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Livelihood Coping Strategies among Artisanal Fishing Households on the Shores of Lake Victoria, Kenya

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Abstract:-Developing countries are endowed with abundant natural resources. They are also more reliant on natural resources given their limited technology and inadequate infrastructural development. Despite the abundance of such resources, many rural communities are struggling over access to natural resources including fish. Fishing households are faced with ever-declining fish catches and combined effort of overexploitation. The impacts have been severe, especially among small scale fishing households. Many artisanal fisher folks have lost their mainstream source of livelihoods and have had to struggle with meeting their daily subsistence. One dominant sources of fishing livelihoods have either collapsed or proving unsustainable for many households. Fishing households are adapting to the declining livelihoods by diversifying and complementing their traditional fish-based livelihoods. Furthermore, the available formal institutions either facilitate or impede full realization of the potential of other sectors. The study examined the coping strategies of artisanal fishing households living on the shores of Lake Victoria, Kenya amidst declining fish stocks. It concludes that many small-scale fishing households have adopted various livelihood strategies such as increased effort in fishing, migration, reliance on remittances, subsistence farming, targeting fish species, sand harvesting, wage employment and localized credit mobilization in form of merry-go-rounds. The study recommends that the government needs to put in place sustainable livelihood opportunities to assist fishing households along the shores of Lake Victoria to diversify their survival.

Keywords: Artisanal, coping strategies, fishing, household, livelihood, Lake Victoria

I. INTRODUCTION

Rural communities have diverse strategies that employ to cope with their vulnerable situations. For example, many households suffer from low income, environmental stresses such as floods, drought, diseases and overall poverty. Small-scale households, fully dependent on aquatic resources are always at the greatest risk given their limited livelihood alternatives. A study conducted by Asravor (2018), indicates that fishing households employ temporal livelihood strategies which are not sustainable because they lack adequate livelihood alternatives. They, therefore, depend on fishing and farming. Moreover, small scale fishing

households are surrounded by poverty which inhibits them from accessing most of the basic facilities. Livelihood diversification is a common phenomenon among households with adequate resources which enable them venture into other opportunities for survival. Fishing households live near water bodies such as oceans, lakes and rivers. Their daily incomes are also derived from activities that are either directly or indirectly related to fishing.

II. LITERATURE REVIEW

Literature on livelihoods that are dependent on fishingshow that globally, most households are engaged in various activities in the sector. A study conducted by FAO (2020), indicates that an estimated 59.51 million individuals were engaged in the fishery and aquaculture sectors in 2018. More specifically, fishing alone comprised of about 38.98 million individuals who mostly resided in developing countries. Aquaculture activity accounted for 20.5 million people mostly from developed countries while capture fisheries remains the most dominant sector in developing countries where individuals either participate as full-time or part-time fishers.

According to Bene and Friend (2011), most of the fishing households earn their livelihoods by weaving various livelihood activities where they generate income for survival. Livelihood coping strategies are also constrained by availability of sustainable livelihood opportunities besides fishing. In some countries such as Ghana, the small-scale fishing sector is well developed and therefore, contributes to approximately 70% of the county's total fish production. In spite of its rich potential, recently cases of illegal fishing activities have been reported in the most parts of the coastal region resulting in overall decline in fish catches. They noted that Ghana lacks a strong legal framework to enforce fisheries legislation, instead the weak regulatory framework continues to attract foreign industrial vessels. Stein (2019) in a study, attributes the

decline to limited employment opportunities in which fishing is perceived as the main source of food for many households. Furthermore, he observes that most countries suffer from a weak legal framework to implement the fisheries regulations. In Malawi, it was estimated that about 14% of households of lakeshore communities were involved in fishing and also contributed to 52% of their livelihoods. The small-scale fishing sector alone contributed to about 90% of the county's overall annual production of fish (Donda and Mafaniso, 2014).

The government of Uganda introduced a livelihood program to address environmental concerns and to safeguard lost livelihoods. The program (Environmental Protection Information Center) intended to transform the perceptions and reform lives of the communities. It was also meant to protect the biodiversity for sustainable human survival. These were to be achieved through various activities such as creation of awareness among communities and fishing villages (households) living on the lakeside and involving them in environmental protection activities in the area. Every household was expected to grow the Vetiver Grass Hedgerow system in order to protect soil and also conserve moisture to enable increase in crop yields. The program EPIC, was an initiative to improve food security and also enhance conservation of biodiversity for an overall improvement of livelihoods of lakeside communities who had depended on fishing for a long time (Byaruhanga, 2003; Byaruhanga and Nalwanga, 2006).

In a study conducted by Geheb and Binns (1997), reported that in some areas of Western Kenya livelihood coping strategies in many households included farming, fishing and livestock herding. Most of the households undertook various activities in order to enhance their incomes and also to ensure food security. The study also noted that increasing human population had constrained the dominant fisheries resources resulting in reduced profit margins. In addition, the entry of commercial investors in the fishery industry pushed the small-scale fishermen to look for other complementary activities for survival. Many artisanal fishing households have experienced changes in income sources occasioned by depletion of fish resource. For example, daily meal intake has changed, dietary requirements have been disrupted and overall income levels have reduced almost across all fishing households. Hence, the need to diversify the traditional fishing livelihoods to supplement.

III. METHODOLOGY

The study adopted a mixed study design. A mixed design enables collection of both quantitative and qualitative data and offers a better understanding of a research problem and questions in a more comprehensive manner. Further, it enables a researcher to understand more salient features of a phenomenon. Purposive sampling technique was used to identify respondents with the required characteristics of livelihood coping strategies such as migration patterns,

remittances and horticulture activities. The technique enables a researcher to select only respondents which display the required characteristics that help in answering the study questions. The main sources of primary data were artisanal fishing households. The researcher relied on the beach leaders to list down the names of the artisanal fishing households for data collection. Key informants (Fisheries Officers, Beach leaders) also provided primary data on livelihood patterns in the study area. The study gathered data from two individuals who were treated as unique in their livelihood strategy. The first individual was a painter while the second was a public transport operator who was once a prominent fisherman in the area. These were the sources of oral narratives. The beach leaders helped in the identification of these individuals. These were the sources of oral narratives. Migration as a variable was measured in terms of periodic movement from original fishing area (residence) and period of stay away from home; income was measured in terms of catch per day and position in the fishery activity; remittance was defined by what type of assets and hard cash relatives who were staying outside their homes sent to relatives. Farming was measured in terms of the various horticultural activities (*Sukuma wiki*, tomatoes and onions being grown by households). Pictorials were used as part of evidence and observation on the various activities that were being undertaken by households as coping strategies. Quantitative analysis involved simple descriptive statistics frequencies and mean. The results were presented in form of graphs, charts and tables, while qualitative analysis involved thematic approach and results presented in form of statements, narratives and quotations.

IV. DISCUSSION

The paper discusses results based on the household coping strategies that were indicated in the study. These include: income, status in fishery, horticulture activities, migration, remittance, fruit vending and cold storage.

4.1. Income

Income streams are the indicators of household coping strategies. These show the diversification mechanisms that households adopt to supplement their previous fishing livelihoods. Fishing provides many activities which are characterized by various income opportunities. These provide sources of survival that support daily patterns of earning a livelihood. Each activity produces its own income range. For instance, some activities like fish marketing attracts hire profit margins compared to scaling or drying. The actual fisher is also more likely to earn more at the landing site, especially when the fish is bought. The study also revealed that income levels depended on the fish species that was being caught. Nile perch was usually bought by exporters or processing industries and had relatively better returns. Tilapia was a rare species that was locally consumed both at household levels as well as in most of the available restaurants at the beaches and some urban centers. It was an attractive species and fetched higher than tilapia in terms of real income. The incomes of

households varied with seasons. There were high seasons which were basically months that fishers got better catches. There were low seasons when incomes were definitely unfavorable, these were the typical months when many households opted for other supplementary activities for survival. Results presented in Figure 1 show the income levels of households that were studied.

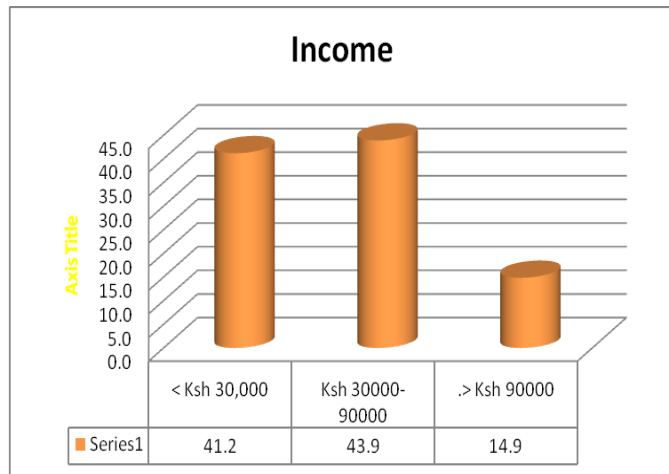


Figure 1. Income levels of respondents

The present study found out that the household income levels of fishing households varied. Most of the respondents (43.9%) indicated that their household incomes fell between USD 300 to 900 per year. Focus group discussions indicated that this was a drop in overall household income compared to previous years in mid 1990s. It was noticed that only few rich households who could afford the required gear (advanced type in terms of power engine and net type) received about 14.9%. These fishermen could go far off in the fishing zones and definitely got better catches than the ordinary small-scale fishermen. Technological advancement was a coping strategy that some fishing households adopted in order to increase incomes. However, for those households which could not cope, it was an opportunity to drift to other income activities not necessarily fishing. These findings conform with those arrived at by Geheb (1997), that fishing households tend to adopt alternative livelihood sources when the main stream activity declines in terms of earnings.

4.2. Position in the Fishery

The study set to examine the status of individuals in the fishery value chain to ascertain the income streams. The household income of individuals also varied with ones' status or position in the fishery. Fishing as an extractive activity, involves so many activities and players. These activities attract different incentives. Information displayed in Figure 2 show various positions that are occupied by various individuals in the fishing activity.

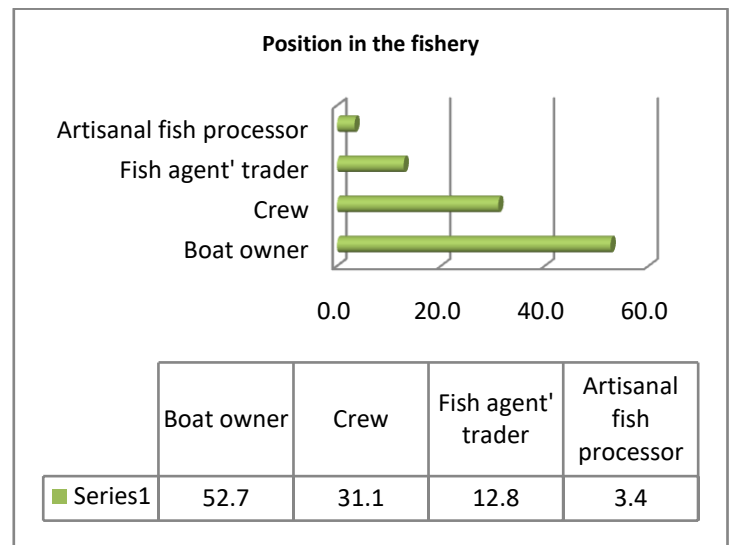


Figure2. Position in the fishery sector

The study found out that fishermen occupied different roles in the fishery value chain. The following were the main positions held by individuals: boat owners, net owners, repairers, crews and processors. Findings indicate that boat owners (52.7%) occupied a superior status and also benefited most from fishing in terms of sharing profits, coincidentally, it was stated that most of the boat owners also doubled as net owners. Hence, they accrued the biggest share. Fishing crew (*Amaal*) were about 31.1%, and were mainly fishers in the beaches. Fish processing is a low-status activity and is also engendered. The study observed that most of those who engaged in fish processing were mostly women and comprised of only about 3.4%. The findings concur with those arrived at in a study by Kleiber, et al. (2014) that gender and role are strong factors usually observed in the fishery value chain because it determines what an individual does and the distribution of earnings in the fishing activity. This suggests some power dynamics exist in the fishery sector.

4.3. Horticulture Practice

Small-scale fishing households oscillate between fishing and farming. The study established that this was the tradition and was observed strictly by most of the livelihoods. It was explained, they did this as a way of maintaining a continuous flow of food in the household. The activities also varied with seasons. For instance, some fishing households reverted to serious cultivation of land when there was a drop in fish catches. However, when drought set in or the catch improved, they quickly went back to fishing again. Confessions obtained from oral interviews conducted in the field reveal that there were isolated households which had generally relied on subsistence crop growing and livestock keeping traditionally. Results obtained from households show that the activities were alternated throughout the year depending on the seasonal variations.



Figure 3. A small-scale farmer undertaking horticultural activity in Kendu-Bay beach

Livelihood coping strategies of households were also determined by access to land. Most of the households who had land along the lakeshores engaged in horticultural activities such as growing “*Sukuma wiki*,” onions and tomatoes. In some instances, they grew cassavas and tomatoes which they sold to local residents and a few of which they sold in the local market centers located along the beaches for income. In one of the Focus group Discussions, one participant claimed: “*our crops have saved us a lot, especially now that fish has declined, there is very minimal income for us, yet life has to continue, some of us sell a few livestock that we keep to pay fees for the children.*”

Personal observations (Fig. 3) reveal some fishermen practiced horticulture after coming from a fishing expedition in the morning, while others engaged in farming in the evening. They alternated between activities for survival. The results suggest that for risk averse fishermen undertook many activities to cushion them from declining fish incomes.

Table 1: Dominant livelihood activities of respondents

		Frequency	Percent
	Unemployed	29	19.0
	Fishing /Farming	69	46.9
	Business (hotel, kiosk, mpesa)	12	8.1
	Total	148	100.0

The study establishes that many households were engaged in fishing and farming (46.9%) for their daily survival. Some households who lived near the beaches also operated various businesses such as kiosks, mpesa and small hotels. However, there were those individuals who were unemployed (19.0%) and kept on hopping from one activity to another depending on availability.

4.4 Migration

The study set to examine the movement of fishing households in the area to understand their adjustment to existing survival. The results indicate that some fishermen moved from one fishing zone to another in search of good catches. The movement was cyclical throughout the year and in most of the cases depending on the type of fish species that was predominant. While some members of a household migrated with their families, others moved alone with the rest of the households remaining behind to take care of the homestead. There were those who moved to nearby urban areas in search of employment. This category repatriated money to the family back home either to help their relatives and or invested in other assets. The remittances were very important as they cushioned the rest of the family back home.

Fishing households also engaged in other activities that were not in existence before. For example, after the decline in fish abundance, some fishermen resorted to water vending, sand harvesting, *bodaboda* transport and wage employment. These were forms of livelihood diversification that helped people to secure their household livelihoods.



Figure 4. A man vending water using a bicycle

Some individuals used motorcycles and donkey carts to sell water to households and construction sites in the neighborhoods. Participants in the Focus group discussions reported that most of those engaged in water vending were young energetic people who were working as fishers along the beaches.

V. CONCLUSION

The study delved into understanding the livelihood coping strategies that artisanal fishing households were engaged in. The research indicates that fishing households were adopting different survival strategies some of which were not sustainable but supplemented their incomes during their bad days. Overall income levels from fishing had greatly reduced

as a result of fish decline in the lake. The coping mechanisms varied across households. Generally, the study establishes that some households were still dependent on fishing for better part of their livelihood. Households integrated fishing with farming to subsidize their delicate livelihood sources.

The study recommends that fishing households be sensitized on adopting sustainable livelihood sources that take cognizance of environment. Therefore, the government to initiate programs that aim at elevating the livelihood standards of fishing households living along the shores of Lake Victoria.

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