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SUSTAINABLE FISHERIES MANAGEMENT PROJECT (SFMP)

Market Segmentation Study Report



MAY 2016

THE
UNIVERSITY
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GRADUATE SCHOOL
OF OCEANOGRAPHY



SNV SMART
DEVELOPMENT
WORKS

This publication is available electronically on the Coastal Resources Center's website at http://www.crc.uri.edu/projects_page/ghanasfmp/

For more information on the Ghana Sustainable Fisheries Management Project, contact:

USAID/Ghana Sustainable Fisheries Management Project
Coastal Resources Center
Graduate School of Oceanography
University of Rhode Island
220 South Ferry Rd.
Narragansett, RI 02882 USA
Tel: 401-874-6224 Fax: 401-874-6920 Email: info@crc.uri.edu

Citation: Amaning, R. (2016). Market Segmentation Study Report. The USAID/Ghana Sustainable Fisheries Management Project (SFMP). Narragansett, RI: Coastal Resources Center, Graduate School of Oceanography, University of Rhode Island. GH2014_ACT079_SNV 70 pp.

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Prepared for USAID/Ghana under Cooperative Agreement (AID-641-A-15-00001), awarded on October 22, 2014 to the University of Rhode Island, and entitled the USAID/Ghana Sustainable Fisheries Management Project (SFMP).

This document is made possible by the support of the American People through the United States Agency for International Development (USAID). The views expressed and opinions contained in this report are those of the SFMP team and are not intended as statements of policy of either USAID or the cooperating organizations. As such, the contents of this report are the sole responsibility of the SFMP team and do not necessarily reflect the views of USAID or the United States Government.

Cover photo: Fish Processor at Akobra (Credit: Richard Amaning)

Detailed Partner Contact Information:

USAID/Ghana Sustainable Fisheries Management Project (SFMP)
10 Obodai St., Mempeasem, East Legon, Accra, Ghana

Telephone: +233 0302 542497 Fax: +233 0302 542498

Maurice Knight	Chief of Party maurice@crc.uri.edu
Kofi Agbogah	Senior Fisheries Advisor kagbogah@henmpoano.org
Nii Odenkey Abbey	Communications Officer nii.sfmp@crcuri.org
Bakari Nyari	Monitoring and Evaluation Specialist hardinyari.sfmp@crcuri.org
Brian Crawford	Project Manager, CRC brian@crc.uri.edu
Justice Odoi	USAID Administrative Officer Representative Jodoi@usaid.gov

Kofi.Agbogah
kagbogah@henmpoano.org
Stephen Kankam
skankam@henmpoano.org
Hen Mpoano
38 J. Cross Cole St. Windy Ridge
Takoradi, Ghana
233 312 020 701

Andre de Jager
adejager@snvworld.org
SNV Netherlands Development Organisation
#161, 10 Maseru Road,
E. Legon, Accra, Ghana
233 30 701 2440

Donkris Mevuta
Kyei Yamoah
info@fonghana.org
Friends of the Nation
Parks and Gardens
Adiembra-Sekondi, Ghana
233 312 046 180

Peter Owusu Donkor
Spatial Solutions
powusu-donkor@spatialdimension.net
#3 Third Nautical Close,
Nungua, Accra, Ghana
233 020 463 4488

Thomas Buck
tom@ssg-advisors.com
SSG Advisors
182 Main Street
Burlington, VT 05401
(802) 735-1162

Victoria C. Koomson
cewefia@gmail.com
CEWEFIA
B342 Bronyibima Estate
Elmina, Ghana
233 024 427 8377

Lydia Sasu
daawomen@daawomen.org
DAA
Darkuman Junction, Kaneshie Odokor
Highway
Accra, Ghana
233 302 315894

Gifty Asmah
giftyasmah@Daasgift.org
Daasgift Quality Foundation
Headmaster residence, Sekondi College
Sekondi, Western Region, Ghana
233 243 326 178

For additional information on partner activities:

CRC/URI:	http://www.crc.uri.edu
CEWEFIA:	http://cewefia.weebly.com/
DAA:	http://womenthrive.org/development-action-association-daa
Daasgift:	https://www.facebook.com/pages/Daasgift-Quality-Foundation-ENGO/135372649846101
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Hen Mpoano:	http://www.henmpoano.org
SNV:	http://www.snvworld.org/en/countries/ghana
SSG Advisors:	http://ssg-advisors.com/
Spatial Solutions:	http://www.spatialsolutions.co/id1.html

ACRONYMS

CCM	Centre for Coastal Management
CEWEFIA	Central and Western Region Fishmongers Improvement Association
CRC	Coastal Resource Center
CSLP	Coastal Sustainable Landscape Project
DAA	Development Action Association
DFAS	Department of Fisheries and Aquatic Science
DMFS	Department of Marine Fisheries Sciences
DQF	Daasgift Quality Foundation
FtF	Feed the Future
GIFA	Ghana Inshore Fishermen's Association
GIS	Geographic Information System
GNCFC	Ghana National Canoe Fishermen's Council
HM	Hen Mpoano
ICFG	Integrated Coastal and Fisheries Governance
MESTI	Ministry of Environment Science and Technology
MOFAD	Ministry of Fisheries and Aquaculture Development
NDPC	National Development Planning Commission
NGOs	Non-Governmental Organizations
SFMP	Sustainable Fisheries Management Project
SMEs	Small and Medium Enterprises
SNV	Netherlands Development Organization
SSG	SSG Advisors
STWG	Scientific and Technical Working Group
UCC	University of Cape Coast
URI	University of Rhode Island
USAID	United States Agency for International Development
WARFP	West Africa Regional Fisheries Development Program

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EXECUTIVE SUMMARY

The Sustainable Fisheries Management Project (SFMP) is a five year project funded by the United States Agency for International Development (USAID) and has committed approximately \$24 million US Dollars to the implementation of the project. The objective of this five-year project (October 2014-October 2019) is to rebuild marine fisheries stocks and catches through adoption of responsible fishing practices. The project contributes to the Government of Ghana's fisheries development objectives and USAID's Feed the Future Initiative.

The purpose of this document is to provide a clear picture of the socio-economic conditions in which stove users operate, their needs, and to provide information to help guide project activities. The study adopts socio-economic status as, an economic and sociological combined total measure of a person's work experience and of an individual's or family's economic and social position in relation to others, based on income, education, and occupation. The segmentation study assessed the socio-economic conditions in relation to the work experience of the processors, their income levels and the level of education. The study among other things also assessed the nature of the operations of the fish processing business and also assets of the processors.

Purpose of the Study

The purpose of the segmentation study is to clearly identify the socio-economic conditions under which the Smoked Fish Processors operate (Stove Users), their needs and provide a clear understanding of the nature of their businesses and operations. The study is also expected to clearly identify key characteristics of the various segments of Smoked Fish Processors in the Central and Western Regions.

Study Methodology

The segmentation study employed both non-probability and some aspects of probability sampling techniques. A total sample size of 160 respondents was utilized for the segmentation study. The sample size was purposefully determined on the basis of availability of funds and resources for the entire study. A total of 8 communities were also selected from the Central and Western Regions based on where the project had post-harvest interventions. Five (5) communities were in the Central Region and three (3) communities in the Western Region. Within each community, a total of 20 Smoked Fish Processors were randomly selected for one-on-one interviews.

The random selection of the Smoked Fish Processors was carried out at the community level using the table of random numbers generated from a sampling frame (list of fish processors available at the time of visit).

Structured questionnaires were developed and used for the household level personal interviews with the Smoked Fish Processors. Key informant interviews and focus group discussion sessions were also held with selected groups in the two regions. The key informants interviewed were the Chief Fishermen and the Konkonhene/Hemaa in the following communities; Ankobra, Axim, Shama, Elmina, Anlo Beach, Apam, Moree and Winneba.

The focus group discussion sessions were made up of discussants from implementing partner Institutions such as DAA, DASGIFT and CEWEFIA. The primary discussants of the focus group discussions were drawn from; NAFPTA, Smoked Fish Processors, Chief Fishermen and Konkonhene/Hemaa.

Field data collection was undertaken using tablets and hard copies of printed questionnaires. A computerized based database was developed for the data entry using Microsoft Access platform and analysis conducted using statistical tools and Microsoft Excel.

Key Results from the Study

1. Demographic Characteristics of the Smoked Fish Processors

A total of 160 respondents were interviewed. Of the total interviewed, the female composition constituted 99%. In all the communities visited, the female Fish Smoke Processor population constituted a greater proportion.

The age structure of the Smoked Fish Processors is of an adult population as majority of them fell within the age category 41 years and above representing 70%. However, the youthful population engaged in smoked fish processing constituted 30%.

Results indicate that more than half of the processors had no form of schooling (58%) whereas 21% had attained middle school/JHS level of education. Primary education level constituted 20% and SHS constituted 1%.

Results indicate that majority of the Smoked Fish Processors had no form of schooling (58%) whereas 21% had attained middle school/JHS level of education. Primary and Senior High School education also constituted 20% and 1% respectively.

2. The Nature of Smoked Fish Processor's Business

The results indicate that majority (78%) of the Smoked Fish Processors have been engaged in the processing business for a longer period not less than 13 years. This implies that 8 in every 10 processor have been engaged in the business for more than 13 years.

Results from the segmentation study indicate that, majority of the respondents are solely Fish Processors (61%) where as 39% are both Fish Processors and Traders. The results also indicate that majority of the processors are women (99%).

Overall, a lower percentage of the Smoked Fish Processors are engaged in processing activities all year round (12 months) representing 45%. Less than half of the processors are engaged in the smoked fish processing business all year round. The seasonal fluctuation influences the processing activities as during the lean season majority of the processors stay out of business. Some also resort to other diversified income generating activities outside of the fishing industry.

Smoked Fish Processors with 1 - 3 dependents averagely processes 1,893 pans of fish per week during the bumper season. The average production increases as the number of dependents also increases. Smoked Fish Processors with 4 – 6 dependents also processes 5,029 pans of fish per week on the average during the bumper season. Majority of the smoked fish processors convert their dependents as helping hands to assist with processing activities and are able to process large quantities due to the helping hands.

3. Fish Smoking Stoves

Ownership of fish smoking stove by the Smoked Fish Processors is impressively on the higher side (98%) overall. On the regional level, 97% of the Smoked Fish Processors in the Central Region own a fish smoking stoves whereas the Western Region is 100%.

The predominant type of fish smoking stove used by the Smoked Fish Processors is the Chorkor stove (88%) followed by the traditional/Mud stove (41%). 6% and 1% use Morrison and Frismo/Kosmos stoves respectively.

The results indicate that majority (74%) of the processors use the double unit size of stoves for their fish smoking activities. This implies that 7 out of every 10 processor use the double unit fish smoking stove.

Results from the study indicate that the Smoked Fish Processors ranked the capacity of the stove as the number one factor they considered in the choice of stove. Availability of the technology was ranked as the second factor. Cost of the stove was ranked as the third factor and design of the stove was ranked as the fourth factor. Durability of the stove was ranked as the fifth and fuel consumption ranked as the sixth factor considered in the choice of a stove. Emission of fuel and mobility of the stove was ranked as the seventh and eighth factors respectively.

The study results indicate that, the average cost of constructing a traditional/mud stove is GHC79.03 and that of chorkor stove is GHC152.50 excluding the processing trays. Of those with the Morrison stove, the average cost of building the stove is estimated as GHC 1,425.00 which includes 8 processing trays.

The average number of stoves used by the Smoked Fish Processors at a go during the bumper season for the single unit stove is 4. The double unit used at a go during the bumper season is 3 and the triple unit used is 1. The average number of the quadruple unit used at a go during the bumper season by the processors is 3.

Results indicate that, during the lean season the average number of stove used by the processors per day for the single unit stove reduced by 50% compared to the bumper season. During the lean season, the number of processing in a week reduce from 5 days per week to 3 days per week according to discussants of focus group discussions.

4. Production Capacity and Storage

The study results indicate that the total quantity of smoked fish processed in a week during the bumper season in pans was 11,152 whereas in the lean season, the total quantity of fish processed is 6,359 pans.

A total of 48,905 trays of fish is processed by the Smoked Fish Processors per week during the bumper season in both Central and Western Regions.

Results indicate that the married processors produced large volumes of smoked fish compared to the divorced, widowed and single processors. The married women process averagely 7,427 pans of fish per week the unmarried process averagely 3,725 pans per week during the bumper season.

Fish processors with no form of education produced less volume of fish compared to those with some level of education. The total volume produced per week in pans by fish processors with no schooling during the bumper season constitute 47.6% for Central Region and 43.9% for the Western Region.

The predominant types of fish stock processed by the Smoked Fish Processors were Sardinella (93%) and Anchovy (72%). Other type of fish stock processed also include Barracuda (54%), Tuna (46%), Horse Markrel (31%), Red Fish (31%), Shark (4%) and Shrimps (1%).

Results from the study indicate that 49% of the Smoked Fish Processors don't have appropriate storage facilities for storing the processed smoke fish.

5. Other Economic livelihood Activities undertaken outside the fishing industry

Results from the study indicate that 36% of the processors are engaged in other economic livelihood activities outside of the fishing industry. However, results also indicate that less

than half (41%) of the processors are engaged in other livelihood activities within the fishing industry.

Results indicate that, for the proportion of Smoked Fish Processors engaged in other economic livelihood activities outside of the fishing industry, petty trading constitute 48.1%, farming constitute 9.3%, Agro processing 7.4%, livestock rearing 4%, food vendor 22.2% and vocational activities 9.3%.

6. Business Capital

The main source of start-up capital of the Smoked Fish Processors was from their personal savings (53%). More than half of the Smoke Processors raised their initial business start-up capital through personal savings.

A significant proportion of the Smoked Fish Processors also raised their initial business start-up by purchasing the fish stock on credit and later paid back their creditors. Presently, the practice of purchasing fish stock on credit is predominant among the micro and small processors has majority do not have the requisite working capital to purchase their inputs for fish smoking processing activities.

A higher proportion (61.9%) of the processors have working capital less than GHC5,000.00. This implies that for every 6 out of 10 processors have working capital for smoked fish processing activities less than GHC5,000.00 (USD1,315).

7. Savings and Micro-credit

The results indicate that majority (62.5%) of the smoked fish processors have a savings account. This indicates that 6 in every 10 Fish Smoke Processor operate a savings account with a Financial Institution.

The proportions that operate savings account with Universal Banks constitute 7.3%, those that operate savings account with microfinance companies constitute 39.0% and Rural/Community Banks constitute 36.6%. Majority of the Smoked Fish Processors save with 1st and 2nd Tier Microfinance Finance Institutions in Ghana.

A greater proportion (61.9%) of the Smoked Fish Processors have never taken a loan facility from a Financial Institution in the country.

Results from the study indicate that 64.4% of the Smoked Fish Processors uses family members as labor for the processing activities. Significant proportions (58.1%) of the Smoked Fish Processors use paid laborers as helping hands for their processing activities.

8. Labor/Helping hands

Results from the study indicate that, of the proportion of Smoked Fish Processors who engaged the services of paid laborers, 52.7% of the processors hired 1 – 3 paid laborers. 40.9% of the processors hired 4 -6 paid laborers and 1.1% hired 7 – 10 paid laborers. A significant proportion of the Smoked Fish Processors hired 10 or more paid laborers.

Results from table 35 indicate that, majority (51.6%) of the Smoked Fish Processors pay their hired laborers on daily basis. More than half of the processors pay their hired laborers on daily basis.

A total of 551 female labor force is engaged by 149 Smoked Fish Processors giving an average of 4 female helping hands per processor. A total of 58 male labor force is engaged by 25 Smoked Fish Processors giving an average of 2 male helping hands per processor.

9. Marketing and Sales

Results from the study indicate that, the Smoked Fish Processors sell their processed fish to bulk aggregators/buyers, friends, other fish processors and any available customer. A greater

proportion of the processors sell their processed fish to any available customer (66.9%). However, in the Western Region a greater proportion of the processors sell their processed fish to bulk aggregators/buyers compared to processors in the Central Region.

10. Business Needs of the Fish Processors

The business needs identified by the Smoked Fish Processors during the focus group discussion sessions and one-on-one interviews were as follows:

- Business working capital loans with lower interest rate and flexible repayment terms.
- Processing sheds to harness their processing activities.
- Improved fish smoking stoves to complement the chorkor stoves as it will reduce the expenditure on fuel wood and reduce the level of smoke inhaled.
- Canoe and other fishing boat accessories including outboard motors
- Pans, processing trays and Processing mats
- Refrigerator for keeping the fish fresh
- Wire mesh to replace the older and thorn ones on the processing trays
- Small business management training especially on records keeping and sales
- Technical training on modern fish smoke processing techniques and storage

Conclusion and Recommendations

The classification of the processors heavily depends on their asset base, employee and working capital. Although the national standard for classification of business scale is by the number of employees and asset base, using this as a benchmark for categorizing the processors would under rate most of the large and medium processors. However using a combination of the number of employees, working capital and the asset base of the processors would provide a true reflection of their business nature.

The segmentation study revealed that, the socio-economic conditions under which the processors operate is influenced by their income, education and access to financial services. Some of the processors operate the business as a family business that employs family members while others also resort to hire paid laborers who are not family members. The socio-cultural dynamics also greatly interplay in the business nature of the Smoke Fish Processors as some resort to traditional ways of running their businesses. Majority of the processors have been involved in the fish smoking processing for more than 13 years and have adopted to certain practices such as; storing the processed fish on the stove, use of traditional mud stove passed-on by parents, use of family members as helping hands as well as involving children under age 18 as helping hands.

There is the need to introduce new improved fish smoking stove technology that is capable of handling large size fish stock. Currently most of the processors who processes large size fish stock use the traditional/mud round stove. The processors are unable to smoke the large size fish using the chorkor because the trays do not have the capacity to handle the large fish stock. Those who tried using the trays had to replace the wire mesh on a continuously basis as the wire mesh easily gets thorn due to the weight and size of the fish. The processing trays should be redesigned taking into account the weight and size of the fish stock processed especially for the improved fish smoking stoves.

The main investment needs of the processors is working capital support. Majority of the processors identified working capital as their number one need followed by wire mesh to replace thorn ones, processing shed and trays. There is the need to create sustainable market linkages that would facilitate the provision of affordable and low interest rate working capital loans to the processors either through the Government or the private sector. Private sector

participation will be necessary to ensure provision of sustainable working capital for the processors.

Enforcement of good fishing practices is necessary to ensure sustainable livelihoods within the fishing industry in Ghana. Majority of the women along the coastal belt of Ghana heavily depend on fish processing as their major economic livelihood activity. Depletion of the fish stock through bad fishing practices would have a negative impact on the livelihoods of these women which would subsequently result in increased poverty levels. Government and development partners need to work together in promoting good fishing practices and enforce laws governing prohibited fishing practices by the Chinese and Ghanaian fishermen. The need to promote alternative livelihoods is necessary to reduce the over-reliance on fish processing activities along the coastal belt of Ghana.

Gender mainstreaming of the activities of the fish processors will be necessary to ensure sustainable livelihoods. The men should be isolated in the fish processing activities as they essential support to the women in the fish processing industry. The survey results indicate that the married processors produced large volume of smoked fish compared to the divorced, widowed and single processors. This is because the spouse of the married women provide assistance to the processors in the form of business working capital support, some with fishing boats provides fresh fish stock for processing and provides helping hands to their wives during fish smoking.

BACKGROUND

1.1 Overview of the Fisheries Industry in Ghana

Ghana has access to significant and valuable stocks of fish. Total domestic production, including aquaculture, is roughly 440,000 tons each year. This fish production is worth in excess of US\$ 1 billion in income annually. In terms of the overall economy, the fisheries sector accounts for at least 4.5% of GDP. These figures underscore the prominent role that fisheries play in the Ghanaian economy as they have done for many generations past. The cost of producing fish in Ghana is however alarming. The evidence available suggests that fish production costs are approaching or exceeding income in all inshore marine capture fisheries over recent years.

There is also evidence that costs are increasing in inland fishing fisheries and what profitability that remains is being rapidly dissipated. Tuna fishery production and capacity has remained relatively stable but fishers report escalating costs as fish are migrating offshore and business compliance costs are increasing. Investments in management to address these problems are however negligible. Fisheries management expenditure in Ghana (measured as a % of total income) is less than 2% of average expenditure in OECD countries (i.e. 17% of revenue).

Overall, there is little or no surplus of income over expenditure in Ghana's Capture fisheries and where some profitability remains it is being lost. This problem has unfortunately been exacerbated by government social interventions and donor activity that has directly or indirectly subsidized fishing effort. Taking into consideration these government social interventions it is likely that Ghana is paying more to catch and produce fish than they are worth.

There is therefore a real risk that current GDP contributions from this sector are unsustainable into the future and this has macro-economic consequences for Ghana both in terms of increased poverty and in draining wealth from other sectors of the economy to support the ailing fisheries sector.¹

1.2 Overview of the SFMP Project

The Sustainable Fisheries Management Project (SFMP) is a five year project funded by the United States Agency for International Development (USAID) and has committed approximately \$24 million US Dollars to the implementation of the project. The objective of this five-year project (October 2014-October 2019) is to rebuild marine fisheries stocks and catches through adoption of responsible fishing practices. The project contributes to the Government of Ghana's fisheries development objectives and USAID's Feed the Future Initiative.

The Sustainable Fisheries Management Project (SFMP) aims to end overfishing of key stocks important to local food security through a multi-pronged approach:

- Improved legal enabling conditions for co-management, use rights and effort-reduction strategies

¹ Republic of Ghana Fisheries and Aquaculture Sector Development Plan 2011 – 2016.

- Strengthened information systems and science-informed decision-making
- Increased constituencies that provide the political and public support needed to rebuild fish stocks
- Implementation of applied management initiatives for several targeted fisheries ecosystems

More than 100,000 men and women involved in the local fishing industry will benefit from this project. USAID has selected the Coastal Resources Center (CRC) at The University of Rhode Island's Graduate School of Oceanography as lead implementer of the SFMP. In leading the project, CRC will work with The Ministry of Fisheries and Aquaculture Development and the Fisheries Commission along with a consortium of international and local partners, including SNV Netherlands Development Organization, SSG-Advisors, Hen Mpoano, Friends of the Nation, Central & Western Fish Mongers Improvement Association in Ghana (CEWEFIA), DQF Quality Foundation, Development Action Association (DAA), and Spatial Solutions. The project also will contribute to the strengthening of marine and fisheries management capabilities at the University of Cape Coast and coastal spatial planning capacity of districts in the Central and Western Regions.

The SFMP builds on the accomplishments of the USAID-Ghana Integrated Coastal and Fisheries Governance (ICFG) Program. The USAID /Ghana SFMP will focus efforts on the small pelagics fisheries along the entire coastline as well as the demersal fisheries and essential mangrove fish habitat in the Western Region. The project will promote ecosystem-based and adaptive management approaches. Additionally, improvements in the value chain of smoked fish, important to tens of thousands of women fish processors and marketers will be supported. The project also will implement activities aimed at reducing child labor and trafficking in the fisheries sector in the Central Region of Ghana.

1.3 Purpose of the Segmentation Study

The purpose of the segmentation study is to clearly identify the socio-economic conditions under which the Smoked Fish Processors operate (Stove Users), their needs and provide a clear understanding of the nature of their businesses and operations. The study is also expected to clearly identify key characteristics of the various segments of Smoked Fish Processors in the Central and Western Regions.

SURVEY METHODOLOGY

2.1 Scope and Timeframe

This segmentation study was conducted between 1st March and 31st March 2016 and included a desk-based document review, key informant interviews, personal interviews and focus group discussions in both Western and Central Regions of Ghana. The scope of this study was limited to Smoked Fish Processors in the two regions aforementioned.

2.2 Sampling Procedure

The segmentation study employed both non-probability and some aspects of probability sampling techniques. A total sample size of 160 respondents was utilized for the study. The sample size was purposefully determined on the basis of availability of funds and resources for the entire study. A total of 8 communities were also selected from the Central and Western Regions based on where the project had post-harvest interventions. Five (5) communities were in the Central Region and three (3) communities in the Western Region. Within each community, a total of 20 Smoked Fish Processors were randomly selected for one-on-one interviews.

The random selection of the Smoked Fish Processors was carried out at the community level using the table of random numbers generated from a sample frame (list of fish processors available at the time of visit).

2.3 Survey Method

Desk Review: A document map, linking key documents to the main areas of review for the segmentation study was drafted and information obtained from the documents was mapped against the areas of segmentation questions and key data extracted to inform the analysis. Key documents reviewed were; the baseline study report, SFMP annual work plan document and project reports at SNV level.

Household Surveys: A household survey targeting the Smoked Fish Processors in their respective communities. The household survey was undertaken in selected 8 communities namely; Ankobra, Axim, Shama, Anlo Beach, Elmina, Moree, Apam and Winneba in the Western and Central Regions respectively. The household survey was conducted within a total of 10 days with an average of 1 day spent in each community.

Structured questionnaires were developed and used for the household level personal interviews with the Smoked Fish Processors. The household survey questionnaire was in three parts A, B and C. Part A of the questionnaire covered demographic characteristics of the respondents. Part B covered the business nature of the Smoked Fish Processors and the final section C covered the business assets and operations of the Smoked Fish Processors.

Prior to the field data collection, the questionnaires developed were pre-tested at SNV level to ascertain the flow of the questions and its relevance to purpose of the survey. The final draft questionnaires were forwarded to SFMP M&E Team for the input before the questionnaires were finalized. The finalized questionnaires were put on tablets and hard copies also presented for the field data collection.

Key Informant Interviews: Key informant interviews were conducted in Greater Accra, Central and Western Regions. A total of 22 key respondents participated in the key informant interviews. The key informants interviewed included; Implementing partner staff, SNV SFMP Project Staff, Chief Fishermen and the Konkohene/Hemaa in the following communities; Ankobra, Axim, Shama, Elmina, Anlo Beach, Apam, Moree and Winneba.

Focus Group Discussions: A series of six (6) focus group discussions were carried out in the Greater Accra, Central and Western Regions to gather information to complement the desk-review and the key informant interviews. In total, over 200 people including 180 females and 20 males were interviewed. The focus group discussions were made of discussants from implementing partner Institutions such as, SNV, DAA, DASGIFT and CEWEFIA. The primary discussants of the focus group discussions were drawn from; NAFPTA, Smoked Fish Processors, Chief Fishermen and Konkohene/Hemaa.

2.4 Field Data Collection, Management and Analysis

Highly skilled personnel were recruited and trained to undertake the field data collection. These personnel were already SNV staff working with the SFMP project. These attended a 2-day training programme during which the Lead Consultant took them through the various sections of the questionnaire including the concepts and definition used. Key words during the training were translated into the local languages of the targeted areas of the survey.

The study adopted the use of individual one-on-one interviews and series of Focus Group Discussions (FGD). The sample size for individual interviews was a total of one hundred and sixty individuals (160) Smoked Fish Processors. Field data collection was undertaken using tablets and hard copies of printed questionnaires. In each community, 20 questionnaires were

administered through direct interviews with the Smoked Fish Processors. The average time spent per interview was 45 minutes. The questionnaires were administered by four (4) trained enumerators with translation done in the local language of the respondents.

2.5 Data Management and Analysis

A computerized based database was developed for the data entry using Microsoft Access platform and analysis conducted using statistical tools and Microsoft Excel. Data entered into the database was thoroughly cleaned and verified before the analysis was carried out.

2.6 Validation of Results

A 2-day validation workshop was organized to review the results of the segmentation study and the business model options report as well as the investment impact tool from 27th -28th April, 2016 at Erata Hotel, East Legon-Accra. The validation workshop allowed for discussions on the results of the study and findings validated through brainstorming sessions. The following organizations attended the validation workshop; Microfin Rural Bank, GRATIS Foundation, Best Performance Company, Food Research Institute, Morrison Energy, DAA, CEWEFIA, Fisheries Commission and the Smoked Fish Processors. The outcome of the validation workshop enriched the segmentation study report.



Figure 1 Group Discussions during Validation Workshop

2.7 Study Limitations

Although all efforts were made to meet with and talk to as many relevant respondents as possible during course of this segmentation study, a number of logistical and practical factors prevented this from being entirely successful. Some of the limitations of this study include:

- Due to resource constraints relating to budget for the study, well-structured probability sampling procedure could not be followed and sample size was not statistical determined.
- Due to time constraints, it was not possible to hold the focus group discussion sessions at the community level with the Fish Processors.
- As a result of external events such as market days, funerals and political events, the list of sampled respondents determined through statistical procedure from a sampling frame of database of Smoke fish processors in consultation with the SFMP M&E Team could not be followed entirely.
- The unit of measure for the processing pans is not standardized as it differs from one community to the other. It was difficult to convert the pans into carton and carton to pans due to differences in weight of the pans.
- The study did not cover the laborers engaged by the fish processors in their fish smoking processing activities. The study was limited to the business owners of smoked fish enterprises.



FINDINGS ON SOCIO-ECONOMIC CONDITIONS UNDER WHICH SMOKED FISH PROCESSORS OPERATE



Figure 2 Gallery of Focus Group Discussions held

RESULTS OF THE SEGMENTATION STUDY

3.1 Demographic Characteristics of the Respondents

3.1.1 Distribution of the Respondents by Sex

A total of 160 respondents were interviewed. Of the total interviewed, the female composition constituted 99%. In all the communities visited, the female Fish Smoke Processor population was dominated. Except for Elmina which the female constituted 95% of the total respondents interviewed.

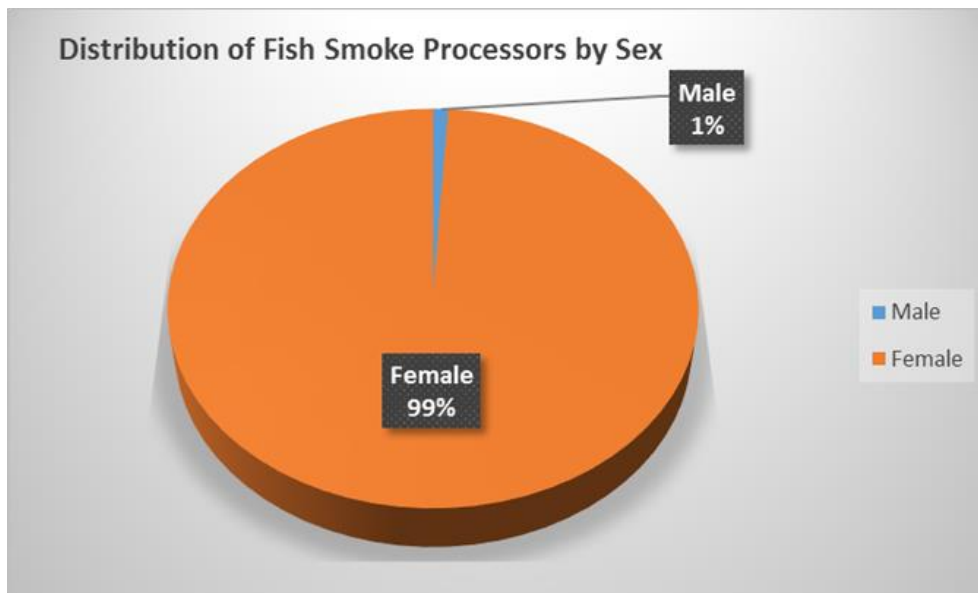


Figure 3 Distribution of Respondents by Sex

3.1.2 Distribution of Respondents by level of Education

The level of education of the Smoked Fish Processors were also assessed and results indicate that majority of the Smoked Fish Processors had no form of schooling (58%) whereas 21% had attained middle school/JHS level of education. Primary and Senior High School education also constituted 20% and 1% respectively.

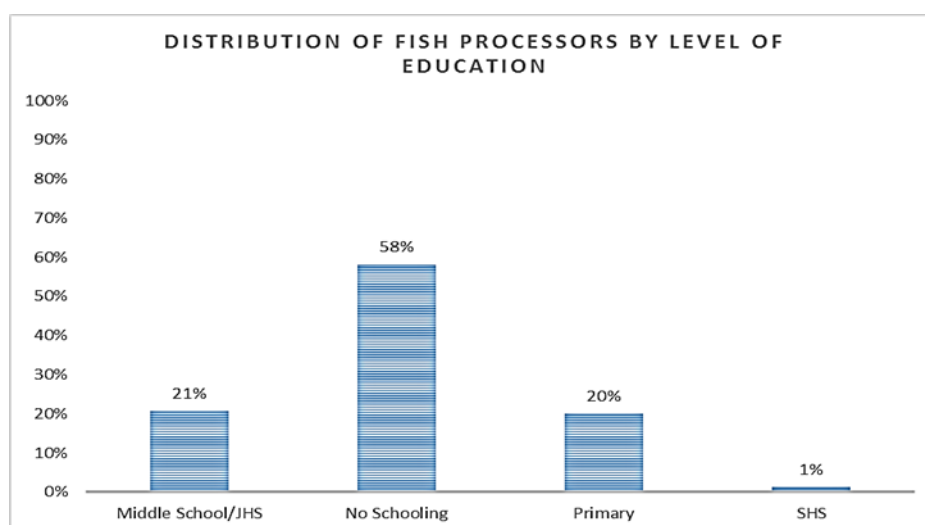


Figure 4 Distribution of Smoked Fish Processors by Education

At the community level, the percentage of Smoked Fish Processors with no schooling is relatively higher for Moree compared to the rest of the communities followed by Winneba (75%). The highest level of education for the Smoked Fish Processors is Senior High School with just 1% within that category of education level.

Table 1 Community Distribution of Smoked Fish Processors by Education

N = 160 (overall)				
Community	Middle School/JHS	No Schooling	Primary	SHS
Ankobra	40%	35%	25%	0%
Anlo Beach	10%	50%	40%	0%
Apam	15%	55%	25%	5%
Axim	20%	60%	15%	5%
Elmina	40%	45%	15%	0%
Moree	10%	90%	0%	0%
Shama	25%	55%	20%	0%
Winneba	5%	75%	20%	0%
Overall	21%	58%	20%	1%

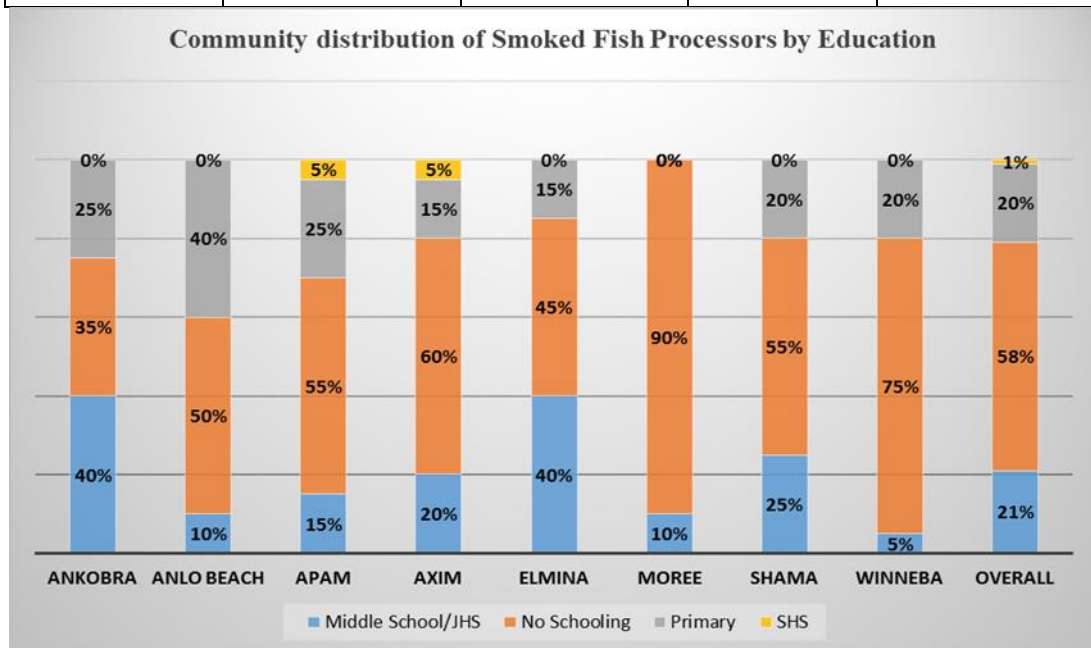


Figure 5 Community Distribution of Smoked Fish Processors by Education

3.1.3 Distribution of Smoked Fish Processors by Age

From figure 4, the age structure of the Smoked Fish Processors is of an adult population as majority of them fell within the age category 41 years and above representing 70%. However, the youthful population engaged in fish smoke processing constituted 30%.

Comparing the age structure of the fish processors with their level of education, the results indicate that the category of the processors with the highest level of education were those above age 40 years. For those who attained Middle School/JHS level of education, the adult population constituted 79% and adult population 66% for primary level of education. The adult population for no schooling constituted 67% of the total processors.

Table 2 Distribution of Age of Smoked Fish Processors by Level of Education

Education/Age	Number	Percent
Middle School/JHS	(N =33)	
18 - 30 years	1	3%
31 - 40 years	6	18%
41 - 49 years	10	30%
50 and Above	16	49%
No Schooling	(N=93)	
18 - 30 years	13	14%
31 - 40 years	18	19%
41 - 49 years	25	27%
50 and Above	37	40%
Primary	(N=32)	
18 - 30 years	2	6%
31 - 40 years	9	28%
41 - 49 years	13	41%
50 and Above	8	25%
SHS	(N=2)	
41 - 49 years	1	50%
50 and Above	1	50%

3.1.4 Marital Status of Smoked Fish Processors

The married Smoked Fish Processors constitutes 69% of the total of 160 processor interviewed followed by the divorced processors (20%). The results indicate that, majority of the Smoked Fish Processors were married. The singles and widowed constitutes 1% and 10% respectively.

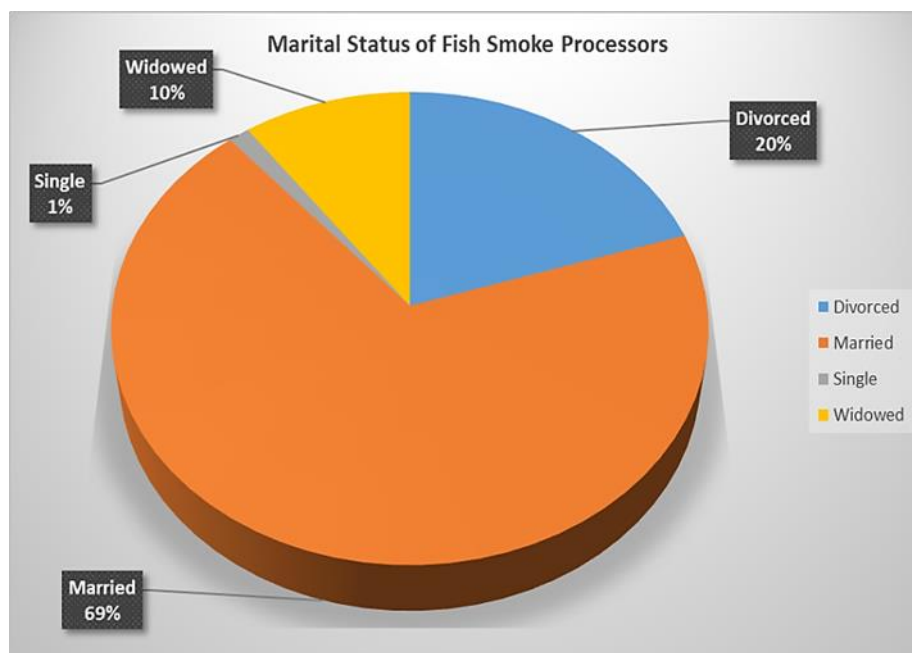


Figure 6 Distribution of Smoked Fish Processors by Marital Status

Comparing marital status with the age of the Smoked Fish Processors, the results indicate that among the divorced population, 84% are above aged 41 years. On the other hand, Widowed are also above aged 41 years and above with just 6% below aged 41 years. However, the age distribution for the married class ranged between 18 years and above with majority (63%) of the married class within ages 41 and above.

Table 3 Distribution of Smoked Fish Processors by Marital Status and Age

Marital Status/Age	Number	Percent
Divorced	(N=32)	
18 - 30 years	1	3%
31 - 40 years	4	13%
41 - 49 years	11	34%
50 and Above	16	50%
Married	(N=110)	
18 - 30 years	14	13%
31 - 40 years	27	25%
41 - 49 years	35	32%
50 and Above	34	31%
Single	(N=2)	
18 - 30 years	1	50%
31 - 40 years	1	50%
Widowed	(N=16)	
31 - 40 years	1	6%
41 - 49 years	3	19%
50 and Above	12	75%

3.1.5 Distribution of Smoked Fish Processors by Number of Dependents

Most of the Smoked Fish Processors have a number of dependents who usually look up to them for their daily livelihood. Some were directly their biological children while others were either direct or indirect relatives who reside with them. The family size of the typical Smoked Fish Processors were usually very large as these translated into the labor force. The results gathered indicate that 80% of the Smoked Fish Processors have 4 or more dependents living with them whereas 20% have less than 4 dependents living with them.

There is a positive correlation between the production volumes of the Smoked Fish Processors and the number of dependents which they usually convert them into labor force for their processing activities especially for the Central Region and overall. The Smoked Fish Processors with large number of dependents tends to have higher weekly production volumes compared with those with fewer dependents during the bumper season.

Smoked Fish Processors with 1 -3 dependents averagely processes 1,893 pans of fish per week. The average production increases as the number of dependents also increases. Smoked Fish Processors with 4 – 6 dependents also processes 5,029 pans of fish per week on the average. On regional level, the situation is not different as there is a general trend in terms of the number of dependents and production volumes of the Processors.

Table 4 Weekly production volume (in pans) by number of dependents

Region/Number of Dependents	Fish processed per week (Unit in Pans)
Central	8,023
1 – 3	1,551
4 – 6	3,007
7 and above	3,465
Western	3,129
1 – 3	342
4 – 6	2,022
7 and above	765
All (Weekly volume in Pans)	11,152
1 – 3	1,893
4 – 6	5,029
7 and above	4,230

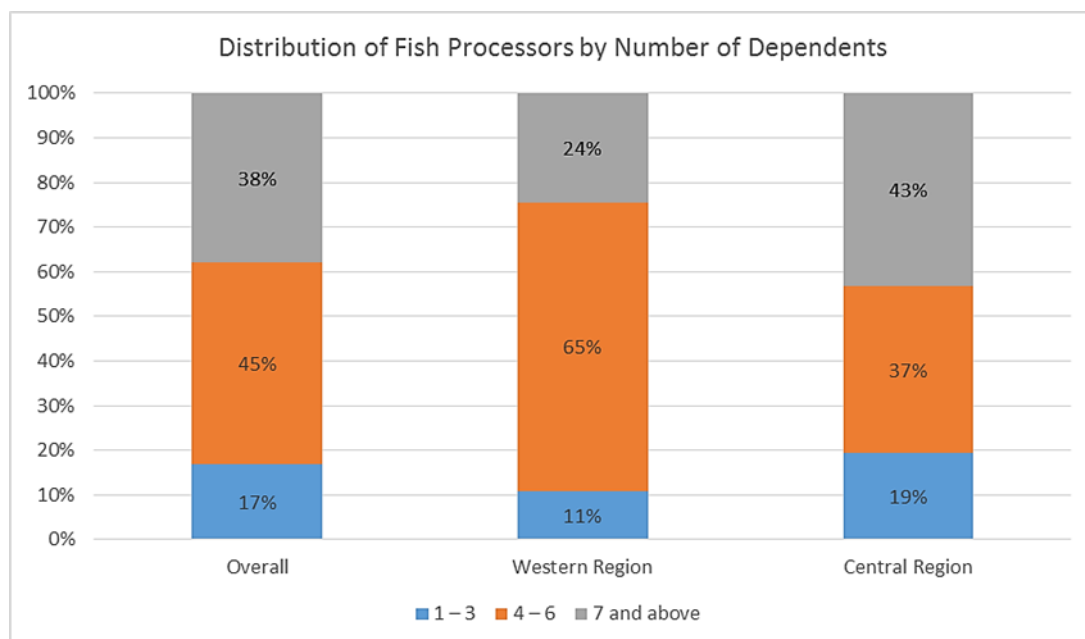


Figure 7 Distribution of Smoked Fish Processors by Number of Dependents

3.2 The Business Nature of Fish Smoke Processing Business

3.2.1 The forms of business undertaken by the Processors

Results from the segmentation study indicate that majority of the respondents were solely Fish Processors representing (61%) where as 39% were both Fish Processors and Traders. It was also found that not all were entirely fish smoke processors as others were also engaged in fish trading activities. At the regional level, the trend was same as higher proportion of the processors were solely fish processors who process and distribute their processed fish to off-takers for sale on the market. The results also indicate that 2 in every five fish processors are also traders implying that they often travel to district, regional and other West African countries' markets to sell their processed fish. The involvement of middle women/off-takers is predominant in the two regions as activities of the fish traders were evident in most fishing communities.

Table 5 Distribution of Smoked Fish Processors by Form of Business

Region/Form of Business	Number	Percent
Region/Form of Business	Number	Percent
Central	(N=100)	
Fish Processor	58	58%
Fish Processor and Trader	42	42%
Western	(N=60)	
Fish Processor	40	67%
Fish Processor and Trader	20	33%
All	(N=160)	
Fish Processor	98	61%
Fish Processor and Trader	62	39%

During the focus group discussion, the discussants indicate that they were often cheated by the middle women/off-takers. The discussants also indicate that the large and medium scale processors usually have strong bargaining power/capacities compared to the micro and small processors. The discussant also mentioned that the micro and small scale processors usually sell their processed fish directly on the market that is doubles as fish traders.

3.2.2 Alternative livelihoods within the fishing industry

The Smoked Fish Processors also undertake other livelihood activities within the fishing industry apart from fish smoking. Results from the study indicate that less than half (41%) of the processors are engaged in other livelihood activities in the fishing industry.

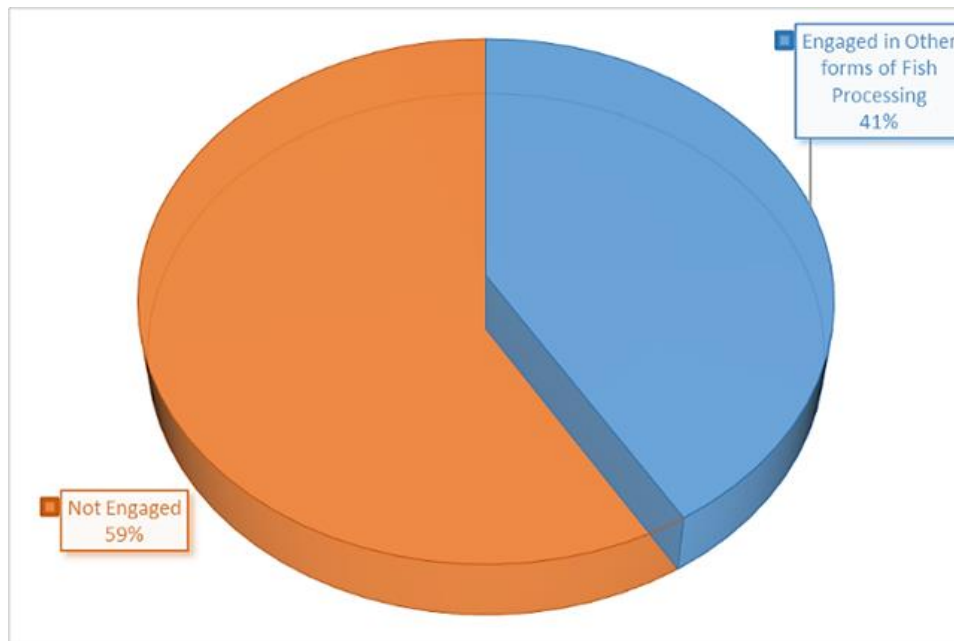


Figure 8 Distribution of Smoked Fish Processors by other forms of fish processing activities undertaken

However, 41% of the processors are engaged in other forms of fish processing activities such as fish salting (Bomone), fish drying (kakoo/Keta school boys) and Fish frying (Nkyenam). Of the number engaged in alternative livelihood options within the fishing industry, majority of them are engaged in fish salting (67%).

Table 6 Distribution of Fish Processors by alternative livelihoods within the fishing industry

(N=66)		
Other forms of Fish Processing	Number	Percent
Drying	12	18%
Frying	10	15%
Salting	44	67%

During the focus group discussions, the discussants were of the view that some of the processors usually undertake fish salting when they were faced with challenges with the fish going bad. They also attributed this to the readily available market for salted fish compared to dried and fried fish.

3.2.3 Period engaged in Fish Smoke Processing Activities

The results indicate that majority (78%) of the Smoked Fish Processors have been engaged in the fish smoking processing business for a longer period not less than 13 years. The trend at the regional level was not different from the overall results. In the Central Region, 76% of the

Smoked Fish Processors have been engaged in the processing business for more than 13 years and the Western Region is 82%. The results indicate that 8 in every 10 Smoked Fish Processors have been engaged in the processing activity for more than 13 years.

Table 7 Distribution of Smoked Fish Processors by period engaged in the processing activities.

Region/Years engaged in Processing	Number	Percent
Central (N=100)		
1 - 3 years	6	6%
4 - 6 years	9	9%
7 - 9 years	5	5%
10- 13 years	4	4%
Above 13 years	76	76%
Western (N=60)		
1 - 3 years	1	2%
4 - 6 years	2	3%
7 - 9 years	8	13%
10- 13 years	0	0%
Above 13 years	49	82%
All (N=160)		
1 - 3 years	7	4%
4 - 6 years	11	7%
7 - 9 years	13	8%
10- 13 years	4	3%
Above 13 years	125	78%

3.2.4 Ownership of Fish smoking stove

The primary equipment used for fish smoking processing is a fish smoking stove whether improved or unimproved. Ownership of a fish smoking stove is essential to the business operations of the Smoked Fish Processor. Ownership of fish smoking stove by the processors was on the higher side (98%) overall. On the regional level, 97% of the Smoked Fish Processors in the Central Region own a fish smoking stoves whereas 100% in the Western Region also own a stove. Results from table 8 indicate that ownership of fish smoking stove is relatively higher in Western Region compared to the Central Region. Of the number who do not own stoves, they indicated renting the fish smoking stoves for their processing activities.

Table 8 Ownership of fish smoking stoves by Smoked Fish Processors

Region/Stove Ownership	Number	Percent
Central (N=100)		
Yes	97	97%
Western (N=60)		
Yes	60	100%
All (N=160)		
No	3	2%
Yes	157	98%

3.2.5 Types of Stove Used by Smoked Fish Processors

The predominant type of fish smoking stove used by the Smoked Fish Processors is the Chorkor stove (88%) followed by the traditional/Mud stove (41%). 6% and 1% use Morrison and Frismo/Kosmos stoves respectively. The use of an improved fish smoking stoves by the Smoked Fish Processors was not predominant in the two regions.

Table 9 Type of stoves used by Smoked Fish Processors

N=160		
Type of Stove Used	Number	Percent
Chorkor	140	88%
Frismo/Kosmos	1	1%
FTT	0	0%
Tradition/Mud	66	41%
Morrison	9	6



Figure 9 Gallery of Types Fish Smoking Stoves Currently being used by Smoked Fish Processors

The discussants outlined the following as reasons for the wide spread use of the chorkor and the traditional/mud stoves:

The chorkor and the traditional/mud stoves can easily be constructed/built by local artisans and some of the women.

The presence of local artisans to build the chorkor or traditional/mud stoves using readily available local materials makes it cheaper to build.

The traditional/mud stove can smoke any type and size of fish. It is capable of smoking both large and small fish stocks.

The chorkor or traditional/mud stoves are easy to maintain.

3.2.6 Size of stove used by the Smoked Fish Processors

The sizes of stoves used by the Smoked Fish Processors vary from single unit to quadruple unit depending on choice of the processor. The results indicate that majority (74%) of the processors use the double unit size of stove for their fish smoking activities. Those who use single unit stoves constitute 55% and 18% use quadruple unit stoves.

Table 10 Size of stove used by the Smoked Fish Processors

N=160		
Size of Stove used	Number	Percent
Single Unit	88	55%
Double Unit	119	74%
Triple Unit	28	18%
Quadruple Unit	14	9%

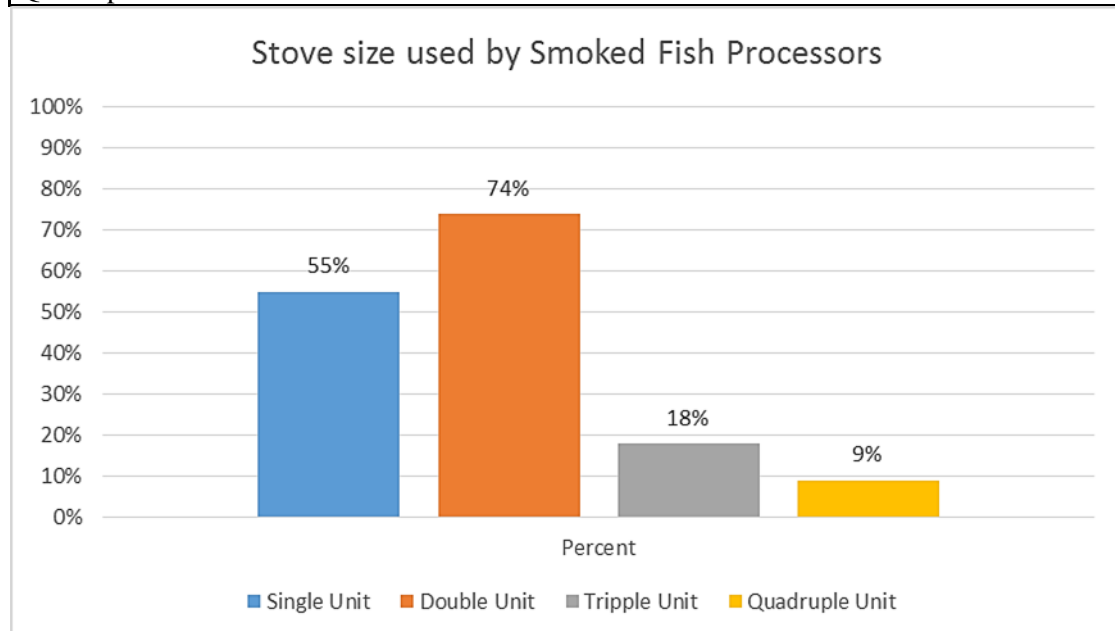


Figure 10 Bar chart showing the types of stoves used by the Smoked Fish Processors

3.2.7 Reasons for the choice of stove used

The majority of the processors indicated the cost of stove (86%) as the primary reason for the choice of stove used followed by availability of the stove (64%). Some also inherited the stove (38%) from their parents. Other reasons such as capacity of the stove (24%), fuel consumption (21%) and design of the stove (19%) as other reasons for the choice of stove. Less than 12% of the processors based the choice of stove on the fuel emission

Table 11 Reasons for the choice of stove used

Reasons for choice of stove	Number (N=160)	Percent
Cost of stove	138	86%
Design of stove	30	19%
Durability	15	9%
Mobility	5	3%
Inherited	61	38%
Availability	102	64%
Fuel Consumption	33	21%
Fuel Emission	18	11%
Capacity	39	24%

3.2.8 Ranking of the most important factors that influenced the choice of stove

Results from the study indicate that the Smoked Fish Processors ranked the capacity of the stove as the number one factor they considered in the choice of stove. Availability of the technology was ranked as the second factor. Cost of the stove was ranked as the third factor and design of the stove was ranked as the fourth factor. Durability of the stove was ranked as the fifth and fuel consumption ranked as the sixth factor considered in the choice of a stove. Emission of fuel and mobility of the stove was ranked as the seventh and eighth factors respectively. In general, the five most important factors considered by the processors in the choice of a stove are capacity of the stove, availability of the stove technology, cost of the stove, and design of the stove and durability of the stove.

Table 12 Ranking of the factors considered in the choice of stove

Most Important Factor Considered	Rank 1	Rank 2	Rank 3	Rank 4	Rank 5	Rank 6	Rank 7	Rank 8
Availability of technology	19%	24%	14%	9%	10%	3%	6%	4%
Capacity	34%	18%	15%	10%	11%	4%	3%	5%
Cost of stove	28%	18%	19%	13%	11%	3%	2%	2%
Design of stove	3%	3%	17%	31%	10%	14%	11%	4%
Durability	3%	12%	13%	15%	18%	18%	16%	11%
Emission	9%	10%	13%	6%	17%	19%	25%	11%
Fuel consumption	4%	13%	5%	11%	14%	25%	18%	6%
Mobility	0%	2%	4%	5%	9%	14%	19%	57%

3.2.9 Average Cost of stove by Type

The average cost of constructing a traditional/mud stove is GHC79.03 and that of chorkor stove is GHC152.50 without processing trays. Of those with the Morrison stove, the average cost of building the stove was estimated as GHC1,425.00 with the processing trays.

Comparing the average cost of the improved stove with the unimproved stoves, generally the cost of building the improved fish smoking stove is relatively higher than the unimproved stove. The average cost of the Morrison stove is approximately 9 times the average cost of the chorkor stove.

Table 13 Average cost of stove by type

Type of Stove	Number	Total Amount (GHC)	Average Cost of stove (GHC)
Chorkor	139	21,197.89	152.50
Morrison	4	5,700.00	1,425.00
Traditional/Mud	40	3,161.00	79.03

3.2.10 Stove utilization by Processors

The average number of stoves used by the Smoked Fish Processors at a time during the bumper season for the single unit stove is 4. The double unit used at a time during the bumper season is 3 and the triple unit used is 1. The average number of the quadruple unit used at a time during the bumper season by the processors is 3. In general, majority of the processors use the double unit for processing.

Table 14 Average Number of Stoves at a time During Bumper Season

stove Utilization During Bumper Season	Number	Total Number used	Average Stove Used at a time
Single Unit	85	367	4
Double Unit	114	357	3
Triple	27	38	1
Quadruple	6	19	3

During the lean season, the average number of stoves used by the processors at a time for the single unit stove reduced by 50% compared to the bumper season. Generally, the average number of stoves used by the processors at a time during the lean season reduces compared to the bumper season. During the lean season, the processors on the average use 2 of the double unit at a time and 2 of the quadruple unit a time compared to 3 units of double and 3 quadruple unit.

Table 15 Average number of stoves used at a time during the lean season

stove Utilization During lean Season	Number	Total Number used	Average Stove Used
Single Unit	61	152	2
Double Unit	85	149	2
Triple	8	11	1
Quadruple	4	7	2

3.2.11 Fish Smoke Production volumes

Production volume during the bumper harvest

From table 16, the total quantity of smoke fish processed in a week during the bumper season in pans is 11,152. The standard unit of measure at the local level for the fish processors is in pans.

Table 16 Total production volume per week in Pans during bumper season

Region/Stove Ownership	Total Production in a week (Pans)
Central	8,023
Western	3,129
Overall	11,152

Comparing the levels of production per week in pans with the level of education of the fish processor reveals very interesting trends in both Central and Western Regions. Fish processors with no form of education produces less volume of fish compared to those with some level of education. The total volume produced per week in pans by fish processors with no schooling constitutes 47.6% for Central Region and 43.9% for the Western Region.

Table 17 Total volume processed per week by level of education in bumper season

Region/Level of Education	Fish processed per week (Pans)
Central	8,023
Middle School/JHS	1,660
No Schooling	3,822
Primary	2,531
SHS	10
Western	3,129
Middle School/JHS	888
No Schooling	1,373
Primary	668
SHS	200
Overall	11,152

Production volumes during the lean season

During the lean season the fish processors unit of measure is usually in pans and cartons. This is because during the lean season some of the processors purchase their fish stock from the cold store while others get some fish stock from the fishermen but often in limited stock. In the lean season, the total quantity of fish processed is 6,359 pans (2 large pans equivalent to 1 carton).

Table 18 Total volume processed during the lean season per week by level of education

Region/level of education	Volume processed per week (Pans)	Volume Processed per week (Cartons)
Central	1,131	2,065
Middle School/JHS	365	1,050
No Schooling	398	608
Primary	368	407
SHS	-	-
Western	278	410
Middle School/JHS	109	18
No Schooling	143	155
Primary	26	37
SHS	-	200
Overall	1,409	2,475

Number of Processing Trays Produced per Week during the bumper harvest

Table 19 indicates that, a total of 48,905 trays of fish is processed by the Smoked Fish Processors per week during the bumper season in both Central and Western Regions. On the average, a total of 6,488 trays of fish is processed per community in Central Region per week during the bumper season compared to 5,488 per community in the Western Region. The overall average of total trays processed per community during the bumper season is 6,113.

Table 19 Regional distribution of quantity of Trays processed per week

Region	Number of trays processed per week	Average trays processed per community
Central	32,442	6,488
Western	16,463	5,488
Overall	48,905	6,113

Table 20 indicates that the married processors produced large volumes of smoked fish compared to the divorced, widowed and single processors. Table 20 indicates that, the married women processes averagely 7,427 pans of fish per week the widowed process averagely 1,141 pans per week and divorced 2,216 pans per week during the bumper season.

Table 20 Distribution of production volume by marital status

Marital status	Number	Production Volume in Pans
Central	100	8,023
Divorced	20	1,721
Married	71	5,161
Single	2	160
Widowed	7	981
Western	60	3,129
Divorced	12	495
Married	39	2,266
Single	0	-
Widowed	9	368
Overall	160	11,152
Divorced	32	2,216
Married	110	7,427
Single	2	160
Widowed	16	1,141

3.2.12 Period of Production in a Year

Overall, a lower percentage of the Smoked Fish Processors were engaged in processing activities all year round (12 months) representing 45%. This implies that 55% of the processors do not undertake the fish processing activities all-year round. A greater proportion (55%) of the processors were engaged in processing activities between 1 to 11 months.

Table 21 Production months of fish processing activities by Region

Production Months	Number	Percent
Central	N=100	
1 -3 Months	1	1%
4 - 5 Months	9	9%
6 - 8 Months	24	24%
9 - 11 Months	11	11%
12 Months (All year round)	55	55%
Western	N=60	
1 -3 Months	2	3%
4 - 5 Months	7	12%
6 - 8 Months	22	37%
9 - 11 Months	12	20%
12 Months (All year round)	17	28%
Overall	N=160	
1 -3 Months	3	2%
4 - 5 Months	16	10%
6 - 8 Months	46	29%
9 - 11 Months	23	14%
12 Months (All year round)	72	45%

A greater proportion of processors in the Central Region are engaged in the processing activities all year round compared to the Western Region. Results from table 22 indicate that 67% of the Smoked Fish Processors are engaged in fish smoke processing activities during off-season.

Table 22 Processors engaged in fish smoke processing activities during the off-season

Processors engaged in fish smoke processing during off season	Number	Percent
Central Region	(N=100)	
No	25	25%
Yes	75	75%
Western Region	(N=60)	
No	28	47%
Yes	32	53%
Overall	(N=160)	
No	53	33%
Yes	107	67%

The key informants attributed the regional dynamics in the production months to the following;

- In the central Region most of the Smoked Fish Processors usually resort to the cold store during the lean season either from Tema or CIKO.
- The off-takers in the Western Markets usually do not purchased iced fish (cold store) processed. That is there is not readily available market for iced fish processed (cold store).
- The Fisheries Commission in the Western Region have duly sensitized the Smoked Fish Processors not to purchase the CIKO stock for processing.
- The fish stock in the Western Region have depleted due to the presence of the fishing harbor and due to the oil drilling activities in the Region, the fishermen are not able to get substantial catch during the lean season.
- The processors in the Central Region usually process the iced fish for the Greater Accra markets. There exist readily available markets for the processed iced fish for the processors in the Central Region compared to the Western.

3.2.13 Type of Fish Stock Processed

The predominant types of fish stock processed by the Smoked Fish Processors were Sardinella (93%) and Anchovy (72%). Other type of fish stock processed also include Barracuda (54%), Tuna (46%), Horse Markrel (31%), Red Fish (31%), Shark (4%) and Schrimps (1%). The regional dynamics was slightly different as the predominant types of fish stock processed in the Central Region were sardinella and Anchovy whereas that of the Western Region was Sardinella and Barracuda.

Table 23 Stock of fish processed

Fish Stock Processed	Number	Percent
Central Region	(N=100)	
Barracuda	42	42%
Tuna	49	49%
Sardinella	98	98%
Horse Markrel	34	34%
Red Fish	30	30%
Anchovy	79	79%
Shrimps	1	1%
Western Region	(N=60)	
Barracuda	45	75%
Tuna	25	42%
Sardinella	50	83%
Horse Markrel	16	27%
Red Fish	20	33%
Anchovy	36	60%
Shark	7	12%
Overall	(N=160)	
Barracuda	87	54%
Tuna	74	46%
Sardinella	148	93%
Horse Markrel	50	31%
Red Fish	50	31%
Anchovy	115	72%
shrimps	1	1%
Shark	7	4%

3.2.14 Sources of Fresh Fish Processed during the Off-season

The main source of fresh fish for fish smoking processing during the off-season is from the cold store (57%). More than half of the processors who undertake fish smoking activities during the lean season buy their fish stock from the cold store. Other sources from which the Smoked Fish Processors purchase their fresh fish during the off-season are; Fishermen (47%), CIKO (7%), Friends (2%) and Konkohemaa (1%).

Table 24 The Sources of fresh fish stock for processing during the off-season

Sources of Fresh Fish Processed during off-season	Number	Percent
Central	(N=75)	
Cold Store	50	67%
From a friend	2	3%
Fishermen	29	39%
CIKO	8	11%
Kokohemaa	0	0%
Western	(N=32)	
Cold store	12	38%
From a friend	0	0%
Fishermen	21	66%
CIKO	0	0%
Konkohemaa	1	3%
Overall	(N=107)	
Cold store	62	58%
From a friend	2	2%
Fishermen	50	47%
CIKO	8	7%
Konkohemaa	1	1%

At the regional level, the main source of fresh fish processed in the off-season in the Western Region is fishermen (66%) and that of Central Region is from cold store (67%). In the Central Region, 11% of the processors purchase their fresh from CIKO during the off-season. During the focus group discussions, the discussants indicated that the main source of fresh fish processed during the off-season is from the cold stores at Tema fishing harbor and the other major cold stores in Takoradi.

3.2.15 Other Economic livelihood Activities outside the fishing industry

Apart from the fish processing activities undertaken, the some of the processors are also engaged in other diversified sources of income. Results from the study indicate that 36% of the processors are engaged in other economic livelihood activities outside of the fishing industry.

Table 25 Engagement in other economic livelihood activities by Region

Region/Engage other Economic livelihoods	Number	Percent
Central	(N=100)	
Engaged in other economic livelihoods	34	34%
Western	(N=60)	
Engaged in other economic livelihoods	23	38%
Overall	(N=160)	
Engaged in other economic livelihoods	57	36%

3.2.16 Other Economic Livelihood Activities

Table 26 indicates that, for the proportion of Smoked Fish Processors engaged in other economic livelihood activities outside of the fishing industry, petty trading constituted 48.1%, farming constituted 9.3%, Agro processing 7.4%, livestock rearing 4%, food vendor 22.2% and vocational activities 9.3%. A greater proportion of the processors are engaged petty trading.

Table 26 Other Economic Activities outside of the fishing industry

Economic livelihood Activities	Number	Percent
Central	(N=32)	
Petty Trading	15	46.9%
Farming	4	12.5%
Agro Processing	4	12.5%
Livestock rearing	2	6.3%
Food Vendor	5	15.6%
Vocational	2	6.3%
Western	(N=22)	
Petty Trading	11	50.0%
Farming	1	4.5%
Agro Processing	0	0.0%
Livestock rearing	0	0.0%
Food Vendor	7	31.8%
Vocational	3	13.6%
Overall	(N=54)	
Petty Trading	26	48.1%
Farming	5	9.3%
Agro Processing	4	7.4%
Livestock rearing	2	3.7%
Food Vendor	12	22.2%
Vocational	5	9.3%

During the focus group discussion, the processors mentioned that diversified livelihood activities outside of the fishing industry are usually undertaken during the lean season and its intensity goes down during the bumper season because much focus is centered on processing activities to maximize the opportunity. They also indicated that during the bumper season, financial and material resources are mostly channeled towards fish processing with little injection in the alternative livelihoods outside of the fishing industry.

3.3 The Business Assets and Operation of Smoked Fish Processors

Fish smoking processing is an intensive economic livelihood activity that requires some key inputs and equipment. The scale of the business is determined by the number of employees and the equipment base of the processors characterized by the working capital base. There are distinctively various levels and categories of Smoked Fish Processors spanning from micro to large scale processors. There are unique features that influence the operation of the micro, small, medium and large scale Smoked Fish Processors in the country and each category is characterized by the employees, assets and working capital base of the processor.

As contained in its Industrial Statistics, The Ghana Statistical Service (GSS) considers firms with less than 10 employees as Small Scale Enterprises and their counterparts with more than 10 employees as Medium and Large-Sized Enterprises. Ironically, The GSS in its national accounts considered companies with up to 9 employees as Small and Medium Enterprises. However, the National Board of Small Scale Industries (NBSSI) in Ghana applies both the fixed asset and number of employees' criteria.

UNIDO's Definition of MSMEs for Developing Countries

Large - firms with 100+ workers

Medium - firms with 20 - 99 workers

Small - “ “ 5 - 19 workers

Micro - “ “ < 5 workers

The definition of MSMEs by the National Board for Small Scale Industries remains the most appropriate for country context.

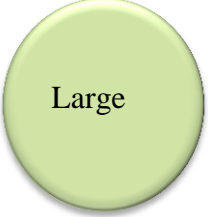



“The National Board for Small Scale Industries describes Micro and Small Enterprises as those enterprises employing 29 or fewer workers. Micro enterprises are those that employ between 1-5 people with fixed assets not exceeding 10,000 USD excluding land and building. Small enterprises employ between 6 and 29 or have fixed assets not exceeding 100,000 USD, excluding land and building.

The National Board for Small Scale industries (NBSSI) further classified MSMEs as follows:

- Micro enterprise: less than 5 employees;
- Small enterprise: 6 - 29 employees;
- Medium enterprise: 30 - 99 employees; and
- Large enterprise: 100 and more employees.

The study among other things assessed the employee, asset and working capital base of the processors. During the focus group discussion sessions with the processors, the discussants clearly outlined the criteria that should be used in identifying the MSMEs processors and the socio-economic characteristics that distinguishes the level of scale of the smoked fish processor as micro, small, medium or large scale processor in table 27.

Table 27 Criteria for identifying the MSMEs within the Fish Smoke Processing Business

 <p>Large</p>	<ul style="list-style-type: none"> -Has processing shed - Usually has 7 – 12 Fish smoking stoves -Usually purchases 5 – 10 trucks of fuel wood load per month -Processes averagely 150 trays of fish per day -Purchases averagely buys large 30 pans of fish per day -Has an average of 5 permanent employed workers and over 10 laborers -Has an average of 6 long mats -Has storage facility -Able to processed quantities that could fill up to 2 cargo trucks per week. -Usually owns a canoe and has paid fishing crew -They usually process expensive fish stock -Usually processes for national and international markets
 <p>Medium</p>	<ul style="list-style-type: none"> -Processes averagely 20 large pans of fish per day -Usually has 4 – 6 Fish smoking stoves -Usually has 4 laborers and 2 permanent paid employees - Processes averagely 80 trays of fish per day -Has storage facility -Usually processes for district and regional markets
 <p>Small</p>	<ul style="list-style-type: none"> -Has less than 3 - 4 fish smoking stoves -Hires less than 3 laborers -Processes averagely 20 trays of fish per day - Usually stores processed fish on the stove -Target market usually both local and district level markets
 <p>Micro</p>	<ul style="list-style-type: none"> -Usually purchase the fresh fish stock on credit -Processes for both local market and some selected district markets -Usually uses the traditional/mud stoves -Processes averagely 2- 5 pans of fish per week

Additional Socio-economic characteristics of the Smoked Fish MSMEs

LARGE

- Has adequate working capital usually above GHC10,000
- Operates regular bank accounts for the business.
- They usually have large work force and laborers
- They process fish all year-round.
- They process fish on large quantities usually above 30 pans of fish per day during bumper season.
- Prepares annual financial statement for their business.
- Undertake annual business assessment of their business
- Produces and sell at regional markets and other West African countries.
- Usually own boats and have paid fishermen.
- Usually very experienced in the processing business.
- Some export their processed fish
- Usually own vehicle for transporting their processed fish to markets
- Have large numbers of fish smoking stoves
- Expensive/Quality lifestyle
- Their children attends good schools
- They usually have adequate storage facilities.
- The male large processors are usually polygamist

MEDIUM

- Capital base usually minimal (between GHC4,000 and GHC10,000)
- Do not own boats but usually have dedicated fishermen who directly supply fish for them to purchase.
- Usually have a combination of paid laborers and family members as helping hands.
- They usually do not own large equipment base
- Usually sell their processed fish to middle women at the District and Regional markets
- Production is usually all year-round
- The production capacity is usually less than 20 pans of fish.
- Sometimes buy the fish on credit from the fishermen
- Processing stoves usually less than 6

SMALL

- They usually have little or no working capital
- They usually do not have much production equipment
- Have no workers/laborers use family members.
- Production is usually on minimal scale.
- Production is usually seasonal
- The production volume is usually very small and on subsistence levels.
- Poor records keeping
- don't have processing sheds
- Don't have storage facility
- They are quick to sell off their processed fish because they have to pay their creditors
- Inadequate purchasing or bargaining power
- Don't earn much returns on their investment (profit) due to size of operations.

Table 28 The Required Needs of the various of Fish

Required Needs	Micro	Small	Medium	Large
Technology cost	GHC 200 -500	GHC 450 -800	GHC 800 -2,500	GHC2,500 -8000
Technology option	clay-based stove	Clay-based stove	Brick-based stove Other modern technologies	Brick-based stove Other modern technologies
Average Loan Size	GHC200 - 500	GHC 600 - 1,500	GHC2,000 - 5,000	GHC6,000 - 15,000
Business capacity enhancement	Records keeping Small business management	Records keeping Small business management Financial management Sales and marketing	Records Keeping Succession plan Business Plan Marketing and Sales Improved processing techniques	Business succession plans Marketing and Sales Business Plan Improved processing for the foreign market
Business Model	BOT (Stove Enterprise builds the stove at a site approved by the End-user. The end-user uses the stove and pay daily user fee for an agreed period). The need for a pro-poor interventions (subsidy). Savings-Led Approaches to build savings culture	End-user financing through a financial institution (No Subsidy). Savings-Led Approaches to build savings culture	End-user financing through a financial institution (No subsidy). Savings-Led Approaches to build savings culture	Savings-led (No need for credit to finance stoves & Subsidy)
Barriers	Subsistence production level because doesn't have the capital to grow.	The prioritized need is capital to purchase the fish stock	Focus is mainly on capital to increase production capacity irrespective of type of stove used	Focus is mainly on meeting the market demand irrespective of the type of stove used Does not see the need for an improved stove

3.3.1 Sources of Initial Business Start-up Capital of Smoked Fish Processors

The study results indicate that the sources of initial business start-up capital of Smoked Fish Processors are unrestricted that is from; financial institutions, spouse, personal savings, purchase on credit and from other family relations and friends. However, the main source of start-up capital of the Smoked Fish Processors is from their personal savings (53.1%). This means that 5 in every 10 Smoked Fish Processors raised their initial business start-up capital through personal savings. On the other sources, financial institution constituted 11.9% through micro-loans they acquired, those who obtained their initial business start-up capital from their spouse constituted 6.3%.

A significant proportion of the Smoked Fish Processors also raised their initial business start-up by purchasing the fish stock on credit and later paid back their creditors. Presently, the practice of purchasing fish stock on credit is predominant among the micro and small processors as majority do not have the requisite working capital to purchase their inputs for fish smoking processing activities.

Table 29 Sources of initial start-up capital of Smoked Fish Processors

Sources of Initial Start-up capital of Smoked Fish Processors	Number	Percent
Central Region	(N=100)	
Financial Institution (Bank, Microfinance, Rural Bank & Credit Union)	12	12.0%
Other family relations & Friends	17	17.0%
Personal savings	48	48.0%
Purchase on credit	15	15.0%
Spouse	8	8.0%
Western Region	(N=60)	
Financial Institution (Bank, Microfinance, Rural Bank & Credit Union)	7	11.7%
Other family relations & Friends	7	11.7%
Personal savings	37	61.7%
Purchase on credit	7	11.7%
Spouse	2	3.3%
Overall	(N=160)	
Financial Institution (Bank, Microfinance, Rural Bank & Credit Union)	19	11.9%
Other family relations & Friends	24	15.0%
Personal savings	85	53.1%
Purchase on credit	22	13.8%
Spouse	10	6.3%

3.3.2 Access to Appropriate Storage Facility by Smoked Fish Processors

Results from the study indicate that 51% of the Smoked Fish Processors have access to appropriate storage facilities for their processed fish. On regional basis, the proportion of fish processors in the Central Region with access to storage facility is 44%. This implies that every 4 in 10 Smoked Fish Processors in the Central Region have a storage facility for storing the processed fish.

Table 30 Access to storage facility by the Smoked Fish Processors

Access to storage facility	Number	Percent
Central Region	(N=100)	
Yes	44	44%
Western Region	(N=60)	
Yes	37	62%
Overall	(N=160)	
No	79	49%
Yes	81	51%

The situation of Western Region however is the contrary to the Central Region as majority of the Smoked Fish Processors (62%) have access to an appropriate storage facility for the processed smoked fish. Table 32 indicates that, of the Fish Smoked Processor that had no appropriate storage facility, majority of them store their processed smoked fish on the stoves (81%).

Table 31 Alternative storage utilized by Fish Processors without storage facilities

Where do you keep processed fish	Number	Percent
Central Region	(N=56)	
On the stove	45	80.4%
Leaves on the tray at the processing shed	2	3.6%
In the bedroom	3	5.4%
At the kitchen	3	5.4%
Process and sell immediately	3	5.4%
Western Region	(N=23)	
On the stove	19	82.6%
Leaves on the tray at the processing shed	2	8.7%
In the bedroom	0	0.0%
At the kitchen	2	8.7%
Process and sell immediately	0	0.0%
Overall	(N=79)	
On the stove	64	81.0%
Leaves on the tray at the processing shed	4	5.1%
In the bedroom	3	3.8%
At the kitchen	5	6.3%
Process and sell immediately	3	3.8%

3.3.3 Average size of business working capital of Smoked Fish Processors

For every successful business, the size of the business working capital is essential to ensure growth and expansion of the business as well as serve as the engine to ensure profitability. The average size of the business working of the Smoked Fish Processors were assessed in the segmentation study and the results indicate that a higher proportion (61.9%) of the processors current working capital was less than GHC5,000.00.

Table 32 Average working capital of Smoked Fish Processors

Average working capital of the Smoked Fish Processors		
Fish Processors	Number	Percent
Central Region (N=100)		
GHC200 - GHC 1,999	36	36.0%
GHC2,000 -GHC4,999	28	28.0%
GHC5,000 -GHC14,999	20	20.0%
GHC15,000 -GHC29,999	9	9.0%
GHC30,000 and Above	7	7.0%
Western Region (N=60)		
GHC200 - GHC 1,999	24	40.0%
GHC2,000 -GHC4,999	11	18.3%
GHC5,000 -GHC14,999	18	30.0%
GHC15,000 -GHC29,999	6	10.0%
GHC30,000 and Above	1	1.7%
Overall (N=160)		
GHC200 - GHC 1,999	60	37.5%
GHC2,000 -GHC4,999	39	24.4%
GHC5,000 -GHC14,999	38	23.8%
GHC15,000 -GHC29,999	15	9.4%
GHC30,000 and Above	8	5.0%

The Processors with working capital between GHC200 to GHC1,999 constituted 37.5%, GHC2,000- GHC4,999 constituted 24.4%, GHC5,000 - GHC14,000 constituted 23.8%, GHC15,000 – GHC29,999 constituted 9.4% and GHC30,000 and above constituted 5%. A fewer proportion of the processors have working capital of GHC30,000 and Above.

Business working capital by Monthly Sales Turnover

Figure 10 shows a positive correlation between the business working capital and the monthly sales turnover. Fish Processors with higher business working capital have higher sales



Figure 11 Distribution of Business Working Capital by Monthly Sales Turnover

Business working capital by Production volume

Figure 11 shows that Processors with higher business working capital tends to produce more compared with processors with lower business working capital. The trend is explained by the purchasing power of the processors with higher business working capital in terms of fresh fish stock to process.

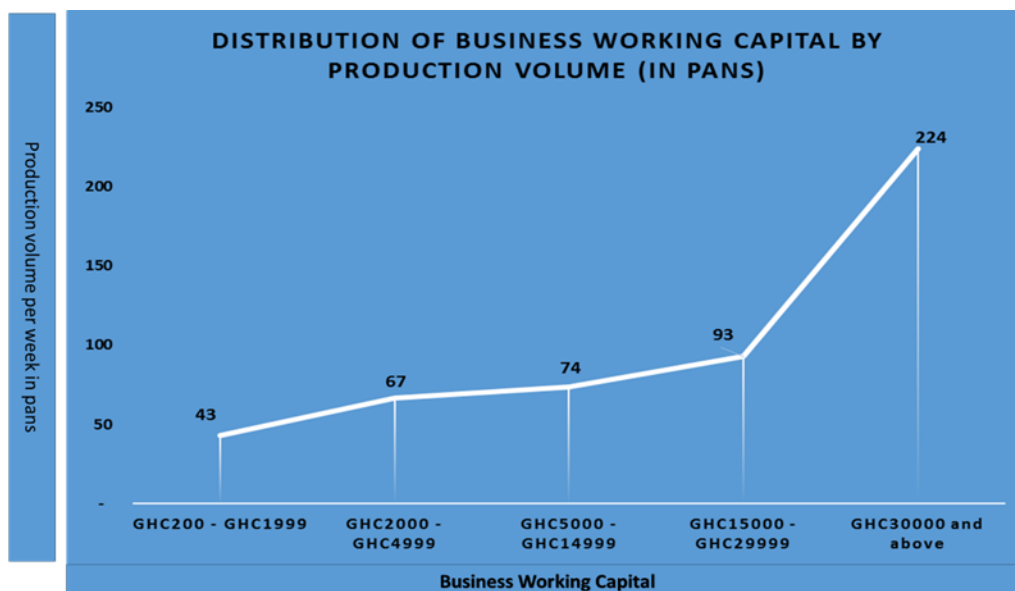


Figure 12 Distribution of Business Working Capital by Production Volume.

3.3.4 The Labor force of the Smoked Fish Processors

Smoked Fish Processors usually require helping hands to support them in their processing activities. Results from table 33 indicate that 64.4% of the Smoked Fish Processors use family members as labor for the processing activities. Significant proportions (58.1%) of the Smoked Fish Processors use hired paid laborers as helping hands for their processing activities.

Table 33 Categories of labor force used by the Smoked Fish Processors

Categories of labor used by Fish Processors	Number	Percent
Central Region	(N=100)	
Equal Partners	6	6.0%
Family Workers	61	61.0%
Paid Laborers	62	62.0%
In-kind Laborers	0	0.0%
Western Region	(N=60)	
Equal Partners	3	5.0%
Family Workers	42	70.0%
Paid Laborers	31	51.7%
In-kind Laborers	0	0.0%
Overall	(N=160)-	
Equal Partners	9	5.6%
Family Workers	103	64.4%
Paid Laborers	93	58.1%
In-kind Laborers	0	0.0%

According to the discussants during the focus group discussions, the micro and small scale processors usually do not use hired labor because they resort to family members as helping hands for their processing activities. The reasons were attributed to the fact that most of the

micro and small processes purchases their fresh fish and other inputs on credit they are unable to engage the services of hired paid laborers and scale of production volume usually can be managed without an external helping hand.

3.3.5 The size of the Labor force hired by the Smoked Fish Processors

Results from the study indicate that, of the proportion of Smoked Fish Processors who engaged the services of paid laborers, 52.7% of the processors hired 1 – 3 paid laborers. 40.9% of the processors hired 4 -6 paid laborers and 1.1% hired 7 – 10 paid laborers. A significant proportion of the Smoked Fish Processors hired 10 or more paid laborers.

Table 34 The size of the labor force used by the Smoked Fish Processors

Size of labor force used by Smoked Fish Processors		
Processors	Number	Percent
Central Region	(N=62)	
1 - 3 hired labor	27	43.5%
4 - 6 hired labor	30	48.4%
7 - 9 hired labor	1	1.6%
10 and Above hired labor	4	6.5%
Western Region	(N=31)	
1 - 3 hired labor	22	71.0%
4 - 6 hired labor	8	25.8%
7 - 9 hired labor	0	0.0%
10 and Above hired labor	1	3.2%
Overall	(N=93)	
1 - 3 hired labor	49	52.7%
4 - 6 hired labor	38	40.9%
7 - 9 hired labor	1	1.1%
10 and Above hired labor	5	5.4%

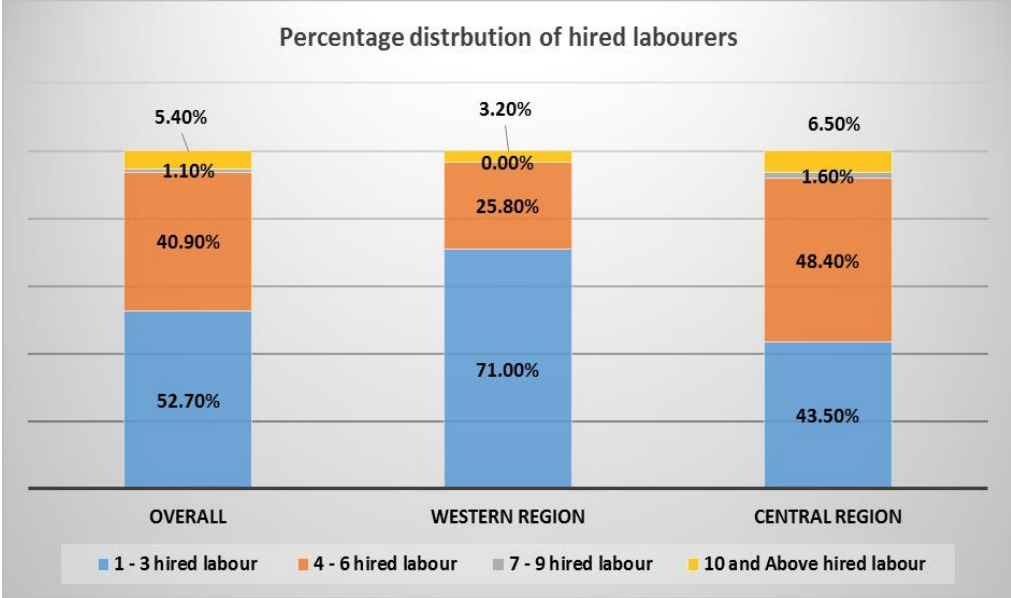


Figure 13 Percentage distribution of hired laborers engaged by Processors

3.3.6 Frequency of payment of hired paid labor by the Smoked Fish Processors

Results from table 36 indicate that, majority (51.6%) of the Smoked Fish Processors pay their hired laborers on daily basis. More than half of the processors pay their hired laborers on daily basis. Laborers paid on bi-weekly basis by the processors constitute 9.7% and monthly paid hired laborers also constituted 8.6%. Some of the laborers are also paid on an annual basis and these constitute 4.3%.

Table 35 Frequency of payment of hired paid laborers

Frequency of payment of hired laborers by Smoked Fish Processors	Number	Percent
Central Region (N=62)		
Daily	43	69.4%
Weekly	11	17.7%
Bi-weekly	1	1.6%
Monthly	2	3.2%
As and When available	1	1.6%
Annual	4	6.5%
Western Region (N=31)		
Daily	5	16.1%
Weekly	12	38.7%
Bi-weekly	8	25.8%
Monthly	6	19.4%
As and When available	0	0.0%
Annual	0	0.0%
Overall (N=93)		
Daily	48	51.6%
Weekly	23	24.7%
Bi-weekly	9	9.7%
Monthly	8	8.6%
As and When available	1	1.1%
Annual	4	4.3%

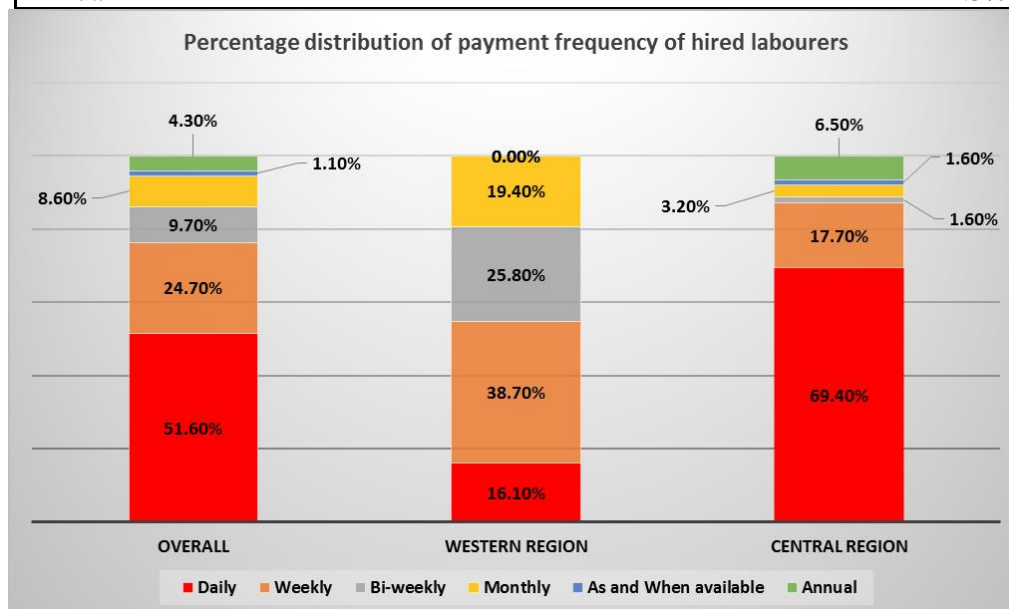


Figure 14 Percentage distribution of payment frequency of hired labourers

3.3.7 Gender distribution of Labor force engaged by the Smoked Fish Processors

The nature of the fish smoke processing require that some of the processors engage helping hands to assist them with the processing activities. A total of 551 female labor force is engaged by 149 Smoked Fish Processors giving an average of 4 female helping hands per processor. A total of 58 male labor force is engaged by 25 Smoked Fish Processors giving an average of 2 male helping hands per processor.

Table 36 Gender distribution of labor force engaged by the Fish processors

Gender distribution of labor used by fish processors	Number	Percent	Total labor force	Average labor
Central Region	100			
Female	95	95%	346	4
Male	15	15%	40	3
Western Region	60			
Female	54	90%	205	4
Male	10	17%	18	2
Overall	160			
Female	149	93%	551	4
Male	25	16%	58	2

3.3.8 Family members used by the Smoked Fish Processors as helping hands

Results from table 38 indicates that a total of 308 family members are engaged by 103 Smoked Fish Processors as helping hands in their processing activities. On the average, 3 family members is engaged by each processor.

Table 37 Family members engaged by Smoked Fish Processors

Family members engaged in processing activity	Number	Total Number engaged	Average number of family members
Central Region			
Total number of family members	61	176	3
Western Region			
Total number of family members	42	132	3
Overall			
Total number of family members	103	308	3

3.3.9 Access to savings account

Ghana has signed to the international agenda towards promoting inclusive finance by ensuring that every Ghanaian above age 18 years operates a bank account. Statistics available (FINGAP) indicates that more than 60% of the Ghanaian population above age 18 are financially excluded (do not have a bank account).

The study assessed the Smoked Fish Processors to ascertain the proportion that have savings account. Overall, 62.5% of the processors operate a savings account. This indicate that 6 in every 10 Fish Smoke Processor operate a savings account with a Financial Institution.

Table 38 Access to savings account

Operate Savings Account	Number	Percent
Central Region	(N=100)	
Have savings account	59	59.0%
Don't have savings account	41	41.0%
Western Region	(N=60)	
Have savings account	41	68.3%
Don't have savings account	19	31.7%
Overall	(N=160)	
Have savings account	100	62.5%
Don't have savings account	60	37.5%

3.3.10 Type of Financial Institution the Processors have savings account with

Table 40 indicates that, the Smoked Fish Processors have savings accounts with the following Financial Institution; Credit Unions, Microfinance Companies, Rural/Community Banks, Universal Banks and Susu Enterprises.

The proportion that have savings account with Universal Banks constitute 7.3%, those that have savings account with microfinance companies constitute 39.0% and Rural/Community Banks constitute 36.6%. Majority of the Smoked Fish Processors save with 1st and 2nd Tier Microfinance Finance Institutions in Ghana.

Table 39 Financial Institutions where Smoked Fish Processors operate savings accounts

Financial Institutions where Processors operate savings account	Number	Percent
Central Region	59	
Credit Union	2	3.4%
Microfinance Company	17	28.8%
Rural/Community Bank	25	42.4%
Universal Bank	3	5.1%
Susu Enterprise	12	20.3%
Western Region	41	
Credit Union	6	14.6%
Microfinance Company	16	39.0%
Rural/Community Bank	15	36.6%
Universal Bank	3	7.3%
Susu Enterprise	1	2.4%
Overall	100	
Credit Union	8	8.0%
Microfinance Company	33	33.0%
Rural/Community Bank	40	40.0%
Universal Bank	6	6.0%
Susu Enterprise	13	13.0%

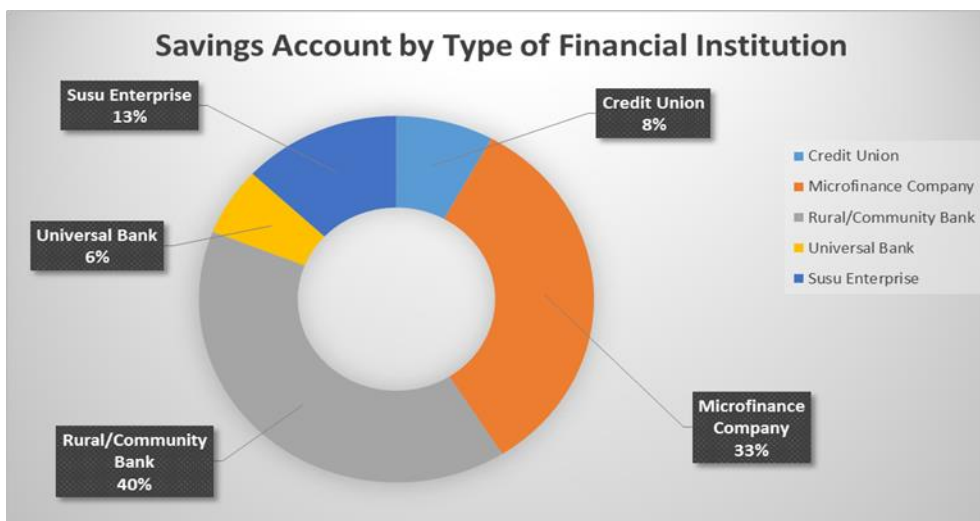


Figure 15 Savings Account by type of financial institution

3.3.11 Access to Credit

The Smoked Fish Processors often require micro-credit to expand their business operations and size. The proportion of Smoked Fish Processors that have ever taken a loan facility from a Financial Institution is 38.1%. A greater proportion (61.9%) of the Smoked Fish Processors have never taken a loan facility from a Financial Institution in the country.

Although significant proportion of Fish Processors operate savings account with Financial Institutions, not many of them have ever accessed loan facilities from the Financial Institutions.

Table 40 Access to Credit

Access to Credit	Number	Percent
Central Region	100	
Ever taken a loan	42	42.0%
Never taken a loan	58	58.0%
Western Region	60	
Ever taken a loan	19	31.7%
Never taken a loan	41	68.3%
Overall	160	
Ever taken a loan	61	38.1%
Never taken a loan	99	61.9%

According to the discussions in the focus group discussion sessions, majority of the women made several attempts to access micro-credit from available Financial Institutions but due to the cumbersome application processes and requirements a number of the processors often do not qualify. Of the proportion who qualified, the high interest rate charged by the Financial Institutions deterred them from taking the loans.

3.3.12 Financial Institutions that provided credit to the Smoked Fish Processors

Results from the study indicate that the Smoked Fish Processors accessed micro-credit from the following financial institutions; credit union, MASLOC, Rural/Community Banks, Microfinance companies, Universal banks, Savings and Loans Companies. A greater proportion of the processors took loans from Rural and Community Banks and Microfinance companies.

The proportion of processors that took loan from universal banks constitute 11.5% and that of Rural and Community Banks constitute 49.2%. Most of the processors accessed their loans from Rural and Community Banks followed by Microfinance Companies (27.9%).

Discussants during the focus group discussion sessions indicate that, the universal bank that has been very open and helpful is GN Bank especially for processors in the Central Region around Elmina and Moree. Others also mentioned the supporting role of the rural banks in promoting their business growth and expansion through micro credits.

Some were also of the view that the loan application processes and requirements are sometimes very cumbersome and rigid coupled with high interest rate charges. The discussants mentioned that the interest rates charged by the rural/community Banks and Microfinance Companies ranges between 3.5% to 5% flat rate per month.

Some of the discussants mentioned that, their experience with financial institutions in accessing micro-loans has not been very helpful as they ended up repaying the loans with their working capital due to the high interest rate and short period of repayment.

Table 41 Financial Institutions that provided Credit to the Smoked Fish Processors

Financial that provided Credit to the Processors	Number	Percent
Central Region	42	
Credit Union	2	4.8%
Microfinance Company	13	31.0%
Rural/Community Bank	21	50.0%
Universal Bank	4	9.5%
MASLOC	2	4.8%
Savings and Loans Company	0	0.0%
Western Region	19	
Credit Union	1	5.3%
Microfinance Company	4	21.1%
Rural/Community Bank	9	47.4%
Universal Bank	3	15.8%
MASLOC	1	5.3%
Savings and Loans Company	1	5.3%
Overall	61	
Credit Union	3	4.9%
Microfinance Company	17	27.9%
Rural/Community Bank	30	49.2%
Universal Bank	7	11.5%
MASLOC	3	4.9%
Savings and Loans Company	1	1.6%

3.3.13 The off-takers of fish processed by the Smoked Fish Processors

Results from the study indicate that, the Smoked Fish Processors sell their processed fish to bulk aggregators/buyers, friends, other fish processors and any available customer. A greater proportion of the processors sell their processed fish to any available customer (66.9%).

Table 42 The target customers the Smoked Fish Processors sells to

The target customers the processors sells their fish to	Number	Percent
Central Region	100	
A friend	2	2.0%
Bulk Aggregator/Buyer	27	27.0%
Another Fish Processor	0	0.0%
Any available customer	85	85.0%
Western Region	60	
A friend	0	0.0%
Bulk Aggregator/Buyer	40	66.7%
Another Fish Processor	1	1.7%
Any available customer	22	36.7%
Overall	160	
A friend	2	1.3%
Bulk Aggregator/Buyer	67	41.9%
Another Fish Processor	1	0.6%
Any available customer	107	66.9%

3.3.14 Where processed fish is sold by the Smoked Fish Processors

The Smoked Fish Processors usually have dedicated markets and other places they usually go to sell their processed smoked fish. From the study, 96.9% of the Smoked Fish Processors sell their processed fish at the market. 6.9% of the Processors sell their processed smoked fish at home and 1.9% sell right at the processing site.

Table 43 Where processed fish is sold by the Processors

Where processed fish is sold by the Processors	Number	Percent
Central Region	(N=100)	
Market	98	98.0%
At home	3	3.0%
At Processing site	1	1.0%
Western Region	(N=60)	
Market	57	95.0%
At home	8	13.3%
At Processing site	2	3.3%
Overall	(N=160)	
Market	155	96.9%
At home	11	6.9%
At Processing site	3	1.9%

3.3.15 The markets in which processed smoke fish are sold

Results from the study indicate that, of the proportion who sell their processed smoked fish at the market, 75.5% sell at the District markets whereas 70.3% at the regional markets. 1.9% of the Processors sell their processed smoked fish at the local market.

Table 44 Types of market in which processed smoke fish is sold

Type of markets	Number	Percent
Central Region	(N=98)	
Local market	2	2.0%
District market	66	67.3%
Regional Market	73	74.5%
Outside of Ghana	3	3.1%
Western Region	(N=57)	
Local market	1	1.8%
District market	51	89.5%
Regional Market	36	63.2%
Outside of Ghana	1	1.8%
Overall	(N=155)	
Local market	3	1.9%
District market	117	75.5%
Regional Market	109	70.3%
Outside of Ghana	4	2.6%

3.3.16 Mode of transporting processed smoke fish to the market

The predominant mode of transport utilized by the processors is public transport (68.1%) followed by cargo trucks (36.3%).

Table 45 Mode of transporting processed smoke fish to the market

Mode of transporting processed fish	Number	Percent
Central Region	(N=100)	
On foot	1	1.0%
Motor king tricycle	1	1.0%
Public transport	60	60.0%
Cargo truck	41	41.0%
Western Region	(N=60)	
On foot	0	0.0%
motor king tricycle	0	0.0%
Public transport	49	81.7%
Cargo truck	17	28.3%
Overall	(N=160)	
On foot	1	0.6%
motor king tricycle	1	0.6%
Public transport	109	68.1%
Cargo truck	58	36.3%

3.3.17 Time of selling processed fish

Due to the scale of production and inadequate appropriate storage facilities most of the Smoked Fish Processors are not able to store their processed fish for a longer duration. Results from the study indicate that, 60% of the Processors sell their finished goods on market days. Significant proportion of the processors also sell their finished goods on daily basis and 14.4% sell “as and when available” to their customers. Less than 1% of the processors sell their finished goods on monthly basis.

Table 46 Time of selling processed fish

Time of selling processed smoke fish	Number	Percent
Central Region	(N=100)	
On market days	64	64.0%
Daily	5	5.0%
Weekly	17	17.0%
Monthly	1	1.0%
As and when available	16	16.0%
Western Region	(N=60)	
On market days	32	53.3%
Daily	5	8.3%
Weekly	19	31.7%
Monthly	0	0.0%
As and when available	7	11.7%
Overall	(N=160)	
On market days	96	60.0%
Daily	10	6.3%
Weekly	36	22.5%
Monthly	1	0.6%
As and when available	23	14.4%

During the focus group discussions, discussants were of the view that the processors are unable to store their processed fish for longer period due to the following:

- They mostly purchase the fresh fish stock on credit and therefore have to quickly sell the processed fish to pay their creditors.
- Some of the processors have taken loan facilities from financial institutions so have to sell to repay the loan taken.
- Some of the processors also are the bread winners of their respective families and therefore require cash to make provision for the family.
- Some of the Processors also enjoy to have cash on hand on a continuous basis.

3.3.18 Average Monthly Sales

Results from table 48 indicates that, the average monthly sales turnover per processor is GHC18,603.13 overall. For the processors in the Central Region, the average monthly sales per processor is GHC22,394.00 and that of Western Region is GHC12,285.00. The average monthly sales per processor is higher in Central Region compared to the Western Western Region.

Table 47 Average Monthly Sales per Processor

Monthly Sales	Number	Total Amount	Average Monthly Sales per processor
Central Region			
	100	2,239,400.00	22,394.00
Western Region			
	60	737,100.00	12,285.00
Overall			
	160	2,976,500.00	18,603.13

Monthly Sales during the lean season

Results from table 49 indicates that during the lean season, 17.5% of the Processors have monthly sales turnover less than GHC2,000. 45.6% of the Processors have monthly sales turnover between GHC2,000 and GHC10,000 whereas 36.9% recorded monthly sales turnover above GHC10,000.

Table 48 Regional distribution of Processors monthly sales lean season

Monthly Sales	Number	Percent	Total Amount	Average Sales per Processor
Central Region (N=100)				
Less than GHC2,000	20	20.0%	20,100.00	1,005.00
GHC2,000 - GHC10,000	44	44.0%	222,800.00	5,063.64
Above GHC10,000	36	36.0%	1,996,500.00	55,458.33
Western Region (N=60)				
Less than GHC2,000	8	13.3%	10,100.00	1,262.50
GHC2,000 - GHC10,000	29	48.3%	159,900.00	5,513.79
Above GHC10,000	23	38.3%	567,100.00	24,656.52
Overall (N=160)				
Less than GHC2,000	28	17.5%	30,200.00	1,078.57
GHC2,000 - GHC10,000	73	45.6%	382,700.00	5,242.47
Above GHC10,000	59	36.9%	2,563,600.00	43,450.85

Monthly Sales during the bumper season

Results from the study indicate that during the bumper season, 2% of the Processors have monthly sales turnover less than GHC2,000; 35% of the Processors have monthly sales turnover between GHC2,000 and GHC10,000 whereas 63% recorded monthly sales turnover above GHC10,000.

Table 49 Regional distribution of Processors monthly sales bumper season

Monthly Sales	Number	Percent	Total Amount	Average Sales per Processor
Central Region (N=100)				
Less than GHC2,000	2	2.0%	3,200.00	1,600.00
GHC2,000 - GHC10,000	29	29.0%	222,800.00	7,682.76
Above GHC10,000	69	69.0%	4,140,000.00	60,000.00
Western Region (N=60)				
Less than GHC2,000	1	1.7%	1,500.00	1,500.00
GHC2,000 - GHC10,000	27	45.0%	121,500.00	4,500.00
Above GHC10,000	32	53.3%	1,401,600.00	43,800.00
Overall (N=160)				
Less than GHC2,000	3	2.00%	4,700.00	1,566.67
GHC2,000 - GHC10,000	56	35.00%	344,300.00	6,148.21
Above GHC10,000	101	63.00%	5,541,600.00	54,867.33

Comparing the monthly sales of the lean season with the bumper season, the results from table 49 and 50 indicate that the sales doubles in the bumper season for processors that made total monthly sales above GHC10,000. During the bumper season, majority of the smoked fish processors moves to a higher monthly sales turnover category compared to the lean season.

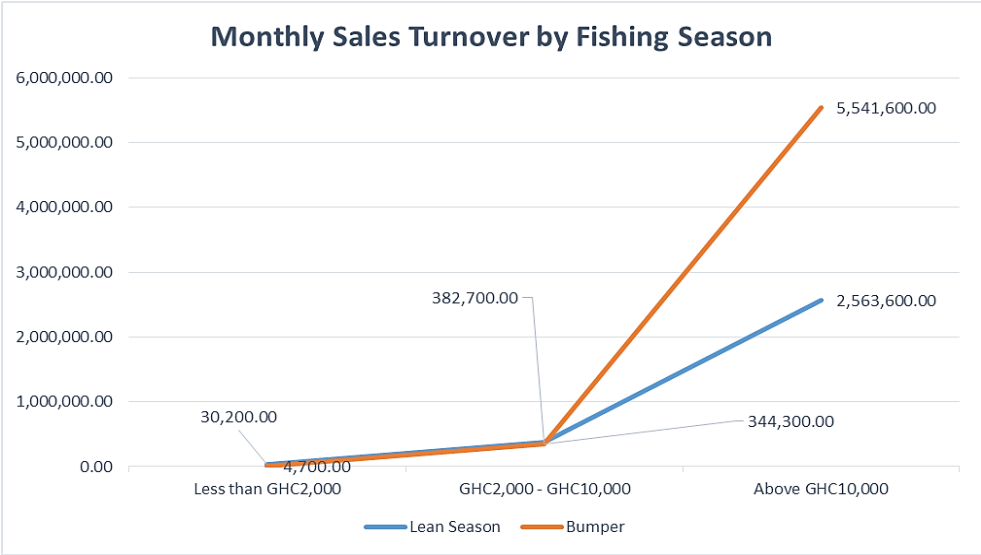


Figure 16 Monthly sales turnover by fishing season

3.3.19 Equipment base of the Smoked Fish Processors

Table 52 below provides details of the asset base of the Smoked Fish Processors in the Central and Western Regions. Less than 20% (19%) of the processors own canoe/boats.

Table 50 The asset base of the Processors

Asset base of the Processors	Number	Percent	Quantity	Average quantity
Central Region	(N=100)			
Canoe/Boat	12	12%	19	2
Smoking trays	96	96%	5,602	58
Pans	88	88%	1,611	18
Fish smoking stoves	92	92%	476	5
Processing shed	54	54%	60	1
Knife	84	84%	645	8
Processing mat	65	65%	185	3
Refrigerator	4	4%	6	2
Processing table	9	9%	19	2
Vehicle	1	1%	1	1
Basket	33	33%	2,401	73
Outboard motor	2	2%	3	2
Western Region	(N=60)			
Canoe/Boat	19	32%	26	1
Smoking trays	47	78%	3,230	69
Pans	57	95%	622	11
Fish smoking stoves	58	97%	531	9
Processing shed	42	70%	49	1
Knife	56	93%	479	9
Processing mat	46	77%	120	3
Refrigerator	16	27%	18	1
Processing table	27	45%	46	2
Vehicle	0	0%	-	0
Basket	34	57%	526	15
Outboard motor	11	18%	22	2
Overall	(N=160)			
Canoe/Boat	31	19%	45	1
Smoking trays	143	89%	8,832	62
Pans	145	91%	2,233	15
Fish smoking stoves	150	94%	1,007	7
Processing shed	96	60%	109	1
Knife	140	88%	1,124	8
Processing mat	111	69%	305	3
Refrigerator	20	13%	24	1
Processing table	36	23%	65	2
Vehicle	1	1%	1	1
Basket	67	42%	2,927	44
Outboard motor	13	8%	25	2

3.3.20 Affiliation to Agro Processing Group/Association

Ideally the Smoked Fish Processors are expected to belong to a group or network association of fish mongers or processors or traders. However, results from the table 51 indicate that 61.3% of the processors belong or are part of a group/Association. The regional dynamics also greatly interplay as 90% of the processors in the Western region belong to an Association compared to 56% in the Central Region. In conclusion, 9 in every 10 processors in the Western Region belong to an Association or processor groups compared to 6 in 10 in the Central Region.

Table 51 Affiliation to Agro Processing Group/Association

Affiliation to Agro Processing Group/Association	Number	Percent
Central Region	(N=100)	
Yes	44	44.0%
No	56	56.0%
Western Region	(N=60)	
Yes	54	90.0%
No	6	10.0%
Overall	(N=160)	
Yes	98	61.3%
No	62	38.8%

3.3.21 Business Needs of the Fish Processors

The business needs identified by the Smoked Fish Processors during the focus group discussion sessions and one-on-one interviews were as follows:

- Business working capital loans with lower interest rate and flexible repayment terms.
- Processing sheds to harness their processing activities.
- Improved fish smoking stoves to complement the chorkor stoves as it will reduce the expenditure on fuel wood and reduce the level of smoke inhaled.
- Canoe and other fishing boats
- Pans, Processing mats and trays
- Refrigerator for keeping the fish fresh
- Outboard motors for the canoes
- Wire mesh to replace the older and thorn ones on the trays
- Small business management training especially on records keeping and sells
- Technical training on modern fish smoke processing techniques and storage.

3.3.22 Challenges of the Smoked Fish Processors

- Limited access to credit/loans
- High interest rate charged by the financial institutions
- Deception by some financial institutions (they collapse resulting in loss of savings)
- Irregular supply of premix fuel for the fishermen
- Unfair fishing practices by the Chinese boat operators on the high seas resulting in poor harvest/catch.
- Activities of the oil drilling contributing to poor harvest
- Credibility of financial institutions is questionable
- Collateral on loans demanded by financial institutions
- Loan application processes usually cumbersome
- Enforcement of Government policies on illegal fishing practices
- Some gets cheated by the Market queens and other bulk aggregators/buyers.

CONCLUSION AND RECOMMENDATIONS

The classification of the processors heavily depends on their asset base, employee and working capital. Although the national standard for classification of business scale is by the number of employees and asset base, using this as a benchmark for categorizing the processors would under rate most of the large and medium processors. However using a combination of the number of employees, working capital and the asset base of the processors would provide a true reflection of their business nature.

The segmentation study revealed that, the socio-economic conditions under which the processors operate is influenced by their income, education and access to financial services. Some of the processors operate the business as a family business that employs family members while others also resort to hire paid laborers who are not family members. The socio-cultural dynamics also greatly interplay in the business nature of the Smoke Fish Processors as some resort to traditional ways of running their businesses. Majority of the processors have been involved in the fish smoking processing for more than 13 years and have adopted to certain practices such as; storing the processed fish on the stove, use of traditional mud stove passed-on by parents, use of family members as helping hands as well as involving children under age 18 as helping hands.

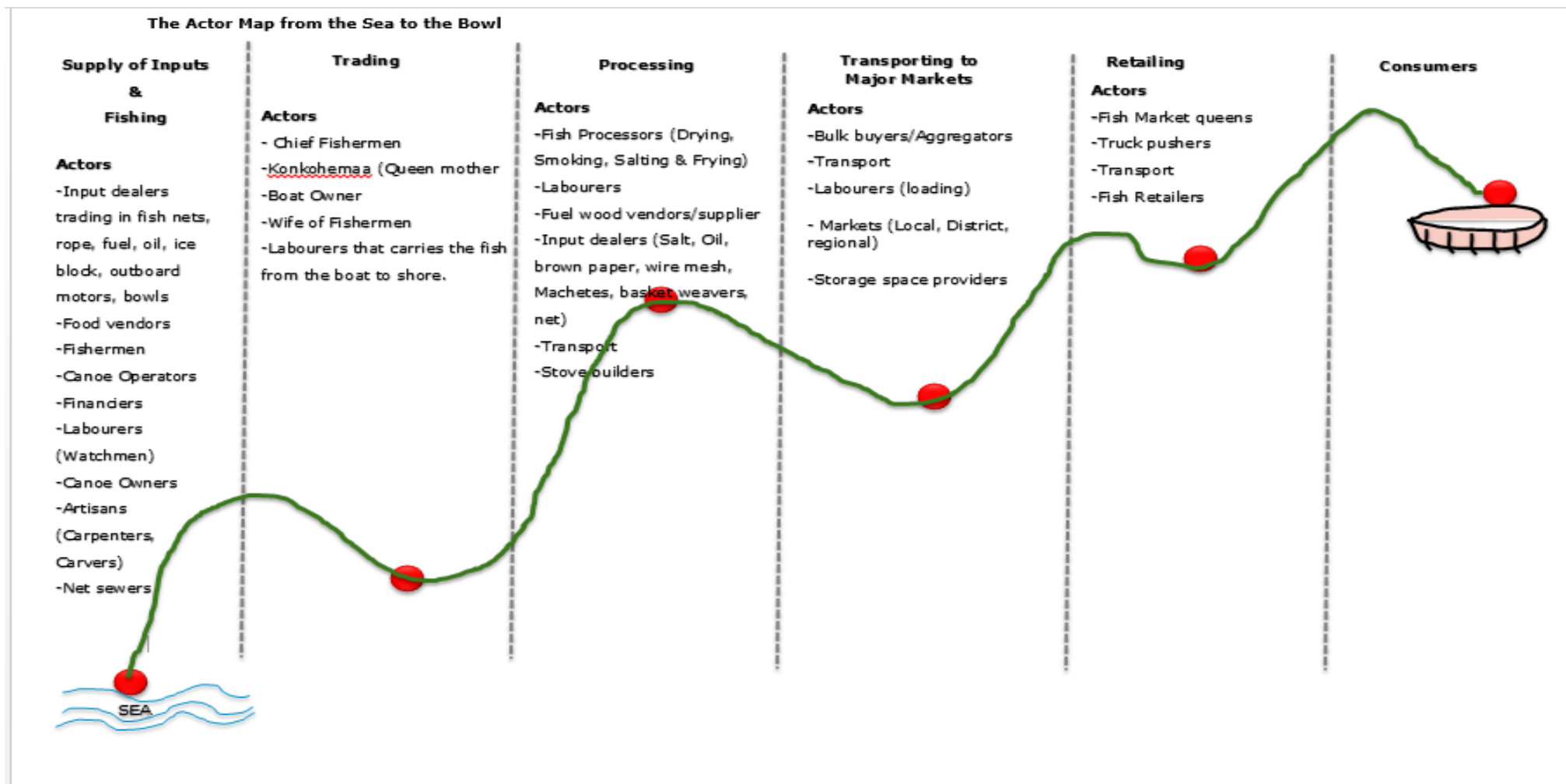
There is the need to introduce new improved fish smoking stove technology that is capable of handling large size fish stock. Currently most of the processors who processes large size fish stock use the traditional/mud round stove. The processors are unable to smoke the large size fish using the chorkor because the trays do not have the capacity to handle the large fish stock. Those who tried using the trays had to replace the wire mesh on a continuously basis as the wire mesh easily gets thorn due to the weight and size of the fish. The processing trays should be redesigned taking into account the weight and size of the fish stock processed especially for the improved fish smoking stoves.

The main investment needs of the processors are working capital support. Majority of the processors identified working capital as their number one need followed by wire mesh to replace thorn ones, processing shed and trays. There is the need to create sustainable market linkages that would facilitate the provision of affordable and low interest rate working capital loans to the processors either through the Government or the private sector. Private sector participation will be necessary to ensure provision of sustainable working capital for the processors.

Enforcement of good fishing practices is necessary to ensure sustainable livelihoods within the fishing industry in Ghana. Majority of the women along the coastal belt of Ghana heavily depend on fish processing as their major economic livelihood activity. Depletion of the fish stock through bad fishing practices would have a negative impact on the livelihoods of these women which would subsequently result in increased poverty levels. Government and development partners need to work together in promoting good fishing practices and enforce laws governing prohibited fishing practices by the Chinese and Ghanaian fishermen. The need to promote alternative livelihoods is necessary to reduce the over-reliance on fish processing activities along the coastal belt of Ghana.

Gender mainstreaming of the activities of the fish processors will be necessary to ensure sustainable livelihoods. The men should be isolated in the fish processing activities as they essential support to the women in the fish processing industry. The survey results indicate that the married processors produced large volume of smoked fish compared to the divorced, widowed and single processors.

Appendix 1: Actor Map from the Sea to the Bowl



Appendix 2: Segmentation study Questionnaire

SEGMENTATION AND DEVELOPMENT OF INVESTMENT TOOL QUESTIONNAIRE FOR FISH PROCESSOR

Date of Interview	
Community	
GPS Coordinates of Community	Long: _____ Lat: _____
GPS Coordinates for the Fish Processor [Shed]	Long: _____ Lat: _____
Region	Central Region [<input type="checkbox"/>] _____ Western Region [<input type="checkbox"/>] _____
Name of Enumerator	

SECTION A: Demographic Characteristic of Respondent

A1	Sex of Respondent	Female [<input type="checkbox"/>]	Male [<input type="checkbox"/>]
A2	Educational Background	No Schooling [<input type="checkbox"/>]	Primary [<input type="checkbox"/>]
		Middle school/JHS [<input type="checkbox"/>]	SHS [<input type="checkbox"/>]
		Post-Secondary [<input type="checkbox"/>]	Tertiary [<input type="checkbox"/>]
		Non-formal Education [<input type="checkbox"/>]	
A3	Marital Status	Single [<input type="checkbox"/>]	Separated [<input type="checkbox"/>]
		Married [<input type="checkbox"/>]	Divorced [<input type="checkbox"/>]
		Widowed [<input type="checkbox"/>]	Co-habiting [<input type="checkbox"/>]
A4	Number of dependents	1 – 3 [<input type="checkbox"/>]	4 – 6 [<input type="checkbox"/>]
		7 and Above [<input type="checkbox"/>]	
A5	Age of Respondent	18 – 30 years [<input type="checkbox"/>]	
		31 – 40 years [<input type="checkbox"/>]	
		41 – 49 years [<input type="checkbox"/>]	
		Above 50 years [<input type="checkbox"/>]	

SECTION B: THE BUSINESS NATURE

B1	What form of Business do you undertake within the fishing industry?	Fish Processor [<input type="checkbox"/>]
		Fish Processor & Trader [<input type="checkbox"/>]
		Fish Trader [<input type="checkbox"/>]
B2	Do you do another form of fish processing apart from fish smoking? [TICK ALL THAT APPLIES]	Drying [<input type="checkbox"/>]
		Salting [<input type="checkbox"/>]
		Frying [<input type="checkbox"/>]
		Other specify:.....
B3	How long have you been in the Fish processing business?	Less than 1 year [<input type="checkbox"/>]
		1 – 3 years [<input type="checkbox"/>]
		4 – 6 years [<input type="checkbox"/>]
		7 – 10 years [<input type="checkbox"/>]
		10 - 13 years [<input type="checkbox"/>]
		Above 13 years [<input type="checkbox"/>]
B4	Do you own a fish smoking stove? [if Yes, skip to QB6]	Yes [<input type="checkbox"/>]
		No [<input type="checkbox"/>]

B1	What form of Business do you undertake within the fishing industry?	Fish Processor [] Fish Processor & Trader [] Fish Trader []	
B5	If do not own a stove by yourself, how do you get a stove to smoke your fish?	Rent it [] Belong to family relation [] Belong to a friend [] Other (specify):.....	
B6	What type(s) of fish smoking stoves do you use? [CHECK TO VERIFY THE TYPE(S) OF STOVE] [Please tick all that applies]	Chorkor stove [] Frismo/Kosmos [] Morrison [] FTT stove [] Traditional mud or metal stove [] Other specify:.....	
B7	What is the size of the stove your use for fish processing	Sing unit [] Double Unit [] Triple Unit []	
B8	Why the choice of the stove you are using [Please tick all that applies]	Cost of the stove [] Design of the stove [] Durability of the stove [] Mobility of the stove [] Inherited [] Availability at time of purchase [] Fuel Consumption [] Emission of smoke [] Capacity of the stove [] Other (Specify):.....	
B9	What are the most important factors you considered in the choice of stove [RANK in order importance mentioned by respondent]	Cost of the stove	
		Design of the stove	
		Durability of the stove	
		Mobility of the stove	
		Emission of smoke	
		Fuel Consumption	
		Capacity of the stove	
		Availability of technology	
B10	How much did it cost you to construct/build the fish smoking stove you are currently using?	Chorkor stove GHC_____	
		Frismo/Kosmos GHC_____	

B1	What form of Business do you undertake within the fishing industry?	Fish Processor [] Fish Processor & Trader [] Fish Trader []
		Morrison stove GHC _____ FTT stove GHC _____ Traditional stove GHC _____
B11	How many stoves (units) do you usually use at a time during the bumper season?	One unit [Number: _____] Double [Number: _____] Triple [Number: _____]
B12	How many stoves (units) do you usually use at a time during the lean season?	One unit [Number: _____] Double [Number: _____] Triple [Number: _____]
B13	How many pans/cartons of fish do you usually process per week during the bumper fishing season?	Pans: [_____] Cartons:[_____]
B14	How many trays do you smoke per week during the bumper fishing season?	
B15	How many months do you process fish in a year?	
B16	Do you usually process fish during the off season? [If No, Skip to QB18]	Yes [] No []
B17	How many pans/cartons of fish do you process per week during the off/lean season?	Pans: [_____] Cartons:[_____]
B18	Where do you usually buy your fresh fish from during the off-season for processing? [SKIP QB20 if not cold store]	Cold store [] From a Friend [] Fishermen [] Other (specify):.....
B19	How many cartons do you usually buy from the cold store to process?	
B20	What types of fish stock do you usually process?	Tuna [] Barracuda []

B1	What form of Business do you undertake within the fishing industry?	Fish Processor [] Fish Processor & Trader [] Fish Trader []
	[Please tick all that applies]	Sadinella [] Horse Mackerel [] Red fish [] Anchovy [] Other (specify):.....
B21	Do you undertake any other economic/livelihood activities during the off fish season? <i>[If No, skip to C1]</i>	Yes [] No []
B22	If Yes, what form of economic/livelihood activity do you undertake?	Petty Trading [] Farming [] Agro Processing []]..... Livestock rearing [] Other (Specify):.....

SECTION C: BUSINESS ASSETS AND OPERATIONS

C1	What form of equipment/assets do you have for your fish processing business? [TICK AS APPROPRIATE AND INDICATE THE QUANTITIES] OBSERVE THE EQUIPMENT AROUND	Canoe/Boat	
		Smoking Tray	
		Pans	
		Fish Smoking Stove	
		Processing Shed	
		Knife	
		Processing mats	
		Refrigerator	
		Processing table	
		Vehicle/Motorking truck	
		Basket	
		Outboard motor	
	Other (specify):		
	Where did you obtain the main of capital to start your fish processing business?		

C1	What form of equipment/assets do you have for your fish processing business? [TICK AS APPROPRIATE AND INDICATE THE QUANTITIES] OBSERVE THE EQUIPMENT AROUND	Canoe/Boat	
		Smoking Tray	
		Pans	
		Fish Smoking Stove	
		Processing Shed	
		Knife	
		Processing mats	
		Refrigerator	
		Processing table	
		Vehicle/Motorking truck	
		Basket	
		Outboard motor	
Other (specify):			
C2	Do you own a storage facility? [If Yes, skip to C4]	Yes [<input type="checkbox"/>] No [<input type="checkbox"/>]	
C3	If No, where you usually store your processed fish?		
C4	What is average size of your business capital for fish processing?	[<input type="checkbox"/>] GHC 200 - GHC1,999 [<input type="checkbox"/>] GHC 2,000 – GHC 4,999 [<input type="checkbox"/>] GHC 5,000 – GHC 14,999 [<input type="checkbox"/>] GHC15,000 – GHC29,999 [<input type="checkbox"/>] GHC30,000 and Above	
C5	What category of workers are involved in the processing of your fish? [SKIP to C7, if not Family/Friends]	Equal partners [<input type="checkbox"/>] Family/friends [<input type="checkbox"/>] Paid laborers [<input type="checkbox"/>] In-kind laborers [<input type="checkbox"/>] Other (Specify):.....	
C6	If family, How many of your family members are engaged in this business?		
C7	How many workers/labourers have you hired to assist you with the fish processing activities?	1 – 3 [<input type="checkbox"/>] 4 – 6 [<input type="checkbox"/>] 7 – 9 [<input type="checkbox"/>] 10 and Above [<input type="checkbox"/>]	
C8	Disaggregate the laborers/workers by gender	Female [_____] Male [_____]	
C9	What is the frequency of the	Daily [<input type="checkbox"/>] Weekly [<input type="checkbox"/>]	

C1	What form of equipment/assets do you have for your fish processing business? [TICK AS APPROPRIATE AND INDICATE THE QUANTITIES] OBSERVE THE EQUIPMENT AROUND	Canoe/Boat	
		Smoking Tray	
		Pans	
		Fish Smoking Stove	
		Processing Shed	
		Knife	
		Processing mats	
		Refrigerator	
		Processing table	
		Vehicle/Motorking truck	
		Basket	
		Outboard motor	
Other (specify):			
	payment of wages/salary for your hired laborers?	Bi-weekly [] Monthly [] Annual [] Other (Specify):.....	
C10	Do you operate a savings account? [If No, skip to C12]	Yes [] No []	
C11	If Yes, with which Financial Institution?	Universal Bank [] Rural and Community Bank [] Microfinance Company [] Susu Enterprise [] Other (Specify):.....	
C12	Have you ever taken a loan from any Financial Institution for your business? [If No, Skip to QC14]	Yes [] No []	
C13	If Yes, from which Financial Institution?	Universal Bank [] Rural and Community Bank [] Microfinance Company [] Money Lender [] Susu Enterprise [] MASLOC [] Other (Specify):.....	

C1	What form of equipment/assets do you have for your fish processing business? [TICK AS APPROPRIATE AND INDICATE THE QUANTITIES] OBSERVE THE EQUIPMENT AROUND	Canoe/Boat	
		Smoking Tray	
		Pans	
		Fish Smoking Stove	
		Processing Shed	
		Knife	
		Processing mats	
		Refrigerator	
		Processing table	
		Vehicle/Motorking truck	
		Basket	
		Outboard motor	
Other (specify):			
C14	Whom do you usually sell your processed fish to?	A friend/Relation [] Bulk Buyer/Aggregator [] Another fish processor [] Any Available customer [] Other (Specify):.....	
C15	Where do you usually sell your processed fish? [If not Market, Skip to QC18]	Market [] At home [] At Processing site [] Other (specify):.....	
C16	If Market, which type of market do you usually go to sell your processed fish?	Local/Community market [] District market [] Regional market [] Outside Ghana [] Others (specify):.....	
C17	Which specific markets do you usually sell your processed fish (Exact name of the market)		
C18	What mode of transport do you often use in sending your processed fish to the market?	motor king truck [] Tricycle [] Public transport [] Cargo Truck [] On-foot/Walk [] Other (specify):.....	
C19	How much do you usually		

C1	What form of equipment/assets do you have for your fish processing business? [TICK AS APPROPRIATE AND INDICATE THE QUANTITIES] OBSERVE THE EQUIPMENT AROUND	Canoe/Boat	
		Smoking Tray	
		Pans	
		Fish Smoking Stove	
		Processing Shed	
		Knife	
		Processing mats	
		Refrigerator	
		Processing table	
		Vehicle/Motorking truck	
		Basket	
		Outboard motor	
	Other (specify):		
	pay per trip on transport in Ghana Cedis?	GHC _____	
C20	At what times do you usually sell your processed fish?	On market days [] Daily basis [] Weekly basis [] As and when available [] Other (specify):.....	
C21	What is your average monthly sales in terms of fish processed? [Estimate weekly sales with respondent first and then assist respondent to calculate the sales for the month]		
C22	Do you belong to any fish processor group? [If No, skip to C24]	Yes [] No []	
C23	If Yes, which group do you belong to?		
C24	If No, any reason(s) for not joining any of the fish processor group		

What are your immediate business needs?

Business Address

Name of Processor	
Contact Phone Number	
House Number	