



KENYA MARINE AND FISHERIES RESEARCH INSTITUTE

FRESH WATER SYSTEMS

KMF/GoK/2019-20/C1.5.i

ASSESSMENT OF ECONOMIC CONTRIBUTION OF SMALL-SCALE FISHERIES ALONG THE VALUE CHAIN IN INLAND WATERS



AUTHORS

Owili, M., Mwirigi, M., Aura, M. C., Odoli C., Nyamweya, C., Ouko, J., Owiti H., Wanguche P.,
Olela P., Odari E., Oburu J., Akinyi J., Otieno D.

May 2020

KMFRI Headquarters

P.O. Box 81651 – 80100, Mombasa

Tel: +254 (041475151/4)

Email: kmfridirector@gmail.com

Background information

Small fish are ubiquitous in all aquatic environments from large marine ecosystems to seasonal ponds, as well as in market places and low-income household diets, but their significance is underrated and little understood as they are consumed locally and often go unrecorded in catch statistics. In fact, fisheries are the most energy efficient producers in comparison to other food production systems and have the least environmental impact in terms of greenhouse gases and use of freshwater, fertilizers, insecticides/herbicides. Catching small fish, which are simply sun-dried and consumed whole, is the highest yielding, eco-friendly, low CO₂-emission and nourishing way of utilizing aquatic resources. However, a range of social, technical, economic and legal barriers inhibit the full potential of utilizing small-scale fisheries. It is the aim of this Performance Contracting Target to assess the economic contribution of small-scale fisheries along the value chain in inland waters.

Objectives of this study were;

To map and quantify the small-scale fisheries and its value-chain in inland fisheries

To map small fish quality across the various market nodes i.e. safety and quality along the value chain (analyse nutritional and safety parameters along the value chain)

To assess the economic contribution of inland small-scale fisheries along its value chain.

Results

Socio-demographic characteristics

The study results reveal that most of the fish traders are female thus conforming to primary knowledge on typical small-scale artisanal fisheries where men dominate fishing while women dominate fish trade and post-harvest activities. In addition, about 81% of the sampled population fell within the most economically active age bracket of 26-55 years (**Table 2**). Whereas most of the traders were married, indicating strong socio-cultural bonds and possible religious affiliation, it was quite remarkable that widows and single parents comprised a significant 16% of the traders. This result suggests a possible attractiveness of SSF trade to vulnerable groups and actors perceived to be economically disadvantaged. In

addition, the respondents had a mean household size of six (6) persons which slightly fell short of the prevailing national average of seven (7) members. A majority of traders had primary education with the band extending favourable up to secondary level. There were fewer educational outcomes at the ends of the ordinal rating implying that few respondents had no education as well as tertiary education. Besides, fish traders had the highest relative educational outcomes, seconded by fishermen and followed by fish processors. The off loaders/loaders of SSF were found to have the least educational levels. Ideally, it is quite concerning that some traders have no formal education at all, and that 60% of the traders have attained education only up to primary level. Fish trade, like any trade, involves weights, measures, values, prices and records which define its routine operations. It would be extremely challenging to engage in fish trade without any formal education and with minimal or no literacy skills and attain success. Primary education is also very basic to provide sufficient capacity to meet the rigor of a modern business environment. While these low educational levels compare well with the general characteristics of poor households who engage in this trade, they provide a clarion call for intervening measures in education support to these traders who are competitively disadvantaged in this trading arena.

Table 1. A summary of key socio-demographic indicators

Demographic Indicator	Sub-Category	Proportions	Average
Sex	Male	30%	
	Female	70%	
Age Bracket (Yrs)	18-25	7%	
	26-35	33%	
	36-55	48%	
	>55	12%	
Civil Status	Married	78%	
	Widowed	14%	
	Single	6%	
	Separated	2%	
Household Size	Mean		5.5

	Min/Max	1/13
Education	None	4%
	Primary	56%
	Secondary	35%
	College	4%
	University	1%

Market dynamics

The SSF traders interviewed were adequately experienced with a mean working tenure of 13 years. However, the experience varied from a low of 0.1 years to a high of 53 years. Since this study depended on perceptions of respondents on various SSF indicators that required adequate recall to construct trading figures, this result lends credibility to our data by virtue of most respondents being relatively experienced in the trade of SSF. Furthermore, that most traders have clung to this line of trade for relatively long periods also indicates good prospects or stability for income from SSF trade. Most (54%) traders also reported personal savings as their main source of business capital followed by donations (18%). There was minimal borrowing from banks (8%) and micro-financial institutions (4%). The rest acquired capital from other sources namely farming, trade credit, among others (**Table 3**). On the contrary, the amount of initial capital was highest for bank and micro financial institutions. A relatively higher capital outlay leads to bigger economic investments which imply benefits from economies of scale, thus increasing chances of profitability and employment creation. Whereas financial institutions provide higher capital possibilities, results indicate that SSF traders have limited access to the opportunities they provide. Growth and expansion of business enterprises has been established to be positively correlated to inclusion and access to financial services (Okello et al., 2017). If these traders are to realize expansion and growth in SSF trading activities, then their inclusion in and access to these financial opportunities cannot be overlooked. This provides an opportunity for banks and other financial institutions to adapt and differentiate their products in order to meet the financial needs of this unique investment group.

Table 2. Source and amount of initial capital for SSF traders (N=225)

Source	Frequency	Capital (Ksh)			
		Working	Initial	Minimum	Maximum
Bank Loan	19	122,105.30	39,894.70	10,000	200,000
Donations	40	23,885.50	5,289.70	200	20,000
Microfinance	10	67,900.00	34,850.00	7,500	200,000
Savings	121	57,184.30	17,121.50	30	400,000
Other	35	153,313.30	11,786.70	300	70,000
Grand Total	225	64,658.40	17,460.70	30	400,000

A total of 307 employees were found to be employed in various capacities by the sampled SSF trade establishments. Of these, producers employed 46%, wholesalers 40%, retailers 14% and the remaining employee was engaged by an agent. The average number of employees per establishment was three (3), ranging from a minimum of one (1) to a maximum of twenty-four (24). In terms of employment categories, commissioned workers recorded the highest (44%) proportion, followed by casuals (43%) with the rest serving on permanent baSSF. The employment categories varied across the business types as shown in figure 1 below.

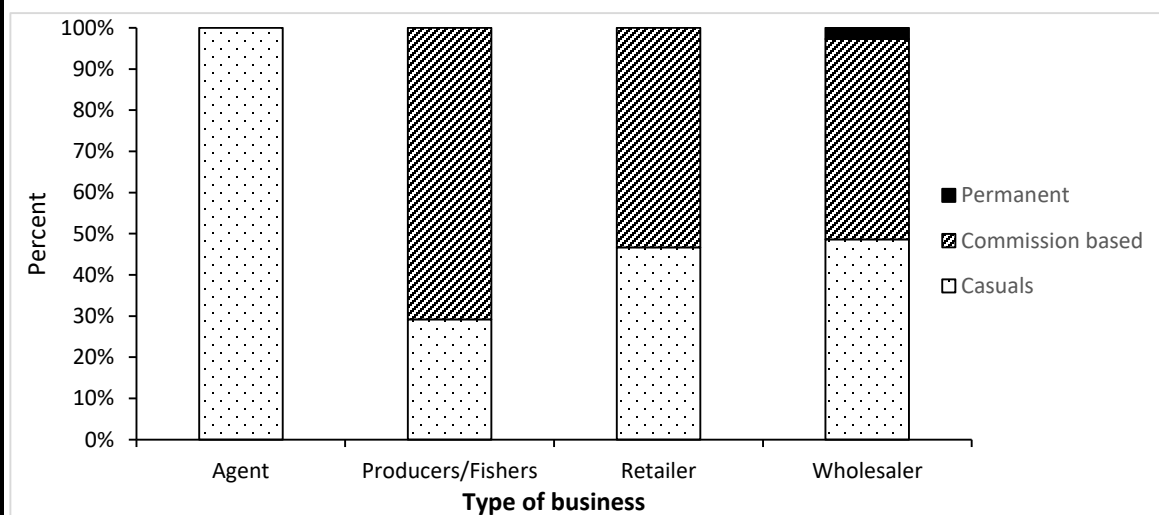


Figure 1. Proportion of employee categories across business types

The main SSF sold in the markets was found to be Omena (*Omena*). It commanded a market proportion of 76%, followed by *Caridina* at 16%, *haplochromines* at 7%, and the rest being Nile perch juveniles (Figure 2). The Omena was mostly (72%) sold in dry form, some (27%) in wet form, and the rest in fried form. *Caridina* was only sold in dry form while *haplochromines* were sold in either dried, wet or fried forms. There was a close correlation between the SSF product form and proximity to Lake Victoria. For instance, wet Omena was mainly available in markets that were closer to the shores of Lake Victoria. While *Omena*, *haplochromines* and Nile perch juveniles were sold for human consumption, *caridina* was only sold for animal feed.

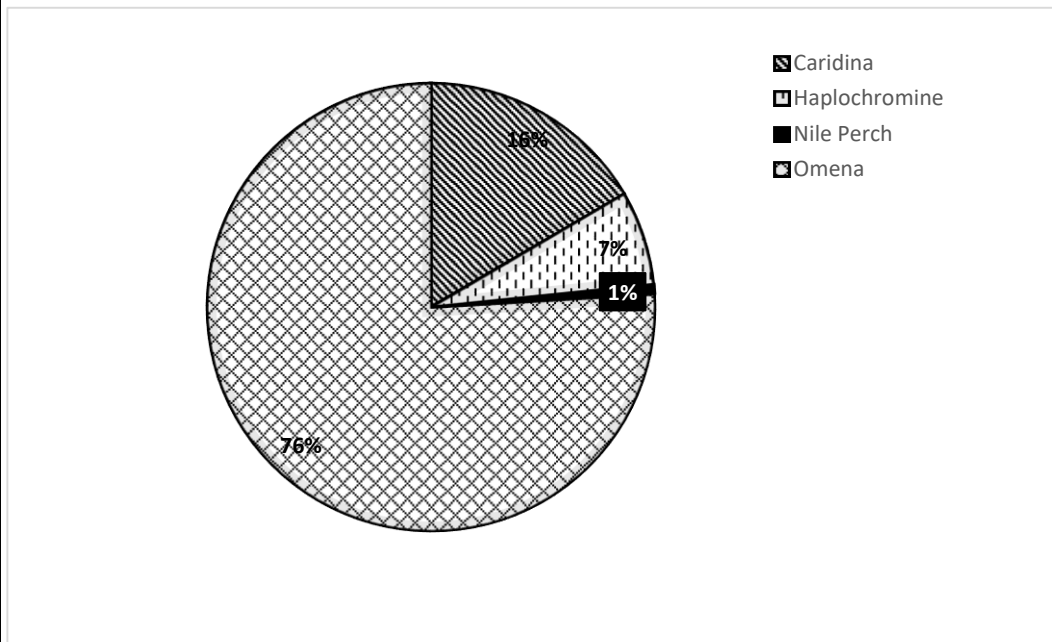


Figure 2. Market preference for small fish in Kenya

Omena was more common (73%) in the dark phase than in the moon phase (27%). The dark phase is more advantageous to Omena fishing since the fishery depends on lamps to attract the fish. It was established that Omena is sold in the market using various measures and weights: troughs, sacks, kilograms, tins, plates and cut jericans (*Kisaujo*). On the other hand, *haplochromines* were mainly sold in tins and troughs. *Caridina* was observed to be sold in tins to domestic buyers and in kilograms and sacks to industrial buyers. These weights highly depended on the type of buyer, form of product and type of market. A standard unit of measurement provides a reference point by which objects of weight, length or capacity

can be described. In the local markets, traders typically place SSF in tins, troughs, sacks or plastic containers of varying sizes even though the central government has established standard weights and measures for more efficient market transactions. There is need to establish why, in spite of the long experience in trade by respondents, they still did not adhere to standards or policies in weights and measures for SSF trade, but instead resort to traditional weights. The use of containers or varying sizes and shapes impose market inefficiencies and pricing challenges on the local market. However, it would also be prudent for responsible market agencies to craft standard weights and measures by taking into consideration the existing customary practices.

Table 3. Trade dynamics in SSF business

	Form	Measure	Av. Qty Bought	Av. Price (Ksh/Kg)	Av. Qty Sold	Av. Price (Ksh/Kg)	Av. Qty Spoilt	Gross Profit Margin
Omena	<i>Dry</i>	Kg	78	160	60	215	15	1.3
	<i>Dry</i>	Tin	72	168	60	178	0	1.1
	<i>Wet</i>	Trough	9.2	800	8.5	1000	0	1.3
	<i>Dry</i>	Sack (Small)	4	2916	3.5	3300	20	1.1
Haps.	<i>Wet</i>	Small Trough	20	500	20	550	0	1.1
	<i>Wet</i>	Big Trough	7	2,400	7	2,600	0	1.1
	<i>Fried</i>	Tin	20	280	10	300		1.1

The SSF value chain mainly originated from fishers at the primary producers. These producers sold their catch to either artisanal processors or local traders at the secondary level. Operators in the tertiary level include fish meal agents and wholesalers. The last actors in the value chain included animal meal industries and consumers in local and regional markets as shown in **figure 3** below.

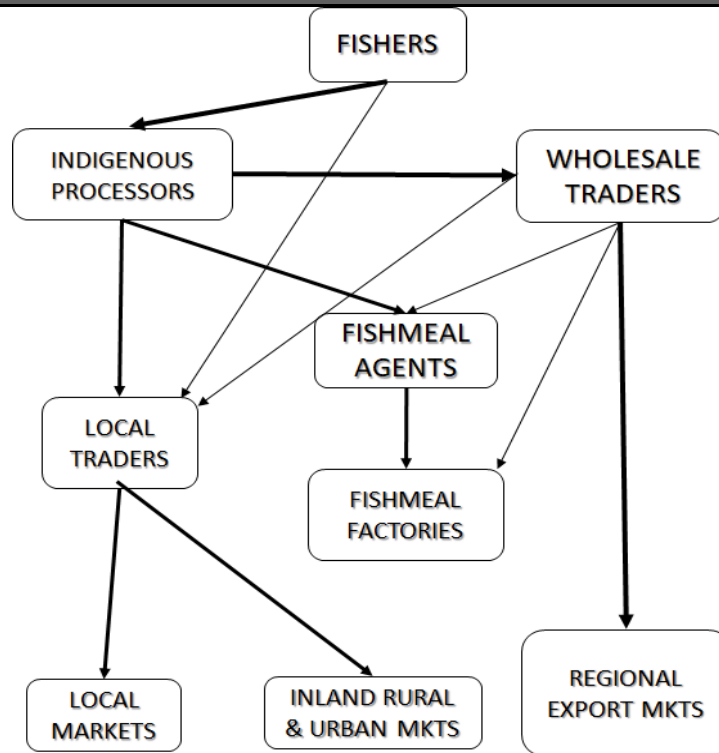


Figure 3. SSF Value chain actors

Challenges

Challenges identified while undertaking the project:

Poor markets' infrastructure and challenged access of the landing beaches during the rainy season. This affects all the key players in the SIS fisheries from producers to traders.

Lack of interest from some respondents to engage on correspondence during the field surveys.

Inadequate support for traders by the government on credit, equipment and law enforcement.

Infrastructural constraints to support the SIS processors in regards to post-harvest processing and value-addition.

Lack of marketing strategies by the key players, mostly processors and traders, to increase the uptake of SIS for human consumption.

Lack of clear and definite policies to control trade and cross-border movement of SIS between the East African countries.

SIS fisheries are highly informal with lack of proper record keeping by the key players, non-harmonized and non-coordinated data recording systems by the main institutions limiting access and comparison of data.

Recommendations

Some of the recommendations brought forth by traders are:

Regulations to control packaging of Omena in sacks to standard as some sacks weigh more than others yet the price is the same.

Action by the government to put in place measures for improved post-harvest processing and value-addition of the SIS fisheries.

Policies to control markets prices to limit high price fluctuations with variations on the seasonality of the SIS fisheries.

Regulation for clean water and better hygiene and sanitation standards for SIS handlers at the fish landing sites and markets.

Policies by the government to control the cross-border movement of SIS, be it for human consumption or otherwise for animal feeds.

Government to increase awareness and sensitize the public on the importance of SIS consumption in regards to their high nutritional value and their affordability.

Provision of intervening educational or training measures to accord the SIS traders the necessary skills required to be competitive in a modernized business world;

Development of standard weights and measures which take into consideration the existing customary practices to enhance adoption by traders;

Improve the business environment in order to attract large scale investors who can venture into better processing technologies and access to distant markets with good prospects for returns;

Develop and implement policies relating to fishing gears and methods and seasonality to enhance sustainability of the fishery.

