Analysis of Competition in the Wholesale and Retail Markets for fish in Kisumu, Kenya

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ABSTRACT

This study analyses competition in the wholesale and retail fish marketing system in Kisumu, which is Kenya's largest fish market. It is based on cross sectional and time series primary data collected in a survey involving 88 retailers and 47 wholesale traders of fish in the town. Stratified random sampling method was used in selecting the respondents.

Concentration ratios, Lorenz curves and Gini coefficients are derived and evaluated for both markets. They demonstrate that market shares are unequally distributed among the wholesalers and retailers. The Gini coefficients are 0.37 and 0.45 for the whole and retail markets respectively.

Based on a Gini coefficient cut-off level of 0.4, it is concluded that the wholesale fish market exhibits effective competition while the retail outlet has oligopolistic tendencies. The implication of this level of competition to price efficiency is discussed. Intervention measures to enhance competition in the market are recommended.

INTRODUCTION

The perfectly competitive market model is often used in economics to evaluate the structure and performance of a given marketing system. This model is characterized by a large number of buyers and sellers, ease of entry and exit, product homogeneity and adequate information flow in the market. Each trading firm in the competitive market maximises profits by equating the price to its marginal cost. The competitive market prices thus reflect both consumer demand and the cost of resources employed (SCHEID and SUTENAN, 1979). The prices are related in time, space and form dimensions by storage, transport and processing costs respectively (SHEPHERD and FUTREL, 1969). This illustrates efficient pricing.

Where there are only a few sellers, each with a big market share, decisions on prices and profits are in the hands of only a few participants. Such markets are associated with non-competitive pricing arrangements (STAATZ, 1980). The resulting price margins

are in excess of the costs of resources employed, indicating price inefficiency (SHEPHERD and FUTREL, 1969).

Competition and efficiency are hence closely related. (MILLER, 1984) affirms that competition in a marketing system is a prerequisite for allocative and economic efficiency. (CLODIUS and MUELLER, 1969) define four variables commonly used to analyze competition in a marketing industry. They are the market concentration, product differentiation, market integration and barriers to entry and exit. Among these, market concentration has the most important influence on the market structure, conduct and performance (ROSENBLUTH, 1955; TOMEK and ROBINSON, 1972).

Market concentration refers to the percentage of total transactions accounted for by a given number of sellers or buyers, ranked in order of market shares from the largest to smallest (SCHEID and SUTENAN, 1979). The percentage share of the largest 4 or 8 firms are commonly used to compare market

concentrations and evaluate competition in the marketing industry (UNITED STATES, 1966; BAIN, 1951; BAIN, 1968; MANN, 1966; RHOADES, 1973; KEYSEN and TURNER, 1965; SCHEID and SUTENAN, 1979 STAATZ, 1986 and KARUGIA, 1991).

Lorenz curves also show the degree of inequality in the market. The Lorenz Curve is a graphical display of the distribution of actual market shares in comparison to the hypothetical case of equal sharing.

The Gini coefficient, on the other hand, is a statistical measure of range 0 to 1 based on the Lorenz Curve. It is a summary of the concentration for all firms in the market, and oligopolistic behaviour increases as the coefficient tends to 1 (SCHEID and SUTENAN, 1979). The Gini coefficient is a better measure where results for the top 4 or 8 firms is inconclusive in grading the competitiveness of the market.

ANDIC and PEACOCK 1961 show that the Gini coefficient, R , can be expressed as:

$$R = \sum_{k=1}^j (P_{k-1} Q_k - P_k Q_{k-1}) \times 1/10000$$

Where, P = Cumulative frequency of trader classes.

Q = Cumulative frequencies of values of commodity sold by each group of traders.

k = Serial order for cumulative frequencies of the class sizes.

Various authors have suggested standards for evaluating competition in the marketing industry based on the level of concentration. UNITED STATES 1966 define high concentration as a situation in which the 4 largest firms handle 50% or more of the sales. BAIN (1951) and MANN (1966) conclude that high concentration occurs when the largest 8 firms control 70% or more of the market, while RHOADES (1973) puts it where the largest 4 firms control more than 30% of the sales. KEYSEN and TURNER (1965) propose that moderate concentration occurs when the top 8 firms handle 50% of the trade. BAIN (1968) though puts it where the first 4 and 8 firms in the industry control at least 35% and 45% respectively of the market.

STAATZ (1986) classified the cattle and beef markets in Abidjan and Bouake, where the largest 4 traders controlled 36% and 50% of the sales respectively, as low concentration. KARUGIA (1991) also determined that the top 4 and 8 beef retailers in Nairobi handled 20% and 35% of the respective market sales and concluded that the market exhibited low grade oligopoly. Similarly, SCHEID and SUTENAN (1979) detected oligopolistic behaviour in the market for finfish in Costa Rica, where the largest 4 and 8 sellers controlled 38% and 62% of the trade respectively.

PARKER and CONNOR (1979) recommended a Gini coefficient of 0.4 and below to indicate effective competition, and otherwise as non-competitive or oligopolistic tendencies. This is a more definite measure since shares of all firms in the market are considered.

High market concentration suggests oligopoly while low concentration would imply competitiveness, provided there are no major barriers to entry into the market (BAIN, 1968). Market concentration also affects the levels and distribution of prices, income and profits. A highly concentrated industry may thus promote inequality in income distribution (SCITOVSKY, 1955).

Kenya's fish industry

Kenya's fish industry is a source of income, employment and food for over 11.2 million Kenyans (OGUTU, 1992). It also earns foreign exchange for the country through export of fish products. In 1993 about 162,910 tonnes of fish was landed from Kenya's portion of Lake Victoria. This represented about 90% of Kenya's total fish output (KENYA, 1994). Three species of fish in the lake are extensively targeted due to their market value. They are *Lates Niloticus* (Nile Perch), *Oreochromis* species (Tilapia) and *Rastrineobola argentea* ("Dagaa").

The fish is sold in local beaches around the lake, in nearby and distant urban markets and in the export market. Kisumu is Kenya's largest urban market for Lake Victoria's fish. The typical marketing channel has both wholesale and retail traders who transfer fish from the fishermen on landing beaches to consumers buying fish at the designated retail outlets. (ABILA, 1995; MOEN, 1983; NYANJA, 1986).

$$\begin{aligned} R &= (42.5 \times 54.2) - (18.4 \times 80.8) = 816.78 \\ &\quad (80.8 \times 70.8) - (54.2 \times 91.4) = 766.76 \\ &\quad (91.4 \times 75.5) - (70.8 \times 93.5) = 280.90 \\ &\quad (93.5 \times 82.2) - (75.5 \times 95.6) = 467.90 \\ &\quad (95.6 \times 90.3) - (82.2 \times 97.7) = 601.74 \\ &\quad (97.7 \times 100.0) - (90.3 \times 99.8) = \underline{758.06} \\ &\quad \quad \quad 3692.14 \\ &= 3692.14 \times 1/10\,000 \\ &= .37 \end{aligned}$$

Table 1. Value (KSH) of Fish transacted by Sample Wholesale Traders in Kisumu per month

<i>Serial No. of Class</i>	<i>Range of Values of Fish Sold by Class (Ksh.)</i>	<i>No. of Wholesalers in Class</i>	<i>Relative Frequency of Class Size</i>	<i>Cumulative Frequency of Class Size</i>	<i>Total Value of Fish sold by Class (Ksh)</i>	<i>Relative Frequency of Sales by Class</i>	<i>Cumulative Frequency of Sales by Class</i>
1	Up to 50 000	20	42.5%	42.5	652 093.40	18.4%	18.4
2	50 001-100 000	18	38.3%	80.8	1 267 031.30	35.8%	54.2
3	100 001-150 000	5	10.6%	91.4	589 039.25	16.6%	70.8
4	150 001-200 000	1	2.1%	93.5	167 767.70	4.7%	75.5
5	200 001-250 000	1	2.1%	95.6	237 759.30	6.7%	82.2
6	250 001-300 000	1	2.1%	97.7	285 223.50	8.1%	90.3
7	300 001-350 000	1	2.1%	99.8	341 693.55	9.7%	100.0
Total		47	100.0%		3 540 608.00	100.0%	

Source: Survey Results

Fig. 1. Lorenz concentration curve for fish wholesale system in Kisumu

Retail market

The retailer with the smallest monthly transactions handled fish valued at Ksh. 2 224.60 while that with the highest sales traded fish worth Ksh. 78 635.65 per month. The retailers have been put in 8 classes with intervals of Ksh. 10 000 (Table 2).

The largest 4 and 8 retailers comprised only about 5% and 9% respectively of the sample. However a comparative percentage of 9% and 17% (as in the wholesale market) controlled 32% and 48% of the retail market sales. This would suggest that the retail market is less competitive than the wholesale market.

Where as these percentages fall within the ranges set by KARUGIA (1991) and RHOADES (1973), they fall outside the ranges suggested by BAIN, (1986), SCHEID and SUTENAN (1979) UNITED STATES (1966) and STAATZ (1986). Hence these results are also inconclusive.

Lorenz curve, (Fig. 2) has been constructed for the retail market using data of sales values for all sampled retailers and following the same procedure as for Figure 1. As in the case of the wholesale market, the retail market Lorenz curve shows market shares are distributed more unequally in the retail market than the wholesale market. The Gini coefficient for the retail market has been computed using cumulative frequency values (Table 2).

$$\begin{aligned}
 R &= (52.3 \times 37.9) - (19.1 \times 72.8) = 591.69 \\
 &\quad (72.8 \times 57.9) - (37.9 \times 86.4) = 940.56 \\
 &\quad (86.4 \times 67.8) - (57.9 \times 90.9) = 594.81 \\
 &\quad (90.9 \times 77.5) - (67.8 \times 94.3) = 651.21 \\
 &\quad (94.3 \times 84.9) - (77.5 \times 96.6) = 519.57 \\
 &\quad (96.6 \times 94.5) - (84.9 \times 98.9) = 732.09 \\
 &\quad (98.9 \times 100.0) - (94.5 \times 100.0) = \underline{439.45} \\
 &\quad \quad \quad 4469.93
 \end{aligned}$$

$$= 4469.93 \times 1/10\ 000$$

$$= .45$$

Table 2. Value (KSH) of Fish transacted by Sample Retail Traders in Kisumu per month

<i>Serial No. of Class</i>	<i>Range of Values of Fish Sold by Class (Ksh.)</i>	<i>No. of Retailers in Class</i>	<i>Relative Frequency of Class Size</i>	<i>Cumulative Frequency of Class Size</i>	<i>Total Value of Fish sold by Class (Ksh)</i>	<i>Relative Frequency of Sales by Class</i>	<i>Cumulative Frequency of Sales by Class</i>
1	Up to 10 000	20	52.3%	52.3	270 823.95	19.1%	19.1
2	10 001-20 000	18	20.5%	72.8	267 151.75	18.8%	37.9
3	20 001-30 000	12	13.6%	86.4	283 655.40	20.0%	57.9
4	30 001-40 000	4	4.5%	90.9	139 869.55	9.9%	67.8
5	40 001-50 000	3	3.4%	94.3	136 874.10	9.6%	77.4
6	50 001-60 000	2	2.3%	96.6	105 513.40	7.4%	84.8
7	60 001-70 000	2	2.3%	98.9	136 586.50	9.6%	94.4
8	70 001-80 000	1	1.1%	100.8	78 635.65	5.5%	99.9
Total		88	100.0%		1 419 110.30	100.0%	

Source: Survey Results

Fig. 2. Lorenz concentration curve for fish retail system in Kisumu

CONCLUSION

The Gini coefficient for the wholesale market is 0.37 while that for the retail market is 0.45. A randomly selected wholesaler or retailer is therefore expected to have a sales level in the respective market by 37% or 45%. Based on a Gini coefficient cut-off point of 0.4 recommended by Parker and Connor (1979), the wholesale market exhibits effective competition while retail market has oligopolistic tendencies.

RECOMMENDATIONS

There is need to enhance competition in the Kisumu fish market. This may be achieved by taking measures that favour entry into the market by more individuals and by raising the scale of operation of the existing small-scale fish traders. One way is to initiate a credit

system for the traders through which they can easily acquire loans and expand their business. Increased access to market information may also assist in increasing the level of competition and achieve more efficient prices.

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