THE SOCIO-ECONOMICS OF NILE PERCH FRAMES MARKETING IN KISUMU

BY:

ABILA RICHARD OGINGA, Msc. (Agric. Econ), Bsc.
KENYA MARINE AND FISHERIES RESEARCH INSTITUTE,
P. O. BOX 1881,
KISUMU

Paper Presented at the FAO/KMFRI International Seminar on Nile Perch By-Products Utilization held on 7th - 10th June 1994 at Sunset Hotel, Kisumu.

ABSTRACT

Nile Perch (Lates niloticus) is the dominant fish from Lake Victoria, constituting 49% of total tonnage and 48% of the beach value of fish landed in Kenya. The main by-products of industrial filleting of Nile Perch are the frame, fillet, and gut contents which respectively constitute 40%, 34% and 9% of the live body weight.

This paper analyses the socioeconomic importance of Nile perch frames marketing in Kisumu, which is Kenya's largest single fish market. It describes the marketing channel for the frames and derives the price spreads and gross margins in the frames trade. The study is based on primary and secondary data obtained by interviewing participants in the market and from available records.

The results show that the fish processing firms in Kisumu produce a daily average of about 20.2 tones of Nile perch frames. This is passed down a well organized marketing channel to local frames processors for frying and thereafter to wholesale and retail outlets. About 600 dealers of Nile perch frames operate at various stages of the marketing channel. Over 70% of them solely depend on fish marketing for employment and income.

There is ready demand for Nile perch frames in Kisumu but the supply depicts a fluctuating trend. The gross margins to traders are fair except for retailers which, at 34% of the consumer price, appears excessive. This raises the retail price of the frame substantially, and may lower its consumption.
INTRODUCTION

Kenya's Fisheries Sector

Kenya's fisheries sector has multiple roles in the country's economy. First it provides employment and income to thousands of individuals engaged in fish production and related enterprises, in fish trade and in industrial fish processing. Fish is also a rich source of animal proteins for human consumption and provides raw material for the manufacture of animal feeds. Smoked Nile Perch (*Lates niloticus*), for example, contains up to 70% proteins (Ikeme, 1992). In recent years the fish industry has shown strong potentials in earning foreign exchange for the country. In 1988 alone, 8,732 tonnes of Nile perch fillet was exported from Kenya (Kenya, 1989).

Lake Victoria is the dominant source of Kenya's fish for domestic consumption and for export. In 1992 the lake produced approximately 166,000 tonnes of fish. Out of this, Nile Perch comprised 81,524 tonnes or 49%, *Rastrineobola argentea* was 75,557 tonnes or 46% and *Oreochromis species* constituted 5,408 tonnes representing 3% (Othina, 1993).

In line with its greater catch levels, Nile perch is the most remunerative to fishermen and traders. In 1986 the value of Nile Perch landed on beaches of Lake Victoria, Kenya was Ksh 114,648,000, representing 48% of the value of all fish landed. *Rastrineobola argentea* and *Oreochromis species* composed 20% and 25% of the total value respectively (Reynolds and Greboval, 1988).

The beach price of Nile Perch has risen in the last two decades, first slightly from 1.59 Ksh/kg in 1976 to 2.01 Ksh/kg in 1986 (Reynolds and Greboval, 1988). Ogunja et al. (1992) however argue that in real terms the prices actually decreased over that period, owing to a hyper-inflationary level of 237% at the time. In the last 5 years the rise in the beach price of Nile Perch has been more drastic, from 10 Ksh/kg in 1990 to 32 Ksh/kg in 1994 (Abila, 1994). This steep rise in fish price may be due partly to the prevailing inflation levels in the country, officially estimated at 27.3% in 1992 and 46% in 1993 and the rising costs of fish production inputs (Kenya, 1994). The increase though may be largely attributed to the rapid development of industrial fish processing in Kenya.

Industrial Fish Processing

The fish processing companies compete for high quality fresh Nile Perch landed on Lake Victoria beaches. The immediate impact of this has been favorable since competition has resulted in high prices for Nile Perch, hence good returns on fish production investments. However the participation of fish processing companies has caused two notable problems on Nile perch marketing and consumption.

First, the small-scale traders have been sidelined from selling fresh Nile perch since the high beach prices significantly reduce their gross margins, making it difficult to sell the fish to local consumers at competitive prices. Abila (1994) shows that in 1991 Nile Perch traders buying fish on Lake Victoria beaches and selling in Kisumu received very
low gross margins of 29% of the marketing margins. In comparison fresh tilapia and 
sun-dried tilapia had gross margins of 65% and 61% respectively. Secondly, the high 
beach prices of Nile perch means that domestic fish consumers cannot afford good 
quality fish.

The fish processing industries mainly produce fish fillets for export. In 1988 there were 
15 fish processing companies operating in Kenya and they exported about 8 732 
tonnes of Nile Perch fillets, valued at Ksh 1 791 million (Ogunja et al, 1992; Kenya, 
1989). Six of these firms were situated in Kisumu and targeted fish from Lake Victoria. 
Besides fillet, other Nile perch products of economic value are Nile perch swim 
bladders used to manufacture isinglass and its body oils utilized in formulating fish 
meals. Nile perch skins may also be tanned into high tensile leather for manufacturing 
shoes (Ogunja et al, 1992).

**Nile perch Frames**

For local fish consumers the most important by-product of filleting is the Nile Perch 
frame. This is the remains of the fish after removing the fillet, skin, belly flap and the 
gut contents, including the swim bladder. Ogunja et al (1992) demonstrates that a 
medium sized Nile perch, if properly filleted, yields 34.2% export-quality fillet, 9.1% gut 
contents, 7.1% skin and belly flap and 40.4% frame, in weight terms. The Nile Perch 
frame consists of its skeleton, head, fins and attached flesh.

Much attention on Nile perch marketing has focused on the export market for fillets, 
ignoring the local trade on the frames. In the past, even fish processing companies 
regarded the frames as waste products and gave them out to traders chiefly to 
dispose of them, with little considerations for hygienic handling or proper distribution 
(Abila, 1994; Reynolds and Greboval, 1988).

This attitude ought to change as local nile perch consumers become increasingly 
dependent on this product. The marketing system should ensure reliable distribution 
of frames in good quality and at a price which consumers can afford, and in addition, 
sufficiently remunerate the traders. At the moment there is very little documented 
information on the marketing of Nile perch frames. This paper exposes the trade on 
the frames in Kisumu and gives recommendations for improving it. Based on the 
suggestion by Moen (1983), Kisumu is considered the largest single market for fish 
in Kenya.

**Objectives of the study**

1. To determine and discuss the socioeconomic importance of Nile perch frames 
   marketing in Kisumu.
2. To describe the marketing channel for Nile perch frames.
3. To derive price spreads and gross margins in Nile perch frames trade.
4. To recommend ways of improving the utilization of Nile perch frames.
Methodology

Statistical data and related information was obtained by interviewing fish traders, local and industrial fish processors in Kisumu. Traders and local processors were randomly sampled at each market visited and interviewed on the marketing process. Other data was obtained from records of fish sales at the Kenya Marine and Fisheries Research Institute. All interviews were done in May 1994.

RESULTS AND DISCUSSIONS

An Overview of the Nile perch Frames marketing in Kisumu

The filleting companies in Kisumu process about 50 tonnes of fresh Nile perch daily and, at a yield rate of 40.4%, produce 20.2 tonnes of Nile perch frames. After production, the frames are sold to middlemen at the factory gate. Some of these middlemen buy the fish regularly and on contract terms with the filleting firms while others are irregular buyers. The former get preference when demand for frames exceed the output. Inspite of this arrangement, there is often excess production of frames especially in the rainy seasons and disposal becomes a problem. The processing firms may opt to sell them at very low prices or even give them out free.

The middlemen transport the frames on hired hand-carts or pick-ups to markets for processing the frames at Obunga, Kisian and Winam Beach. A few of them though take frames to sub-outlets in residential areas for frying and sale. At the processing markets the middlemen sell the frames to processors operating there who deep-fry the fish and thereafter sell the fried frames mainly to traders from Kibuye wholesale market and also to those from retail markets in Kisumu and traders from other urban centres such as Kakamega, Kitale, Eldoret, Kericho and Nakuru.

At Kibuye Wholesale Market, which is the sole wholesale market for frames in Kisumu, the wholesale traders sell frames to retail traders who in turn transport them and sell to individual consumers at the various retail markets in Kisumu. Some consumers though buy fish directly from the wholesale market even though this is discouraged by market regulations.

The Nile Perch Frames Traders

Survey carried out in May 1994 revealed that there are about 120 middlemen obtaining fish frames from fish filleting factories in Kisumu. About 63% of them are males and 70% of the middlemen are fully occupied in the fish business and get all their income from it while the rest have subsidiary employment elsewhere.

The fish processors number about 220 at Obunga, 120 at Kisian and 60 at Winam. Approximately 75% of them are women and more than 90% of them fully depend on fish processing for employment and income. There are 15 dealers of Nile Perch frames operating in Kibuye wholesale market, 12 of them being Women. Abila (1994) determined that up to 96% of fish wholesalers in Kisumu derive all their income from fish marketing.
The number of retailers for Nile perch frames is surprisingly small. Normally it is expected that the number of traders should increase down the marketing channel corresponding to the decrease in number of units handled by each trader. The survey found 32 sellers of frames distributed in 8 registered retail fish markets in Kisumu, viz; Manyatta, Okonyowelo, Kowino, Kondele, Kibuye, Jubilee, Mamboleo and Otonglo. This gives an average of 4 traders per market. Abila (1994) found out that fish retailing in Kisumu is a full-time employment and retailers depend on it for their entire livelihood. The details of traders frying and selling fish at the residential areas was not established since they mainly operate at night.

The marketing channel for Nile perch frames shows an organized trade with interdependent successive channel levels. It lacks vertical integration characteristics as would be in the case where traders at one level own operations at other levels. This is favorable for reliable distribution of the frames and fair price formation.

**Trends of Nile perch Frames Supply and Consumption**

There is very little wastage of fried Nile Perch frames as almost all of it is sold out. The trend of frames supply may therefore be a good indicator of the levels and pattern of their consumption. Available statistics for the supply of Nile Perch frames to Kibuye wholesale market between 1990 and 1993 shows a fluctuating supply pattern, perhaps corresponding to the unstable weather pattern in the same period. The estimated values of frames supplied in Kibuye market shows a general upward trend while, as expected, the unit price has inverse relationship with the quantity of frames available for sale. This means that consumers are willing and able to pay more when supply falls, indicating that there is sufficient demand for the commodity.
Marketing channel for Nile Perch frames in Kisumu

Industrial Fish Processors

Middlemen of Marketing

Local Fish Processors at Obunga, Kisian, Winam

Wholesalers at Kibuye Wholesale Market

Wholesale and Retail Traders in neighbouring Towns

Retailers at various Retail Markets in Kisumu

Retailers in Residential Areas

Fish consumers in Kisumu

Main Channel

Other Channel
Table 1. Quantities (kg and values (ksh) of Nile Perch Frames sold in Kibuye Wholesale Market (1990 - 1993)

<table>
<thead>
<tr>
<th>Year</th>
<th>Weight (kg)</th>
<th>Value in '00(Ksh)</th>
<th>Unit Price Ksh/kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>1990</td>
<td>818 641</td>
<td>12 310</td>
<td>1.50</td>
</tr>
<tr>
<td>1991</td>
<td>991 612</td>
<td>13 449</td>
<td>1.36</td>
</tr>
<tr>
<td>1992</td>
<td>921 361</td>
<td>12 431</td>
<td>1.35</td>
</tr>
<tr>
<td>1993</td>
<td>622 896</td>
<td>13 415</td>
<td>2.15</td>
</tr>
</tbody>
</table>


Price Spreads and Gross Margins in Nile Perch frames Marketing in Kisumu

The Gross Margin measures the net revenue after deducting the variable costs of production or marketing from the total revenue. Abila (1994) demonstrates that a fish trader’s gross margin may be derived as:

Gross Margin = (Selling price per Unit) - (Unit Variable costs + Buying Price per Unit)

This paper presents the price spreads, variable costs and gross margins derived along the typical channel supplying frames from the filleting plants through the processing markets and Kibuye Wholesale market to the various retail outlets in Kisumu. The unit costs are aggregates for traders in the same business per kilogram of frames sold. Weights of frames are expressed in kilograms using a conversion ratio of 2.5 kg per frame, which is the average weight for a medium-sized Nile perch frame.

The results show that traders’ gross margins progressively increase along the marketing channel. This is expected since traders normally handle less units of a product down the marketing channel and so require higher margins to receive sufficient total revenue. The gross margins to retailers though are unproportionally high, substantially raising the consumer price for frames. Perhaps this explains the small number of retailers per market since consumers opt to buy frames directly from wholesalers or processors to benefit from the lower prices. This should be encouraged and the existing restrictions relaxed so as to make the Nile perch frames more affordable and promote its consumption.
## Price Spreads, Variable costs and Gross Margins in Frames Trade in Kisumu

<table>
<thead>
<tr>
<th></th>
<th>Unit costs (Ksh/kg)</th>
<th>% of Consumer Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ex-factory Price</td>
<td>0.60</td>
<td>10.0</td>
</tr>
<tr>
<td>Transport to Processing Market</td>
<td>0.16</td>
<td>2.7</td>
</tr>
<tr>
<td>Middlemen's Gross Margin</td>
<td>0.24</td>
<td>4.0</td>
</tr>
<tr>
<td>Middlemen's Selling Price</td>
<td>1.00</td>
<td>16.7</td>
</tr>
<tr>
<td>Variable Costs of Processing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Labour</td>
<td>0.24</td>
<td>4.0</td>
</tr>
<tr>
<td>Firewood</td>
<td>0.32</td>
<td>5.3</td>
</tr>
<tr>
<td>Frying Oil</td>
<td>0.30</td>
<td>5.0</td>
</tr>
<tr>
<td>Other Marketing Costs to Processors</td>
<td>0.06</td>
<td>1.0</td>
</tr>
<tr>
<td>Processor's Gross Margins</td>
<td>0.48</td>
<td>8.0</td>
</tr>
<tr>
<td>Processors Selling Price</td>
<td>2.40</td>
<td>40.0</td>
</tr>
<tr>
<td>Transport to Kibuye Wholesale</td>
<td>0.24</td>
<td>4.0</td>
</tr>
<tr>
<td>Other Costs to Wholesalers</td>
<td>0.18</td>
<td>3.0</td>
</tr>
<tr>
<td>Kibuye Wholesalers Gross Margins</td>
<td>0.78</td>
<td>13.0</td>
</tr>
<tr>
<td>Kibuye Wholesalers Selling Price</td>
<td>3.60</td>
<td>60.0</td>
</tr>
<tr>
<td>Transfer Costs to Retail Market</td>
<td>0.20</td>
<td>3.3</td>
</tr>
<tr>
<td>Other Marketing Costs to Retailers</td>
<td>0.15</td>
<td>2.5</td>
</tr>
<tr>
<td>Retailers Gross Margins</td>
<td>2.05</td>
<td>34.2</td>
</tr>
<tr>
<td>Retailers Selling Price</td>
<td>6.00</td>
<td>100.00</td>
</tr>
</tbody>
</table>

Source: Survey Results, May, 1994.
PROBLEMS IN NILE PERCH FRAMES MARKETING

1. Location of Processing markets.
The processing of Nile Perch frames is associated with irritating smoke, foul stench and general damage to the environment. Because of this, processing markets tend to be located away from both the town center and the residential areas. Traders therefore incur higher costs of transport to and from the processing markets.

2. Price instability
The ex-factory price of frames inversely fluctuates with the supply levels. Thus there are drastic seasonal price changes. Large price variation do not allow traders to plan and manage their business well.

3. Frames spoilage.
Wastage of frames usually result from contamination at all levels and, most commonly between the factory and the processing markets due to poor handling procedures. However the processors utilize most of the frames they receive, thus minimizing the rate of wastage.

CONCLUSION

The Nile perch frames trade in Kisumu employs about 600 people, at the various levels of the marketing system. In all cases, over 70% of the traders depend wholly on the frames business for employment and income. The frames marketing is therefore important in alleviating poverty and raising standards of living.

The marketing channel for Nile perch frames illustrates that the trade is well organized and successive channels are inter-dependent. This ensures reliable distribution of the frames and fair price formation.

There is sufficient and increasing demand for the frames while the supply shows a fluctuating trend. This raises the need for effective distribution network for the frames.

Traders' gross margins increase down the marketing channel. The margins are reasonable except for retail traders where they are unproportionally high, substantially raising consumer price for Nile perch frames. Fish consumers may gain by buying frames directly from wholesalers or processors.

RECOMMENDATIONS

In view of the importance of Nile perch frames as a human food, industrial fish processors ought to change their attitude on handling and disposal of the product. They should ensure that the frames are stored and handled under hygienic conditions and also fairly priced especially when output is low.

There should be efforts to look for new markets to absorb excess frames, particularly during the rainy seasons. This would employ more traders and increase the income
of the present ones.

Rules restricting wholesalers and processors from selling directly to consumers should be relaxed and consumers encouraged to take advantage of the lower prices at the two market levels. This would promote the utilization of Nile perch frames for human consumption.

REFERENCES


Fisheries Department (1988), "Statistical Bulletins", Department of Fisheries, Nairobi


Othina A.N. (1993), "Catch and Effort Assessment Survey for the Artisanal Fisheries of Lake Victoria (Kenya waters), Kenya Marine and Fisheries Research Institute, Kisumu.