

GH : FRI / IDRC FISH PRESERVATION PROGRAMME

THE STRUCTURE OF THE RURAL FISHERY  
BUSINESS

by

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# Chapter 1

## The Structure of the Rural Fishery Community

### 1.0. Overview.

The daily life in a rural fishery community depicts both cultural and business practices. The facets of life are inseparable. However, a distinction can be made at ceremonies. For the purpose of generalization and ease of exposition, the structure of a rural fishery community is described under two subtitles: The Managerial Structure of the total fishing Community and the Fishery Business System.

### 1.1. The Managerial Structure of the Community

The community as a whole exists by virtue of the fishery business. It is also one of the occupational communities of the towns and large villages as in Half-Assini, Elmina and Apam.

From the management point of view, the town or village has its Traditional Chief who exercises authority over the affairs of the whole township and its business communities. Like other groupings in the town the fishery community has a Governor, in the person of the Chief Fisherman (see Fig. 1), who owes allegiance to the Traditional Chief. The nature of the allegiance depends upon the size of the fishing

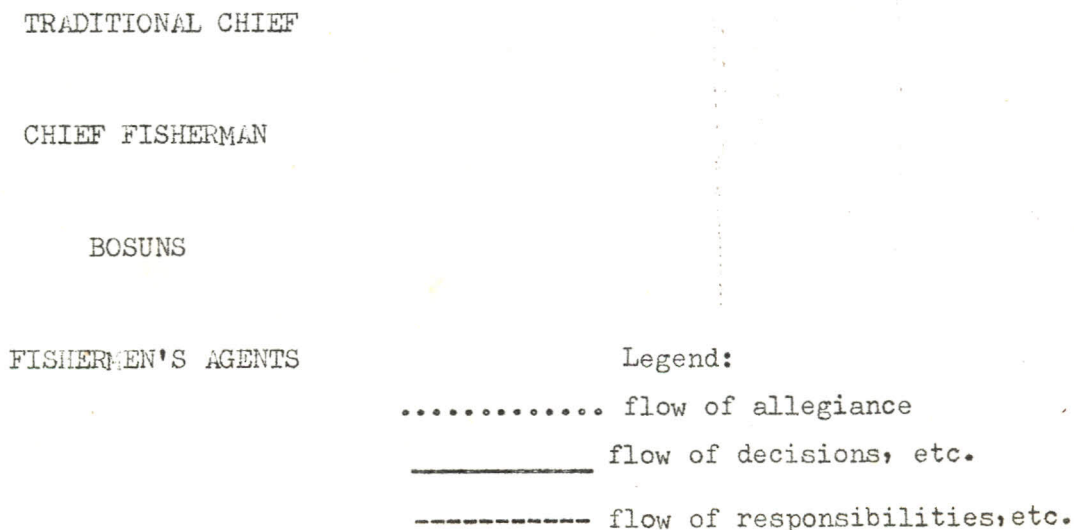


Fig. 1. The Managerial Structure of a Fishery Community

community vis-a-vis the rest of the community and the importance of the fishing activities in the general pattern of occupational distribution in the town.

The management of the fishing community rests with a kind of Committee which consists of the Chief Fisherman, Bosuns and the Fishermen's Agents. The Chief Fisherman is normally one who has been or still is an active fisherman. The Bosuns are the "Captains" of the canoes registered with the community. This group may have co-opted members of retired, experienced fishermen. The Fishermen's Agents comprise all the women through whom the fishermen dispose of their catch at the landing sites. The Agents may or may not be the wives or relatives of the fishermen.

This type of management structure prevails in the fishing communities of Axim and Half-Assini. Similar structures with varying modifications can be found in the fishing communities of Apam and Accra/Chorkor. There was no evidence of the prevalence of this structure for the riverine fishery communities that I visited. And whether or not a freshwater fishery community exists in the form as it obtains on the coast can be anybody's guess.

In practice the functions of the managerial set-up are executed through the office of the Chief Fisherman who

- 1) controls the fishing activities of the community through the Bosuns.
- 2) impose taxes and/or collects dues from the residents as well as the visiting fishermen. The resident immigrant Fanti fishermen of Half-Assini, for example, pay "mpoano nsa" of  $\text{C}\text{d}130$  per annum to the Traditional Chief of the town. John L. Dibbs, a FAO fish marketing Expert remarked that "...it is customary for the crew of a canoe which is moving to another village for a period to obtain permission to move in from the Chief Fisherman, who will charge the visitor a fee" (12, p.4).

- 3) where necessary, he arranges, through the representatives of the Fishermen's Agents, the handling of the fish for a visiting fisherman. However, there are many instances where sales of visiting fishermen were organised without the explicit orders of the Chief Fishermen.
- 4) mediates in disputes and settles fights.
- 5) executes customary and religious rites of the community. Owing to the hazardous nature of their work the fishermen are generally superstitious in such a way that their fishing activities are controlled to a large extent by fetishes and taboos.
- 6) mediates in the community's demand for technical assistance and helps to implement technological innovations proposed, occasionally by the Fisheries Department.
- 7) helps in promoting cooperation among the community and researchers fact-finding or development officers.

The last four functions, viz 4), 5), 6) and 7) are customary, while the remaining three relate to the fishery business.

## Chapter 2.

### The Fishery Business System.

#### 2.0. Overview

The second aspect of the rural fishery community is the business system. Fig. 2 indicates that one dimension of the system consists of fish production, curing and processing and marketing. The second dimension, which can only be inferred from the analysis, deals with the technology of entrepreneurship.

## 2.1. Fish Production

The rural fisherman used dugout canoes which have (paddles) and outboard motors fitted onto most of them. Fish is caught with handlines cast and set-nets. The marine fishermen's canoes vary in sizes and are mostly motorized. The production unit ranges from one-man cast-or gill-net canoe to the large "ali" canoes which may carry an average crew of 10 men during the main season. While the production of fresh-water fish is estimated at about 40 000 metric tons in 1975, the marine fish production was about 134 000 metric tons.

The Volta Lake System, the sea outlying the coast of the Central Region and the eastern portion of the sea of the Western Region are the sources of more than 75 per cent of the total rural fish production in the country. Landings are small for most of the year and large during a short season of about 12 weeks. Assuming that there were about 50 000 canoes in operation in 1975 for both marine and riverine fisheries, and, that each canoe had an average crew of 8 men during the year, the per canoe output was about 30 metric tons which gave about 3.7 metric tons per fisherman.

Of the riverine species, Tilapia, catfish, pike, Nile perch, clams, shrimps and mud fish are the popular species of any commercial significance. The marine catch have such commercial species as herrings, seabream, burrito, anchovies, kanfla, mackerel, baracuda and epa. 2  
7  
84

## 2.2. Curing and Processing

As fish is one of the most perishable foods, the problem of preservation arises as soon as it is caught. It appears that the traders are aware of this fact so that it has become mandatory to sell or cure it without delay.

Fish is cured or processed by the relatives of the fishermen, the Fishermen's Agents if they can afford and/or if the local occupational specialization allows it and by traders, according to the

prevailing local preservation and curing technology. Of the processes mentioned in Fig. 2, smoking, drying and salting are the three principal curing methods observed during the survey.

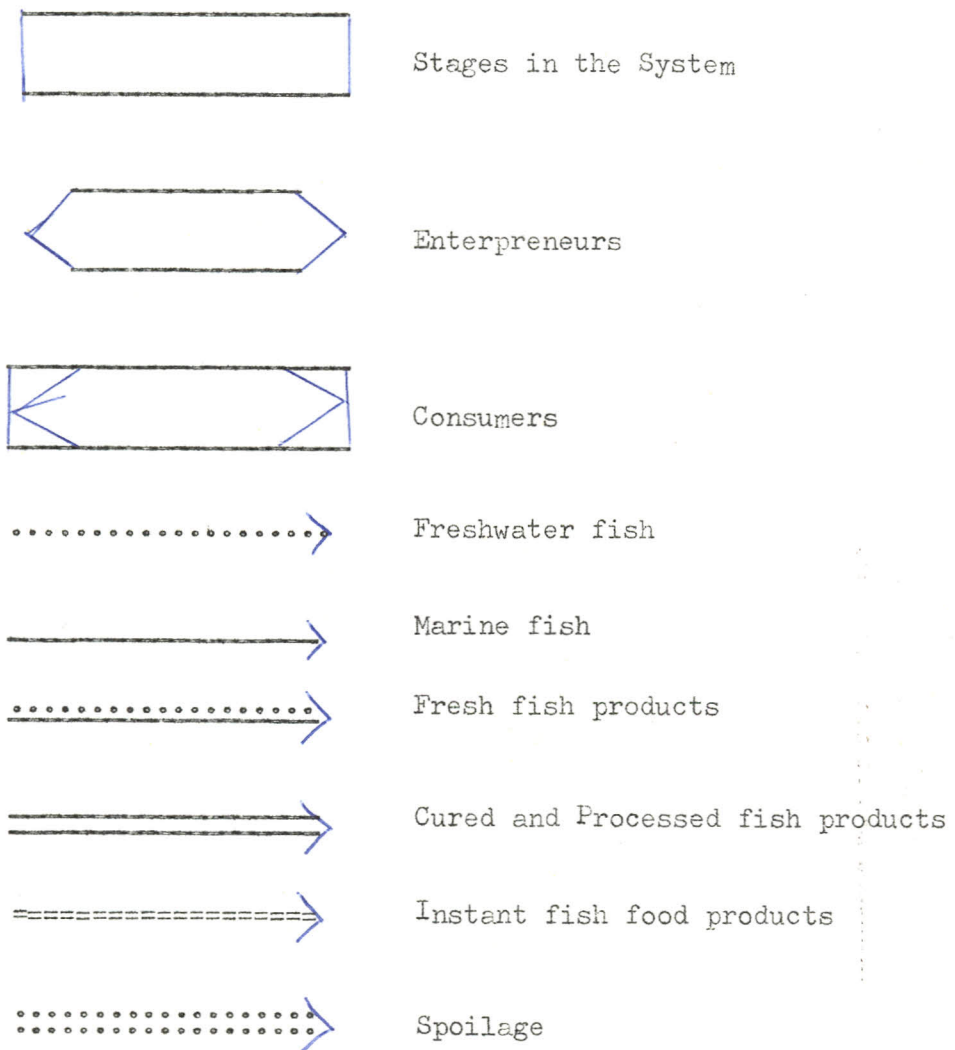
## 2.2. Drying

Drying accounts for the largest share of the catch preserved for human consumption. Drying may be done alone, in combination with smoking or salting or both. Sundrying, the simplest and the cheapest method of curing fish, uses the sun and the wind as drying agents. Certain riverine species and smaller sea fishes like the anchovies are preserved in this way at Akatsi, Abandzi, Winneba, Elmina and Axim. Such fishes are laid on the ground or on fine gravel to dry. Medium and large size species are invariably scaled and split to expose a greater part of their surface to the sun/air. The fish is normally fermented to obtain the desired flavour before drying in the sun. In general, drying tends to reduce the water content and preserves the fish, so that the effect of curing on appearance, odour, flavour, texture of the flesh and the nutritive values are minimized (13, p.25; 8, p.).

Fig.2

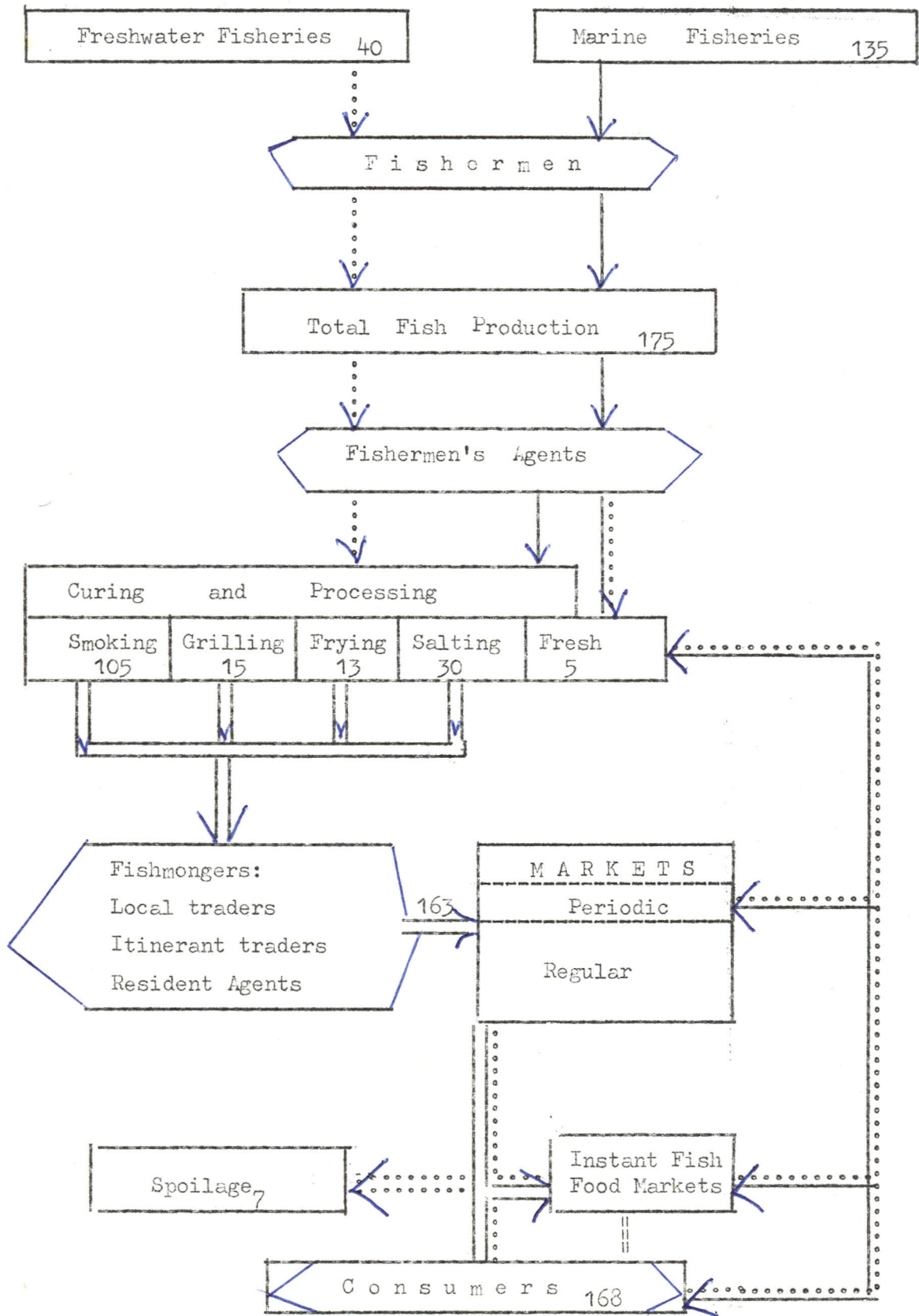
A Diagram of the Rural Fishery Business System

Key to the Diagram



40, 135, 105, etc

the disposition values in 1000 metric tons based on 1375 data.





### 2.2.2. Smoking

This curing techniques is widely used in view of the heavy demand for smoked fish. Both hot and cold smoking are applied. It was observed that most of the marine and freshwater fish are suitable, with herrings; Spanish mackerel; epa; seabream; catfish; the Nile perch and shrimps being the favourites. Fish smoking is done throughout the year. It was observed that small fishes are smoked whole; medium-sized are sometimes scaled and gutted and large size species are either cut into pieces or strips and/or deeply scored to facilitate smoke penetration.

Smoking ovens are traditional; often small and have simple structures. They are made of clay or metal; round or rectangular in shape. Specimen of these ovens are found in Kpandu-Torkor; Accra-Chorkor; Apam; Elmina and Axim where some of the ovens are sheltered in straw or palm frond houses. The smoke chamber which is often some 30 cm. above the fire pit; is usually loaded with fish that have been prepared for that. A hot fire (hot smoking) is normally used for the first day; followed by a lower heat (cold smoking) and more smoky fire during the two or three subsequent days. Many factors; such as consumer preference; costs of smoking and season combine to determine the extent to which fish may be smoked dried.

### 2.2.3. Salting

It was observed that traditional processors employed two salting techniques. (a) In dry-salting; the fish; tilapia or trigger fish is cured by adding dry salt to layers of fish in a container and left to stand for 1 - 3 days; after which the fish is washed in water before spreading it out in the sun to dry for a period of 2 - 3 days. Salters at Axim; New Takoradi; Elmina and Keta dry salted fish on racks. A few others dry their fish on old mats; sacks or straw spread on the ground. (b) In brine salting fish is preserved by submerging it in brine (11,p.37).

This method has been used in experiments at the IDRC Fishery Project at Elmina. However owing to the short period of salting, the product of the IDRC experiment was different, especially the meat was more elastic in texture than that which is produced by the rural salters.

Each of them generate different smells. As a result the IDRC product was referred to as "kako", while that of the rural industry is called "momoni" or stinky fish". Medium - and large-size marine and freshwater species are suitable for this process.

Salting is believed to be useful during the glut season "when the fish mammals could not get rid of any more of their wares and also when it was well on the to spoiling" (11,p.9). But the survey revealed that salting, like smoking, is done throughout the year. In as much as there is the demand for "koobi" and "momoni", some of the landed Tilapia, sharks, rag fish, Ekan, Nile perch, etc., will be designated, especially white fleshed and catiligenous species, for salting and making stink fish. And that production does not depend on the volume of landed catch.

#### 2.2.4. Grilling and Frying

Grilling is used to preserve most of the fish which are to be marketed in the fishing centres and at the nearby markets. In this process only live smokeless fire is used to cook the fish. Almost all the fish that go in for smoking are suitable for grilling.

Frying is another method of preserving fish. By this method the fish is cooked in boiling oil or fat. Only fresh fish or small and medium size of most species are suitable for frying. Occasionally salted fish are fried. If fresh fish are to be fried, large sizes are cut into manageable pieces. Medium size fish may also be scored to accelerate the frying process and to ensure good quality of the product.

In all the centres surveyed significant frying activities were observed. Most of the marine species and some of the freshwater fish like shrimps, clams, small sizes of Tilapia, etc. are suitable for this process.

## 2.3. Fishery Products and Utilization

### 2.3.1. Fishery Products

Fishery Products may be defined as basically animal life exploited or caught fresh and/or processed for human consumption and for animal or poultry rations. As it can be inferred from Fig.2 the production and processing stages of the system give out five kinds of fishery products, namely:

- (a) Fresh fish - the primary fishery product from which processed products are made.
- (b) Cured fish - secondary products which consist of smoked (hot or cold), salted, grilled and fried fish made with simpler and less expensive methods.

### 2.3.2. Utilization

Statistical evidence on utilization is difficult to come by. However it may be sufficient to know at this point of the report that almost all the fishery products are utilized as food for man. An unknown quantity of small size fish, like anchovies, are sold to poultry farms where it is processed into meal for poultry rations. Utilization of this kind makes an indirect contribution to the food supplies. Utilization, in this context, may be defined in terms of three very important factors, namely: (a) the type of curing and processing to which the fresh fish is subjected, (b) the marketing characteristics of the cured products and (c) the consumption taboos and dietary habits which shape the preference/rejection of one species/fishery product to others.

### 2.4. Marketing

There is an awareness that fishery products have limited handling life. On this assumption it is believed that fish marketing is influenced by the distances the products have to be moved, the

selling and accounting techniques used, the prices prevailing at the times of sales and the pattern and size of consumer demand for a given fishery product. The survey indicated three systems of fish distribution.

(i) Distribution in the Fishery Community. This is a simple distribution mechanism. It is known that fresh fish can survive the ordeals of the prevailing handling practices for about 24 hours. Thus both wholesaling and retailing take place at the beaches, shores and landing sites. Sales may be effected at wholesale through the Fishermen's Agents or directly (in the case of freshwater fish to consumers) to food sellers and processors. There are free-lance fishmongers who buy from the Fishermen's Agents and retail to consumers and other petty buyers at the landing sites on the coasts. Part of the cured fish is sold by fishmongers in the local public markets to consumers. This system of retailing includes selling at the small nearby markets. Surpluses of fishery products are sold to itinerant wholesalers at the processing sites or at specified places within the public markets.

(ii) Distribution in the Immediate Vicinity. In this system, wholesalers and trader/transporters, who can be men or women distribute both fresh and cured fish within a radius of about 100 km. from the fishing town or village. On arrival the traders sell direct to the resident retailers of food sellers. Some of the markets serve as break-up points for the distribution of cured fish to more nearby secondary and tertiary markets. Like the markets of Mankessim and Beposo, they may be periodic markets.

(iii) Long-Distant Distribution Circuits. Distant markets are served by numerous intermediary fishmongers and trader/transporters. Trade is confined to cured fish - dried, salted and smoked. Some of the periodic markets have become established as the collection centres for specific species and cured fish. For instance the Keta market is known for its Epa momoni, koobi. Akatsi is famous for its fresh fish of the Volta Lake System. Abandzi is known for anchovies and Mumford, and Elmina are celebrated towns for trigger fish. The periodic markets at Mankessim, Tarkwa, Obuasi and some of the Kumasi markets serve as the assembling and sales points in this distribution system.

At these points consignments are sub-divided and batches of cured fish are distributed to secondary, tertiary and more distant regular markets.

(iv) Prices. Prices are the monetary values of the fishery products being traded. The custom is that prices should always be bargained. As a result prices are affected by a number of factors of which the volume catch, species composition, condition of the fishery products, production and processing costs, transport charges, spatial distribution of the entrepreneurs and non-economic factors are the most notable ones. Prices of fresh fish are generally related to the traditional consumer preferences rather than to nutritional quality and values. For cured fish certain standards of quality and presentation are used to determine the price. For instance traders in salted fish look for the degree of brightness of colour appearance, i.e. the degree of bacterial infestation, to price their products. Examples of price formation are discussed in another report that follows this one.

(v) Consumer Preference. Preferences are determined by the demand (economic factors) and taboos and superstitious beliefs about the effects of consuming certain species or fishery product when one is sick or pregnant, etc. Florence Dovlo noted in a study (4, pp.2-4) that there is a belief that when children are fed on fish they grow to become spoilt and thieves, while some species, like the Minnow, (Mpatowamon in Akan) is believed by the Akwapims to cause abortion. However, fish heads, especially, are regarded as brain food for the child and are therefore recommended to the expectant mothers.

The demand for fish depends on tastes supported by a portion of the consumer's income. The real value of the income effects can be influenced by the retail price. Thus the combination of beliefs and economic factors have tended to compel some consumers to dislike some species and even some forms of the fishery products. In this respect the relative cheapness of substitutable source of other animal protein is an important factor to reckon with.

The general observation is that the growing scarcity of preferred species and the relative expensiveness or lack of alternative sources of animal protein may tend to minimise the dislike for tabooed species and suspected fishery products. The case of the Trigger fish exemplified this remark.

## 2.5. Entrepreneurial Technology

Entrepreneurial technology refers to complex processes that take place so that the fishermen and the numerous fishmongers would make decisions regarding the type of facilities to be used, how they are to be employed and why each of them behave in the way they have been doing. It was revealed that most of the entrepreneurs are motivated by the expected income to sustain their standard of living. The income is believed to come from the profits obtained from the sales they make. With this knowledge, one can safely assume that the entrepreneurs would naturally behave in such ways so that their expected income would be maximised.

At the production level, the fishermen are bonded by tradition and the nature of the business system to sell their catch solely to their respective Agents (fish mummies). In each community there are as many agents as there are canoes. And because of their number there is often intense competition among them as they jealously guard their monopolistic rights to dispose of their clients' fish. The fishermen are compelled, by other economic-financial and non-economic considerations, to take the price offered by their Agents. In this wise the Fishermen's total income would depend, a priori, on the volume of catch and the prices offered by their respective Agents.

2.5.1. Fishmongers' Selling Methods and Practices. The traditional selling techniques vary a great deal. They depend on a number of factors ranging from pure economic to emotional considerations. Fishmongers who ply distant markets use two methods for disposing off their fishery products. In the first method the seller fishmonger accompanies her consignment to the market and sells them by herself.

In the second method the fishmonger sends her consignment through a familiar driver/transporter to be delivered to their permanent sales agents in the rural markets. They have their business etiquettes to follow :

i) Documentation. Paper work is absent. Partners have developed certain trading procedures to facilitate communications and transactions. Some of these are described below.

ii) Identification of Consignments. In a pre-transaction negotiations both the supplier and the consignee agree that the containers, either baskets or crates, be marked with special designations. Some of the consignees often send strips of their old cloth as their symbols for identification by the suppliers. From these cloths the supplier ties a piece to every package despatched. Before claiming the consignment, the resident agent has to produce a copy of the symbol or cloth. When the identity is established the driver allows the agent to carry away the wares.

iii) Invoicing. The suppliers selling price is represented by a number of palm kernels and pebbles tied in a piece of cloth and placed on one of the packaged loads. One palm kernel is equivalent to  $\text{C}\text{2.00}$ , a pebble is equal to  $\text{C}\text{1.00}$  (6, p.7). The sum of the values of the number of kernels and pebbles indicates the suppliers' selling price per hundred pieces of medium-size fish or for the whole consignment. The agent opens the package and looks for the knot to know the selling price before effecting any sales.

iv) Accounting. The agents account for the sales by sending the sum of the proceeds through the driver to the Suppliers. The empty containers are sent together with the sales proceeds. Sometimes either the agent or the supplier visits one another to settle their accounts and rewards.

v) Units of Sale. Like the sale of other agricultural commodities fishery products are never sold by weights in rural markets. At the wholesale level large fishes are sold whole or in chunks; medium-size fishes are sold in units of 100 pieces, per basinful/basket. Small-size fishes are sold in basins or baskets of varying volumes. Retailers sell large fishes in chunks or such convenient pieces; medium-size fish in singles or heaps of up to 5 pieces and small size fishes in heaps.

vi) Displays and Presentation of Products. Fishery products, fresh or cured, are presented in open baskets, basins, crates or other containers for inspection by the prospective buyers at the wholesale level. Retailers present their wares in heaps or singles per a given price on a flat wooden or enamel trays and basins and on tables in the markets. Usually they use grey paper from empty cement bags, newspapers, green or dried leaves as wrappers.

vii) Quality factors Certain recognized standards of quality and presentation are observed. For these factors are known to influence the prospective buyers' propensity and the price. In the sale of

- a) fresh fish, the factors are colour of eyes, smell, colour of gills and whether or not the belly is swollen.
- b) dried fish, the various shades of bright colour appearance, indicating, apparently, the degree of microbial contamination or infestation, fungal growth, etc.
- c) smoked and grilled fish, the degree of moisture content or weight, varying shades of smoky colour appearance, smell, etc.
- d) fried fish, taste of oil and the extent of oxidation (the degree of rancidity).

viii) Pricing Methods. Prices of fresh fish are based on preference, volume of catch and other non-economic factors. The fishermen utilize this piece of information as far as their agents would permit. Motivated by the quasi-monopoly profit, the agents often intentionally prolong the bargaining process by offering the lowest price.



As a result the process is characterized by haggling. Some species are always relatively expensive, others are medium-priced while the small-sized fishes are normally low priced. Nevertheless the supply and the demand for a given fishery product affect the price level at a given market.

ix) Market Behaviour of the Fishmongers. In general the fishmongers' selling prices are higher than their purchase prices. Price levels are related to the distance separating individual markets from the supplying centres and the landing sites. Some of the fishmongers have formed "cartels" or market rings to control the flow of supplies into many of the markets. Although the fishmongers are formally illiterates, their economic judgement of the effects of market conditions on their performance are rational. For instance how they maximize their expected income may be explained in terms of the assumptions underlying the theory of elasticity of demand. Namely, that 1 per cent decrease in the supply of fish should cause more than 1 per cent rise in the market value. In practice, they know that by restricting supplies, the demand for fish would become inelastic. They could then increase their earnings by selling less at higher prices, thus reaping a semi-monopoly profit.

The behaviour of the fishmongers as "middlemen" has led to charges of hoarding, creation of artificial scarcity and profiteering. Until the case for or against the fishmonger "middleman" is discussed elsewhere in latter essays, the fishmongers have been and may continue to be indispensable to the fishermen and the consumers in many ways.