



## Impact of Covid-19 Pandemic on Fish Sales in Aboabo Market, Tamale Metropolis

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**Abstract:** This study was to explore the impact of Covid-19 pandemic on fish sales in the Aboabo Market in the Tamale Metropolis. The data were collected from 57 fish sellers who play their trade in the Aboabo market using multi-stage sampling. Paired T-test was used to analyse the earnings of fish sellers before and during the Covid-19 pandemic. The results showed that 38.6, 35.1, 3.5 and 22.8% of respondents sold smoked-fish, fresh-fish, salted fish and frozen fish, respectively. The quantity of fish sold by majority (61.4%) of the fish sellers decreases during the pandemic compared to before the pandemic. A majority (57.9%) of fish sellers had their earnings reduced during the Covid-19 pandemic compared to before the pandemic (47.4%). The Covid-19 pandemic has affected the quantity of fish sold and have reduced the income of fish sellers in the Tamale Metropolis. This could compound issues of food security and livelihood of the fish sellers. The study recommends Philanthropies and donor agencies to design a financial support for the fish sellers to cushion them to resist against future pandemic and facilitate smooth distribution of fish across markets.

## INTRODUCTION

Fish provides up to 60% of animal protein and accounts for 22.4% of family food expenditures and 25.7% of poor households income allocation<sup>[1,2,3]</sup>. The per capita fish consumption was 28kg in 2014 which is above world and Africa average of 18.9 and 10.5 kg, respectively, but however, the per capita consumption decline to 21 kg in 2020<sup>[2,4]</sup>. In 2018, Ghana's annual domestic fish consumption was estimated at 775, 000 mt with 370, 000 mt being imported in to the country costing USD\$311-373 million in 2018<sup>[4]</sup>. Marketing challenges includes poor processing, insufficient storage, lack/high transportation cost, lack of ready market, power supply and poor pricing<sup>[5]</sup>. Regardless, the spread of the

COVID-19 epidemic came to exacerbate the problems with unanticipated consequences for Ghana's health, social and economic sectors- jobs, incomes and food security.

Low sales, reduced quantity produced, rising costs and rising prices affecting earning capacity of fish sellers and purchasing power of consumers. The loss of demand has led to reduction and more volatile prices especially in Mediterranean fisheries by (20-70%). Production of fish decrease by 50% in French fisheries. Even though the pandemic is not over, assessing its impact on fish sales will provide a baseline information for government, other researchers, policymakers and other stakeholders in making informed decisions to improve the quality and resilience of the fish market.

## MATERIALS AND METHODS

**The global status of fish production:** Total worldwide capture fisheries output reached 96.4 million tonnes in 2018, the greatest amount ever recorded, representing a 5.4% rise over the previous three years. The increase in 2018 was primarily driven by marine capture fisheries, with output from marine sector increasing from 81.2 million tonnes in 2017 to 84.4 million tonnes in 2018<sup>[6]</sup>.

**State of fish production in africa:** Largely, the production system is dominated by pond system with an average yield estimated at 500 kg/ha/year, with the pond ranges from less than a 100 to more than 10,000 kg/ha/year (Moehl). Out of the top ten aquaculture producers in Africa, Egypt, Nigeria, Uganda and Ghana contribute about 93% of total regional production output.

**State of fish production in ghana:** Ghana now produces 500,000 metric tonnes of fish per year from its maritime fisheries, inland waterways and aquaculture. The fishing sector provides a livelihood for 2.6 million Ghana-ians, accounting for 10% of the country's population. Lake Volta is Ghana's is the single most important source of inland fish capture, hosting around 140 fish species and providing a source of income for approximately 300,000 Ghanaians who reside in the lake's surroundings<sup>[3]</sup>.

Imports of fish have increased substantially in recent years in order to maintain per capita yearly consumption, reaching US\$373 million in 2013. As a result, the seafood trade deficit in 2013 increased from a US\$33 million surplus in 1997 to a US\$319 million deficit in 2013<sup>[3]</sup>. It is estimated that the fisheries, which are largely artisanal, use about 29,300 fishing vessels, more than half of which are powered by hand and employ over 250,000 fishermen<sup>[3]</sup>.

**Concept of fish trade:** Developed nations contributed around 80% of overall imports of fish products. Capture fisheries are leveling down, while aquaculture is increasing, influencing those sector's fish supply. The distribution chain, including the location and kind of processing operations, is continuously adapting to technological, communication and transportation advances. Freer commerce and liberalized markets also contribute to the sector's globalization. As a result, trade is more sensitive to changes in supply and demand characteristics at the global, regional and national levels. Consumer tastes and spending power, as well as demographic changes, influence demand for fish and fisheries goods (Kurien).

**Fish trade in the world:** The demand for fish on the worldwide market is so great that supply is far from being fully met. Frozen fish consumption is increasing at the

expense of canned fish and heat-processed goods. Economic growth in the developed countries that are the main outlets, as well as increased knowledge of consumers on nutritional value of fish, have contributed to the expansion of the fish trade resulting in higher prices for fishery products. The development of fish farming, on the other hand, has slowed price increases. Asia, which is the leader in fish farming largely contributed to price reductions. Prawn prices, for example, fell by 30% on the global market prior to the outbreak of viral infections in fishponds.

**Fish trade in africa:** Primarily, men are mostly involved in fishing in Africa, while women are primarily, but not exclusively, more actively involved in downstream activities such as post-harvest handling, selling fresh fish, processing, storage, packaging and marketing. These women account for 58% of the actors in the seafood value chain's post-harvest activities. Smoked fish is an essential part of many African countries' daily meals and a critical source of revenue for many coastal communities. Small-scale fisheries processing is often characterized by intense smoking and drying processes mostly undertaken by women<sup>[7]</sup>.

**Fish trade in ghana:** The marine industry exports lobsters from the artisanal fleet as well as many other species from the semi-industrial and industrial subsectors, including the shrimp and tuna fleets. Ghana's main seafood exports are frozen tuna to Spain and Cote d'Ivoire. Diverse demersal species are also carried to Japan, while cuttlefish, crabs and lobsters are shipped to China. Tuna sales account for 14% of Ghana's Non-Traditional Exports (NTEs), making it the single most important contributor after horticulture<sup>[3]</sup>.

Fish imports and exports are tightly controlled and require a permit from the Ministry of Fisheries and Aquaculture Development (MOFAD). Imports of farmed fish, on the other hand, are prohibited in order to encourage domestic production. Imports of fish are high during the lean local fish season, which runs from November to May, but decline during the fish boom time, which runs from July to September. Fish imports totaled US\$ 108 million in 2010, while fish exports produced US\$ 65 million over the same period<sup>[3]</sup>.

**Marketing and distribution:** In the Ghanaian fisheries sector, two distinct forms of marketing may be found. They are the wholesalers and the retailers. Wholesalers are large processors and distributors. This group of women generally works directly with boat owners or is a boat owner her-self. They have direct access to fish, which they process and sell to consumers. These large-scale merchants typically travel great distances to larger towns with larger markets, such as Kumasi and Techiman,

to distribute items to retail customers. The majority of end consumers buy straight from merchants. Retailers typically purchase on credit from wholesalers and make payments when the items are sold.

**Marketing and trading of fish products in Ghana:** Small pelagic species are generally marketed in smoked form, whereas demersal species are sold in fresh at landing beaches, fish markets or refrigerated shops<sup>[3]</sup>. During the primary fishing season, consumption of fish, particularly fresh fish, rises in coastal and interior locations. During the lean season, fish is primarily marketed and purchased for food in smoked form from local sources and frozen form from external imports. Sardinellas, ancho-vies and mackerels are quite inexpensive and are eaten by the majority of Ghanaians. Dried anchovies are primarily marketed and consumed by the poor and isolated rural areas. Some ethnic groups preferred some particular varieties of fish for everyday consumption as well as during special occasions<sup>[4]</sup>.

**Fish supply and consumption:** For household consumption, fish is commonly obtained fresh, smoked-salted, dried, salted and dried, canned, fried, or grilled. In addition to human consumption, some fish, such as anchovies and tuna, are used for fishmeal. Currently, the sector alone consumed about 41% of the annual fish production, with the remainder being imported. To meet the yearly per capita consumption demand of fish per person, the importation of fish would have to be more than doubled.

**Challenges of fish marketing in Ghana:** Ghana's fish stocks, both marine and freshwater, have been declining throughout the years. The problems of the fisheries sector are diverse, ranging from inadequate infrastructure, such as modern landing sites, which may lead to high postharvest losses, inappropriate and technologically limited fishing craft and gear, insufficient fish processing and storage facilities, poor regulatory framework enforcement and insufficient monitoring and surveillance. The persistent reduction in quantity of fisheries catch in Ghana leads to decreasing economic benefit to the fishers.

**State of global fisheries and covid-19:** The global fish and seafood industry is one of the world's largest and most heavily interconnected marketplaces, with vast supply chains and hundreds of participants. The worldwide fish and sea-food industry is expected to grow to US\$194 billion by 2026, up from US\$159 billion in 2020. The worldwide seafood and fish market's breadth and complexity demonstrate the importance of fisheries to an economy and the necessity to analyze the influence of COVID-19 on fish sales. A significant impact of COVID-19 on fisheries globally is seen in Myanmar as a greater percentage of fish wholesalers stopped their opera-

tions due to ordered curfews and fall in prices resulting from low demand and leading high cost of production in harvested stocks<sup>[7]</sup>.

Small-scale fishing industries in Namibia, for example, have been completely shut down due to their little contribution to the country's economy. Changes in the market, such as decreased demand, decreasing prices, shipping prohibitions and so on, have impacted the livelihoods of those working in small-scale fishing.

## RESULTS AND DISCUSSION

**Study area:** A three-month study was conducted between April, 2020 and June, 2020 at the Aboabo Market located at latitude 9°24'10.8" N and 0°50'.0" W in the Tamale Metropolis Fig. 1.

**Sampling techniques:** Multistage sampling was used to conduct the study. Purposive sampling was done to select forms of fish sellers and random sampling was used to select 57 participants with 15 respondents of each form of fish sellers for the study.

**Data collection:** Primary data was obtained through key informant interviews and questionnaires were used to solicit information on demographic factors, business information, sales information, key problems faced and other areas of interest. Secondary data was obtained through literature and other data sources Fig. 2.

**Analysis:** The data collected was inputted in MS Excel 2016 and exported to SPSS version 20.0 for descriptive



Fig. 1: Map of Aboabo Market, Tamale



Fig. 2: Primary data collection

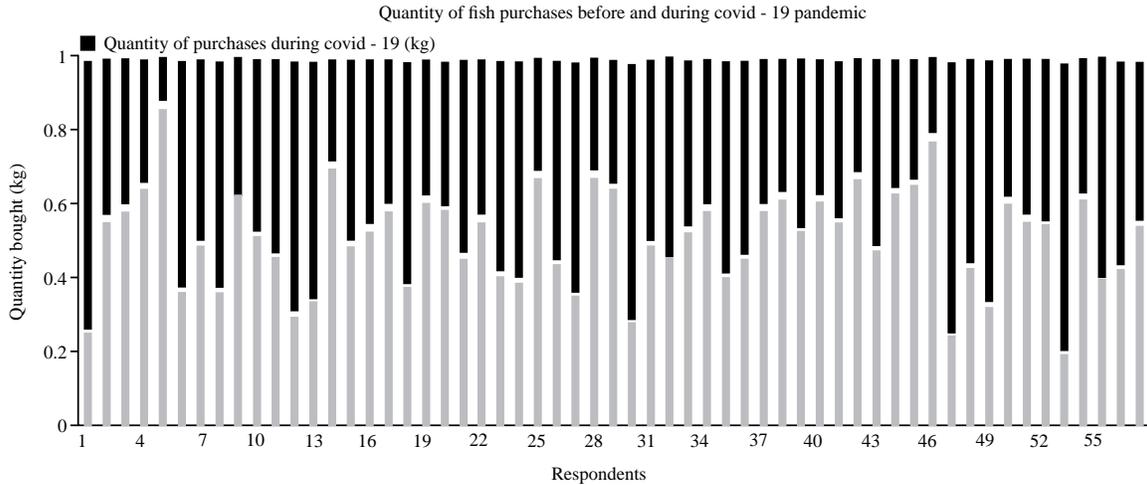


Fig. 3: Quantity of fish purchase in Aboabo Market, Tamale

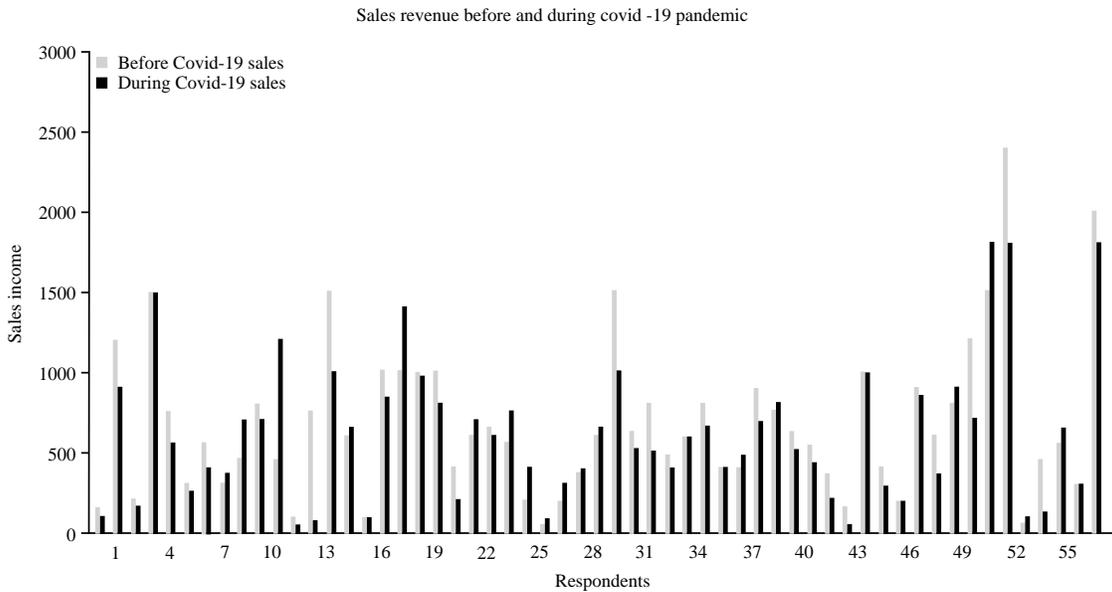


Fig. 4: Earning from sales before and during the pandemic

statistical analysis on the socio- economic factors of the participants. Data on quantity of fish purchase and sales revenue of participants were analysed using T-test at an alpha value of 0.05. The results were presented in means and standard errors, percentages, Table 1-6 and Fig. 1-4.

The study revealed that females outnumbered males in the fish processing business value chain. This confirms to the study by Onumah *et al.*<sup>[1]</sup> (CRC4<sup>4</sup>; Cheke<sup>8</sup>). However, the age and other factor did not have any effect on the marketing or sales ability of the sellers which contradict the study by Onumah *et al.*<sup>[1]</sup> found that demographic factors have positive and significant influence on fish sales.

Majority of fish sellers had reduction in quantity of fish purchase/bought before and during Covid-19 Fig. 3.

There was no significant difference between fish bought before Covid-19 and fish bought during Covid-19 Pandemic. This was similar to the study by Diao *et al.*<sup>7</sup> who reported a greater percentage of fish sellers stopped their operations due to ordered curfews and fall in prices resulting from low demand leading to high cost of production in harvested stocks.

However, fish transportation delays, high preservation and storage costs, reduction in quantity supplied could also affect fish purchases<sup>[5,8]</sup>.

Table 1: Demography of participants in aboabo market

| Gender | Age distribution |           |      |           | Household size |      |           |
|--------|------------------|-----------|------|-----------|----------------|------|-----------|
|        | Sex              | Frequency | Rang | Frequency | Percentage     | Size | Frequency |
| Male   | 19               | <20       | 9    | 15.8      | 1-5            | 30   | 52.6      |
| Female | 38               | 20-30     | 31   | 54.4      | 6-10           | 9    | 15.8      |
|        |                  | 31-40     | 9    | 15.8      | >10            | 18   | 31.6      |
|        |                  | 41-50     | 8    | 14.0      |                |      |           |
| Total  | 57               | Total     | 57   | 100.0     |                | 57   | 100.0     |

Table 2: Forms of fish sold in Aboabo Market, Tamale

| Forms                 | Frequency | Percent |
|-----------------------|-----------|---------|
| Smoked - fish sales   | 22        | 38.6    |
| Fresh - fish sales    | 20        | 35.1    |
| Salt/Dried fish sales | 2         | 3.5     |
| Frozen fish sales     | 13        | 22.8    |
| Total                 | 57        | 100.0   |

Table 3: Quantity of fish bought and sold before and during the pandemic

|           | Number | Bought (%) | Number | Sold (%) |
|-----------|--------|------------|--------|----------|
| Reduced   | 31     | 54.39      | 33     | 57.90    |
| No-change | 3      | 5.26       | 1      | 1.75     |
| Increase  | 23     | 40.35      | 23     | 40.35    |
| Total     | 57     | 100.00     | 57     | 100.00   |

Table 4: Statistical analysis of fish bought before and during

| Parameters            | Mean and standard error/Pearson correlation |  | p-value |
|-----------------------|---|--|---------|
|                       |   |  |         |
| Paired sampled t-test | 21.16±39.21                                 |  | 0.592   |
| Pearson chi-square    | 1191.289 <sup>a</sup>                       |  | 0.013   |

Table 5: Earning from sales before and during the pandemic

| Parameters | Number | Respondents (%) |
|------------|--------|-----------------|
| Increase   | 17     | 29.82           |
| Reduced    | 33     | 57.90           |
| No-change  | 7      | 12.28           |
| Total      | 57     | 100.00          |

Table 6: T-test analysis of sales revenue before and during COVID-19 pandemic

| Parameters         | Mean and standard error/Pearson correlation |  | p-value |
|--------------------|---|--|---------|
|                    |   |  |         |
| T-test             | 64.61±30.92                                 |  | 0.038   |
| Pearson chi-square | 1051.808 <sup>a</sup>                       |  | 0.013   |

Majority of the fish sellers had their revenue decline by 2-89% Fig. 4.

There was significant difference between fish sales revenue before Covid-19 and during Covid-19 Pandemic. About 57.90% of respondents reported a decrease in sales during the pandemic compared to before the Covid-19 pandemic. This was similar to the study by Bennett<sup>[9]</sup> reported that pandemic have detrimental influence on sales through limitation on purchasing power of consumers.

However, reduction in quantity supplied, power outages and a lack of access to financing could be other influencing factors which conform to what is reported by Asogwa and Asogwa<sup>[5]</sup> and Cheke and Abiodun<sup>[8]</sup>.

## CONCLUSION

Marketing of fish is a very lucrative business in Aboabo Market, Tamale and would be much profitable if well-managed and sustained. It can be concluded from the study that the pandemic had impact on fish marketing or sales since it was observed that fish sellers had changes in their earnings before and during the pandemic. This could compound issues of food security and livelihood of the fish sellers.

## RECOMMENDATION

Further studies must be carried out on fish sales to widen the participants in the Aboabo in the Tamale Metropolis. Government should provide fish sellers with not only financial assistance but also education on other ways to preserve fish. Also, studies should be carried out during the pandemic to include other prevailing problems of fish sellers in the Aboabo market and expand its scope to other larger markets in the Metropolis to disaggregate the impact of the pandemic and the prevailing challenges.

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