconomic operation. In view of the increasing demand for prawn pickles and other diversified prawn products both inside and outside the country, it is essential for the private entrepreneurs to start diversification.

7.4.3 QUALITY CONTROL

Production and inspection of seafood in general and prawn in particular with respect to food safety and quality is shifting from inspection and testing to a system control approach where critical problems are prevented before they occur. Among existing systems, Hazard Analysis and Critical Control Point (HACCP) is considered to be the best strategy to offer greater security to the consumers of seafood. It is now the world market standard for seafood safety.

HACCP was originally created by the US Food and Drug Administration (FDA) in January, 1994. Other international food regulators have later on taken to HACCP as a good safety standard. The FAO's Codex Alimentarius Committee on Fish and Fisheries Products has converted its fresh and frozen fish standard to HACCP. HACCP makes processor perform the analysis, control and documentation necessary to prevent known hazards which are likely to occur. In utilizing HACCP, processors must prevent hazards and also document the operation of their system.
HACCP would monitor the whole system from raw material receipt to shipment of the finished product. It incorporates the following seven principles:

1. Identification of hazards, analysis and determination of measures to control them
2. Identification of critical points
3. Establishment of critical limits for each critical point
4. Establishment of monitoring and checking procedures
5. Establishment of corrective action when necessary,
6. Establishment of verification and review procedures, and
7. Establishment of documentation concerning all procedure and records

HACCP would identify specific hazards and adopt preventive measures for their control. It would focus on the prevention of hazards rather than relying on end product testing.

The greatest advantage of the HACCP system is that it constitutes a systematic, structural, rational, multidisciplines, adaptable and cost effective approach to quality assurance. Properly applied, there is no other system which can provide the same degree of safety and assurance of quality and the running cost of a HACCP based system is small compared with a large sampling programme.

It may appear impossible to upgrade an underdeveloped fish industry in a developing country like India. But by using the HACCP concept, it would be possible to identify the areas where the necessary changes and improvements can be introduced. By adopting HACCP technique, India can
capture international market and realise much higher prices of prawn products. But this model of management is yet to be learnt by our prawn exporters.

The establishment of uniform quality systems or standards has become essential for the fish producing nations to promote international trade. In pursuance of this, International Organisation for Standardisation located at Geneva published in 1987 the five international standards on quality assurance known as the ISO 9000 series of standards.

The objective of ISO is to promote the development of standardisation and related world activities with a view to facilitating international exchange of goods and services and to develop co-operation in the sphere of intellectual, scientific, technological and economic activities. The five ISO standards are ISO 9000, ISO 9001, ISO 9002, ISO 9003, and ISO 9004. The quality system or standard of each is as follows:

ISO 9000 is a guideline for selection and use of quality management and quality assurance standards.

ISO 9001 is a model for quality assurance in design development, production, installation and service. This covers quality management system for all aspects of producing a product or service right from design, manufacturing, inspection, sales to installation and service. This will assure the customers that conformity to specified requirements is met throughout the whole cycle from design to service.

ISO 9002 represents the model for quality assurance in production and installation. If one has an established design or specification, this is more appropriate.
ISO 9003 is a model for quality assurance in final inspection and test

ISO 9004 is a guideline on development of quality management systems to minimise costs and maximise profits

ISO 9000 has its relevance in prawn export trade of Orissa for promoting trade and securing higher prices from many of the advanced countries like Japan and Canada

The Govt of United Kingdom and India have signed a memorandum of understanding for a Rs 2.75 crore project in post-harvest, fishery technology. The project will be jointly implemented by the CIFT, India and National Resources Institute (NRI), U K. The Project aims at assisting CIFT to become a centre of excellence in post-harvest fishery technology with a view to accelerating the growth of Indian fisheries. It will be a great help in providing necessary technological guidance to the fishery industry as a whole to upgrade the processing technology conforming to the requirements of ISO 9000

The Association of CIFT and the Overseas Development Agency (ODA) in their collaborative research have revealed that there is a lot of avoidable wastage of valuable protein in the form of low value fish and prawn owing to improper methods of processing, preservation, transportation and marketing in the developing countries. The joint project will help to reduce post-harvest losses and to develop new technologies for better utilisation of available resources and for obtaining much higher prices.
7.4.4 TRANSPORTATION

Transportation is considered to be an essential requirement for prawn trade outside the landing centres.

In the earlier days, transportation of frozen sea products for export was made from Orissa to Calcutta by lorries or trains for shipment. But due to long haulage, the exporters had to incur heavy losses. The state government imported four refrigerated road vans in 1967 for use by the Fisheries Department. Subsequently, those vans were hired to exporters/processors for the transportation of frozen prawns. In the seventies, two more refrigerated vans were acquired by the private entrepreneurs. Now, most of the exporters/processors use insulated vans for transportation of frozen prawns from the factory sides to the ports of shipments.

For domestic trade, transportation of prawns to outside state markets and local markets is made by trains or lorries with no refrigeration facilities. In many cases, delay in transportation causes spoilage. However, some refrigerated vans are used for transportation to few outside state markets like Calcutta and Jamshedpur, etc. In absence of adequate transportation facilities, there is no prawn trade in many parts of the State.

There are many environmental opportunities for prawn trade as there are many areas where prawn is not available for consumption by the people. We can explore the possibilities of prawn trade in these areas and make adequate transportation arrangements in order to develop the internal prawn trade.
7.4.5 SHIPPING ARRANGEMENT

Export of frozen prawn produced in Orissa is channelised through Paradeep port of Orissa as well as some other ports of other states. But the export of prawn through Paradeep port has stopped since 1992-93 due to poor shipping arrangements and also due to better competitive price of raw material offered by the exporters of other states. The export situation of prawn and other fish products through different ports is shown in Table 7.4.

**TABLE 7.4 EXPORT OF FISHERY PRODUCTS OF ORISSA THROUGH DIFFERENT PORTS FROM 1987-88 TO 1996-97.**

<table>
<thead>
<tr>
<th>Year</th>
<th>Paradeep</th>
<th>Calcutta</th>
<th>Vizag</th>
<th>Madras</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1987-88</td>
<td>1422</td>
<td>614</td>
<td>-</td>
<td>-</td>
<td>2036</td>
</tr>
<tr>
<td>1988-89</td>
<td>1095</td>
<td>1389</td>
<td>85</td>
<td>12</td>
<td>2581</td>
</tr>
<tr>
<td>1989-90</td>
<td>425</td>
<td>2418</td>
<td>868</td>
<td>29</td>
<td>3740</td>
</tr>
<tr>
<td>1990-91</td>
<td>164</td>
<td>1705</td>
<td>1972</td>
<td>-</td>
<td>3841</td>
</tr>
<tr>
<td>1991-92</td>
<td>341</td>
<td>1502</td>
<td>1842</td>
<td>-</td>
<td>3685</td>
</tr>
<tr>
<td>1992-93</td>
<td>-</td>
<td>1805</td>
<td>2900</td>
<td>-</td>
<td>4705</td>
</tr>
<tr>
<td>1993-94</td>
<td>-</td>
<td>1423</td>
<td>2990</td>
<td>-</td>
<td>4413</td>
</tr>
<tr>
<td>1994-95</td>
<td>-</td>
<td>1666</td>
<td>4184</td>
<td>167</td>
<td>6017</td>
</tr>
<tr>
<td>1995-96</td>
<td>-</td>
<td>1610</td>
<td>5398</td>
<td>62</td>
<td>7070</td>
</tr>
<tr>
<td>1996-97</td>
<td>-</td>
<td>2380</td>
<td>7212</td>
<td>32</td>
<td>9624</td>
</tr>
</tbody>
</table>

*Source MPEDA, Bhubaneswar*

Table 7.4 reveals that the export of prawn and other fishery products from Orissa was 2036 mt in 1987-88 out of which a quantity of 1422 mt was channelised through Paradeep Port and 614 mt through Calcutta port. In 1991-92, the export increased to 3685 mt but the export through Paradeep sharply declined to only 341 mt as against the export of 1502 mt through
Calcutta port and 1842 mt through Vizag. It is also revealed that there has been no export through Paradeep Port since 1992-93. In 1996-97, the export through Vizag port was 7212 mt while it was 2380 mt through Calcutta port and 32 mt through Madras port.

Paradeep port has failed to attract the exporters as a result of which the state is losing valuable foreign exchange. It is therefore, essential that shipping arrangements at Paradeep should be improved so as to channelise the entire export of prawns and other fishery products of Orissa through this port.

7.4.6 CONSUMERS' AWARENESS

Although we have developed a good export market, we are yet to develop our internal market for prawn. Some consumers treat iced fish as stale fish due to prejudice. Some also do not prefer sea products. Ignorance about the nutritional values of sea and iced products has to be dispelled by creating awareness among the consumers through publicity and advertisement.

7.4.7 PROVISION OF SUPPORT PRICES AND SUBSIDY

Involvement of a large number of middlemen affects the interests of both fishermen and consumers. Provision of suitable support prices for commercially important fish/prawn varieties will safeguard the interests of fishermen as well as the consumers.

The internal trade system is very much backward in Orissa and the people highly dispersed and living in the remote areas are suffering from animal protein deficiencies. In order to sell fishery products to highly dispersed poor populations, the government may subsidise internal fish trade.
or undertake it directly as a government enterprise. Other nations like Peru and Senegal have introduced this provision. This may be also attempted in Orissa to provide prawn and fish cheaply to the people.

7.4.8 EXPORT BARRIERS

There may, sometimes, arise difficulty of entering foreign markets which constraints export. There are tariff barriers and import controls and regulations of prawn importing countries to accept our new sources of supply. The greatest threat for developing countries like India is the need of applying HACCP as a compulsory requirement to export products to major prawn importing countries. This may be used as a new trade barrier to our seafood exports.

Therefore, it is essential that there is close co-operation between the regulatory agencies and the fish industry of a country concerned. The main challenges to achieve this goal relate to lack of political will, lack of trained personnel for application of international standards, lack of financial resources, lack of communication between inspection authorities and lack of clear instructions, etc.

7.4.9 ELIMINATION OF MALPRACTICES BY MERCHANTS

Bonding of boats is a common practice among the fish merchants at the landing centres. More than 50 percent of the mechanised boats in Orissa are bonded to merchants and the terms and conditions usually relate to only the sale of prawn. The usual stipulation is that the fisherman is bound to dispose of all his catch to the merchant at market prices. The market prices are determined by the few merchants. Conditions for a fair competition among the merchants do not exist in view of bonding factors and the limited
number of merchants. The market can be described as an oligopolistic market rather than a competitive one. Therefore, the fisherman’s realisation of price is much less.

Among other factors affecting the realisation of the given market prices, lack of grading, weights and measurement etc. need special mention. There are no standard norms in the market for the grading of prawn of different varieties. A merchant himself defines the grades/quality and fixes price for a given lot of catch. There is no market committee or organisation which regulates marketing and the bonded fishermen have to accept the grades/ prices as declared by the merchants for their product.

In order to make the prawn trade more competitive as well as to introduce fair trade practices, the following measures are to be taken:

a) prawn trade must be regulated on the pattern of agricultural trade and the auction system must be made compulsory for the disposal in the primary market. This alone will remove the present bonding system having unfair trade practices.

b) standard grading practices must be evolved and enforced through market committee.

7.4.10 NEED FOR MARKETING CO-OPERATIVES

Large number of intermediaries usually enter the fish industry either through their direct involvement or indirect involvement. There are some intermediaries in trading activities. Besides, processing, cold storage and freezing, packing and transportation may also introduce other intermediaries in the system of distribution. The relationship between fishermen and intermediaries can be improved in favour of the fishermen by institutional
developments. The most important of these are the fish marketing organisations, co-operative societies, state fishing corporations and numerous types of government loan schemes for fishermen and boat-owners.

A popular strategy to improve trade as well as to curtail the bargaining power of the trader/financier and to provide better prices to fishermen is to channelise the initial trading transaction through fisheries co-operatives. The fishermen's co-operatives under the marine sector in Orissa do not undertake marketing activities although this has been found to some extent under the Chilka fishery sector. Therefore, the fishermen's co-operatives have to be developed into fish marketing co-operatives.

The simplest form of co-operative marketing is where fish/prawn is auctioned at the landing centre in full view of the fishermen. At a more sophisticated level, the co-operatives may provide ice, processing and storage etc. When co-operatives become more sophisticated in handling and processing, they would meet unfair competition from the private sector. The co-operatives may also have adequate provision of finance for the fishermen in the absence of which they will continue to borrow from traders/financiers and will be obliged to them to trade their catch.

7.5 CONCLUSION

Prawn produced in Orissa is mostly exported to foreign countries. About 70 percent of the prawn produced in the state is exported while only 10 percent is despatched to the other states for trade and the rest 20 percent is left for trade inside the state.

There are six types of intermediaries involved in prawn trade in Orissa who exploit the fishermen at various stages of marketing. They
appropriate high margin of profit and there are also high marketing charges. Thus, the retail prices are much higher but the fishermen get only less share of the consumer rupee. A fisherman gets 46.2 percent of the consumer rupee when there is trade of prawn inside the state but gets only 38.9 percent in case of trade outside the state.

In fisheries, free competition rarely exists. The price of prawn is determined by the monopsonistic power of the intermediaries which affects the interests of the fishermen. There is no legislation to control the malpractices of these intermediaries. The fishermen co-operatives under the Chilka sector undertake marketing of fish to small extent but the co-operatives under the marine sector have not yet started this activity.

There is a lot of wastage of prawn due to lack of proper processing. The vessels fishing in the sea do not have any arrangement for brine chilling. The insulated ice boxes developed by the MPEDA for preserving the catch on board are not widely used by the fishing vessels.

The ice and cold storage facilities are inadequate and there is no quality packaging for the iced prawns.

The processing plants have not upgraded the freezing technology. The IQF which is the latest freezing technology is yet to be popular among the processing plants.

The prawns produced in the state are diverted to other states for export as the shipping arrangements available at Paradeep port are poor. Quality control which is the major consideration in the field of export is seriously missing with the exporters of the state. The HACCP which is accepted as the world market standard for quality assurance is not applied by the prawn processors of the state.
Internal trade system in the state is backward. Transport facilities are not available for the trade of prawn in the remote areas. There is also no provision of support prices in order to safeguard the interest of both the fishermen and the consumers.
REFERENCES


5 Behera, B C (1996) "Souvenir, Seminar on Shrimp Farming in Orissa, A Complete Review", Dec 20 OSFA, Bhubaneswar


7 Mohanty, N P (1981) "Ice Plants and Freezing Plants in the Coastal Districts of Orissa- An In-depth Study", Small Industries Service Institute, Govt. of India, Cuttack, p 18


10 Stanton, W J (1975) "Fundamentals of Marketing", MaGraw Hill, Kogakusha, Tokyo, p 246


12 Tall, Amadou (1995) "INFOFISH International", June, p 47


14 Purushothaman, K C (1994) "Fish Technology", Vol VII, No 3 and 4, July-Dec

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