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Challenges and Opportunities of Kenyan artisanal Fish Industry

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ABSTRACT

This paper examines the challenges and opportunities of the artisanal (small scale, non-commercial) fish sector in Kenya which has a potential to significantly contribute to the country's economy through employment creation, income generation and source of nutrition. However several challenges were identified relating to the artisanal processors including lack of adequate sanitation, chilling, cold storage and distribution facilities hence they opt for traditional fish processing techniques such as sun drying and smoking. However, these challenges often lead to huge economic and quality post harvest losses due to color change, extraneous matter contamination, bacterial breakdown, mould and insect infestation, pilferage by birds and animals. This paper aims at discussing the challenges that the artisanal fish traders encounter and proposes various ways of improving the artisanal fish sector in Kenya. The study adopted exploratory research design to help determine the best research design, data collection method and selection of subjects. The data collected was analysed qualitatively to provide useful information and recommendations for academic purposes. The study recommended improved storage facilities that are able to control and maintain the required environment and at the same time, are technically and economically viable to processors and traders, such as the plastic layered baskets.

Keywords: Artisanal fishery, employment, collective efficiency theory, interest group theory

INTRODUCTION

According to Nyeko, (2008) Kenya's fish industry has developed over the years to be a major source of income and an important export commodity which considerably supports the country's economy with average earnings of Kshs. 4 billion (approximately 0.5% Gross Domestic Product) annually through fish trade. The fisheries sector provides livelihood, income and employment to more than 2 million people and Lake Victoria provides about 95% of the total fish landed in

Kenya. The main fish landed in Lake Victoria are Dagaa (*Rastrineobola argentea*) (62.9 %), Nile perch (*Lates niloticus* L.) (29.9%), Tilapia (*Oreochromis niloticus* L.) (5.3%), Fulu (Haplochromines) (1%) and others (0.8%) (Odongkara, 2008). The most far-reaching economic change in the Kenya's fish industry has been the commercialization of Nile perch from Lake Victoria (Abila, 1998). However, of urgent public policy concern is the impact of the growing exportation of fish to the international markets on the food security and the local livelihoods of the lake communities.

Over the past 20 years, the fisheries sub-sector has gradually evolved from a domestic consumption oriented industry to an export oriented industry with value added processing being applied (EPZ, 2005). Despite food security increasingly becoming an issue of national concern in Kenya, and the fish industry has been identified in the country's Vision 2030 as one of the sectors that if improved would effectively contribute towards alleviation of food insecurity. However, the local fishing communities are increasingly losing access to and control of the fishery resources. Production, processing and marketing have become technology dependent leading to marginalization of the artisanal fisherfolk communities (Ogutu, 1996). The export of local fish has also contributed to the reduction in supply of locally available, relatively inexpensive protein source. (Bokea & Ikiara, 2000) established that food security for Kenyans has been increasingly compromised as more fish finds its way to external markets or animal feeds factories. In addition, jobs have been lost as the traditional small-scale processors and marketing agents have been pushed aside to pave the way for national and international capital. The biggest cost, moreover, has been the adverse impact on the ecosystem and threats to the sustainable exploitation of these crucial fisheries.

CONCEPTUAL FRAMEWORK

According to Mitullah (1998), the promotion of individual efforts embedded largely in small scale enterprises have become a key development agenda. The notion of clustering and collective efficiency notions owes its origin to Alfred Marshall's theory of 'externalities', which was advanced as ways for understanding and fostering efficiency and performance of small scale enterprises through collective action, and focuses not on a firm's internal organisation but on the general development of industry including, the importance of location and the potential for efficiency among small firms. These are reflected in labour pooling, development of specialised local supplies and services, and technology spill over's (Schmitz 1997).

Collective efficiency theory states that under certain circumstances, clusters of enterprises give rise to the division of labour and specialization among small producers, the emergence of suppliers, agents, technical and financial service providers, and ultimately a pool of skilled wage workers (Schmitz, 1995). It is further argued that by facilitating the industrialization process, collective efficiency can lead to the creation of jobs and higher incomes for many people in developing countries (McCormick et al 1996).

External economies and joint action are the two pieces of the theory of collective efficiency. External economies are important to growth, but are not sufficient to ride out major changes in product or factor market as they require joint action (Schmitz 1995; 1997). What is often not clear, however, is what promotes or prevents joint action. When analysing clusters it is necessary to assess the benefits and costs of joint action. McCormick (1997) hypothesised that the small size of product market, the net effects of disabling external economies, and the high cost of effective joint action have prevented African clusters from developing beyond low level operation.

Mitullah (1998) concluded that clusters based on petty commodity trade and services except in isolated cases have not exploited the potential of joint action. This can be done by applying interest group theory, derived from pluralist conception of society which is important in processes that involve decisions of who gets what, when, and how. In this process of interest group politics one interest group bears the cost of action and another receives the benefits. There is need to understand what draws individuals and enterprises into cooperating or taking joint action as well as what prevents them from doing so. For one to take joint action there has to be a feeling of inadequacy in one way or the other. To this extent, any entrepreneur who decides to combine forces with other entrepreneurs or firms expects some gain based on shared interest. However, two faces of power characterise politics of interest groups. One is manifested in the decision making process, and the other is evident in the capacity of powerful individuals and groups to prevent issues that threaten their interest from arising (Chilcote, 1981).

Mitullah (1998) suggested that most clusters in Africa, either lack relevant institutions and/or have weak ones making it difficult to exploit the benefits of collective efficiency through cooperation. The existing associations are largely informal and address welfare issues. Few of them also engage in advocacy, advice, information and training activities, savings and loans and joint market activities (Haan, 1995). Although these institutions come up 'from within', a distinction can be made between a 'top-down' and 'bottom up' approach which is viewed as important for growth since it enables a group of micro and small enterprises to take joint action in facing a particular problem (Haan, 1995). In applying the theory of collective efficiency, the state at local level and sectoral associations can play a pivotal role in fostering and assisting clusters. This is more needed during early stages of industrialisation since most enterprises in Africa are still small, basically for subsistence and revolve around the individual sole proprietors. Therefore the role and vision of the individual entrepreneur may be more important than investing in joint action (Nadvi and Schmitz 1994).

CHALLENGES IN THE ARTISANAL SECTOR

Fishing in Kenya is mostly carried out by artisanal fishermen operating small fishing boats in inland lakes and marine waters. Some fish is sold fresh while a significant proportion is processed for later consumption. The poor infrastructural systems compounded with lack of adequate sanitation, chilling, cold storage and distribution facilities has made it imperative for the subsistence artisanal small holding fishery communities to use indigenous fish preservation methods like smoking, salting and sun-drying as a feasible alternative mainstay for the households. Unfortunately these traditional methods lead to huge economic and quality post harvest losses due to colour change, extraneous matter contamination, bacterial breakdown, mould and insect infestation, pilferage by birds and animals (Mndeme, 1998). For instance, the landings for dagaa in Kenya are high but the value of the catch is very low since the post harvest losses in the dagaa sub-sector are estimated at between 20 - 30% and even up to 50% during the rainy season (Ofulla *et al.* 2007). Consequently, these small pelagic fisheries have increasingly been underutilized for human consumption but instead they are mostly used for the production of fishmeal in the animal feed industry. In contrast, the industrial fish processors collect the fish from the beaches using refrigerated trucks, buying through intermediary traders and process frozen and chilled products for export. Okedi (1995) suggested that since falling fish supplies has been issue in the Lake Victoria fisheries, this could be addressed by using several methods such as improved technology of catching fish, enforcing regulatory measures such as possibility of complementing existing fish stocks with introduced fish species. Failure to improve fishing methods and enforce regulatory measures will result in overfishing, illegal fishing gears including trawlers gears complemented with trawlers which destroy nursery grounds, the Nile Perch poaching on most small fishes, and water hyacinth weeds spreading and interfering with water

system, then it will not be possible to isolate the contribution of each of the variables to the diminishing fish catch. (Gheb, 1997).

There are concerns that the artisanal fisheries sub-sector operates without an explicit national policy. The government has continued to invest in measures aimed at promoting more exportation of fish and fish products to the international markets as outlined in the revised Fisheries Act. of 1991. Since these efforts are based on the policy of exploitation of resources to maximize foreign exchange earnings, they often favour the large-scale commercial fisheries rather than the artisanal fishermen. The currently launched Economic Stimulus Plan (ESP) is aimed at development of aquaculture mainly focuses on the enhancing fish stocks against the dwindling natural stock but mentions little about post harvest management of the aquaculture fisheries. There is, therefore, a need for a systemic fisheries policy that explicitly addresses the plight of the artisanal fish industry both as a renewable natural resource and source of food. The direction of change towards industrialization in the fisheries sector is an incentive to the need to promote the establishment of cottage industries, which would process fish using improved traditional methods.

MATERIALS AND METHODS

This study was conducted through exploratory research design and this was done by reviewing available literature, interviews and through the use of questionnaires. This design was found appropriate for the study because enabled the researchers to collect data from participants who have had practical experience with the problems being studied. The study relied on self reporting in which quantifiable information was collected from the respondents using questionnaire .The data, after collection, was processed, summarized and verified in accordance with the objectives of the study. Content analysis for qualitative data was the preferred method of analysis on the basis that it subjected the data to summarizing and analysis of messages about underlying perception and opinions.

RESULTS AND DISCUSSION

Proposed strategies to improve artisanal fish industry

Infrastructure and appropriate fishing gears

Artisanal fish harvesting and handling is often done using traditional or other rudimentary fishing crafts at the prevailing conditions due to limited access to ice cold storage as well as chilling facilities. Furthermore, lack of adequate infrastructure and technical expertise has often translated into significant post harvest losses due to the associated quality defects. Subsequently, the fishermen's income has been permanently precarious because of the dependence on middlemen for means of production and marketing. Identification and implementation of sustainable funding mechanisms in terms of savings and credit schemes would be necessary for improving fisheries management during harvesting and handling. It would among other things, facilitate the purchase of appropriate fishing gears such as ice insulated containers, which have the ability to extend the shelf life of the fresh fish(Eyo, 1998).

Public education and community management programs

In recent years, the potential export markets have expressed concerns over the nature of unsatisfactory fish and fish products handling practices in Kenya. This calls for the need to invest in public education and community management programs. The non-governmental and community-based organization represents a unique "vehicle" for introducing appropriate

participatory fisheries management practices. Already an attempt has been made towards establishment of Beach Management Units (BMU). On the other hand, fishermen should be encouraged to deliver their fish only at gazetted landing beaches. The stakeholders therefore, need to allocate adequate resources both financial and human towards the improvement of infrastructural facilities such as feeder roads, display shades and cooling facilities to facilitate this.

Improved technologies for handling, processing and storage methods

Following threat of export bans by the European Union markets, urgent attention needs to be given to the establishing of hygienic practices through the supply chain. The other major concern in artisanal fish processing today is on how to extend the shelf life and convert the fish into more marketable form. Longer shelf life allows for market expansion and increases the economic value of the fish as well as nutritional levels in the population. Although, sun-drying is widely used currently, it is greatly hampered by significant post harvest losses (Mndeme, 1998). Therefore, considerable effort should be aimed at assessing the economical and technical feasibility of various improved drying methods such as drying racks and solar dryers through research.

Fish smoking is commonly done in pits or raised smoking racks; however, the smoke densities and heating temperature are not easily regulated hence giving rise to substantial nutritional losses and irregular quality of products (Ikeme, 1998). Traditional smoking of fish needs to be improved to reduce the build up of spoilage and pathogenic agents. As such, more emphasis should be put on research and development of appropriate design and modification of the current smoking methods with regard to the fuel consumption, product quality, and reduced processing time.

Several channels of distribution characterize the present system of artisanal marketing of fish. However, the packaging relies on perforated woven baskets and sacks, which do not offer appreciable protection against hazardous substances, which may result into shortened shelf life of fish and fish products. Processed fish products are vulnerable to oxidation, insect infestation and bacterial contamination. There is need for improved storage facilities that are able to control and maintain the required environment and at the same time, are technically and economically viable to processors and traders, such as the plastic layered baskets.

CONCLUSION

The domestic market is not well defined or organized and involves buying the fish at the beach by small scale traders and selling to various open-air markets and fish shops. Fish prices have been characterized by numerous upward and downward shifts due to a number of factors. The processing industry has been reported to influence market prices at various landing sites such that fish destined for them attract higher prices than those destined for open markets. The civil society organizations, the government departments concerned and other stakeholders, should organize for seminars, workshops and forums to help create awareness among the fishermen not only on the prices in the market, but also on other pertinent issues affecting the industry such as empowerment of small enterprise groups, progressive environmental practices, capital resources, business skills and knowledge. This would provide useful insight on supply and demand, and other emerging issues affecting the industry hence improve the distribution pattern. The artisanal fisheries communities dominate the fish industry. Therefore, policies and programmes should be developed to restructure and strengthen the traditional fish industry. This would promote a sustainable fisheries management by involving participation of stakeholders including researchers, extension officers, and other relevant officers from government, non-governmental organizations and the community. (Bokea & Ikiara, 2000) proposed that intervention was

imperative to rectify the increasingly worrisome situation with the Kenyan fisheries of Lake Victoria. Intervention was required at the level of management and management institutions should be transformed to enhance their sensitivity to natural capital which include Lake Ecosystem and physical capital such as fishing vessels and gears (Ikiara, 1999).

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