Fall 2015

I’m Not A Fishermen, I Don’t Sell Fish, I’m Not Even A Fish: The MicroEconomy of Fish within the Formal and Informal Markets of Mwanza

Austin Brush

Follow this and additional works at: https://digitalcollections.sit.edu/isp_collection

Part of the Agricultural and Resource Economics Commons, Community-Based Research Commons, Family, Life Course, and Society Commons, Place and Environment Commons, Politics and Social Change Commons, Rural Sociology Commons, and the Work, Economy and Organizations Commons

Recommended Citation

Brush, Austin, "I’m Not A Fishermen, I Don’t Sell Fish, I’m Not Even A Fish: The MicroEconomy of Fish within the Formal and Informal Markets of Mwanza" (2015). Independent Study Project (ISP) Collection. 2180.

https://digitalcollections.sit.edu/isp_collection/2180

This Unpublished Paper is brought to you for free and open access by the SIT Study Abroad at SIT Digital Collections. It has been accepted for inclusion in Independent Study Project (ISP) Collection by an authorized administrator of SIT Digital Collections. For more information, please contact digitalcollections@sit.edu.
I’m Not A Fishermen, I Don’t Sell Fish, I’m Not Even A Fish
The Micro-Economy of Fish within the Formal and Informal Markets of Mwanza

Austin Brush
Tufts University
Acknowledgments:

I think it goes without saying that this study would never have been possible without the support and assistance of many different people. To start off, I would first like to thank both of my translators Philipo and George who were nothing but selfless and enthusiastic throughout my entire study. Both were essential in navigating my different study sites, interviewing my subjects, and translating each and every interview for me.

Secondly, I would like to thank all of the staff at the Kishamapanda Guest House who kept our temporary home secure everyday and were constantly accommodating to all of our needs. They helped Mwanza feel like a home.

Thirdly, I would like to thank the staff of SIT, including Reese Matthews, Oscar, Nana, and Mama Juni who consistently helped us whenever we called and prepared us for our ISP adventures.

Fourthly, I would like to thank the Tanzanian Fisheries Research Institute in Nyegezi which was incredibly hospitable to me and allowed me to utilize both their library and professors as additional resources to supplement my primary data collection.

I would also like to thank all of the individuals who participated in my study and contributed to my overall data collection. This includes the fishermen, fish vendors, and the various professors at the Fisheries Research Institute. Without their willingness to participate my study would be non-existent.

And finally, and far from least, I would like to thank my parents who have always encouraged me to pursue my interests and have provided the support and means of doing so. They are also the ones who have had to deal with my foolishness since I was born, so again, thank you for everything.
Abstract:

The purpose of this study was to examine the micro-economy of fish in the city of Mwanza in the context of the formal and informal market place and how it operates on a daily, monthly, and annual basis. In particular, I examined the different roles of fishermen, formal vendors, and informal vendors within the harvest, movement, and sale of fish and their perspectives on their own contributions and those of others at each stage. Between November 7th and November 26th, data was collected through 102 non-random, opportunistic interviews with my sample population of fishermen, formal vendors, informal vendors and professors at the Tanzania Fisheries Research Institute. These interviews were conducted at various landing beaches, regulated market areas, and unregulated market areas within the area of the city of Mwanza. From the initial 90 interviews I utilized descriptive statistical analysis to outline trends about perspectives on profitability of certain fish species, transportation methods and costs, storage techniques, and the evolution of price in the local market. Pursuing themes generated from these initial interviews, I interviewed 16 more vendors and professors and outlined five themes pertaining to the seasonality of the market, the clash between the formal and informal market, the influence of the external market, the increasing vulnerability of fishermen, and the clashing perspectives of fishermen and vendors. All these themes signify the overutilization of the lake and increasing pressures, stemming from both interior and exterior factors. In going forward the local and national government should work to ensure job and food security for fishermen and formal vendors, while providing legal avenues for informal vendors to integrate into the local market so as to solidify sustainability legislation.
Table of Contents:

Introduction: ........................................................................................................... 1

Study Site Description: ....................................................................................... 6
  Figure 1: Municipal Map of Mwanza City ......................................................... 6

Methods: ................................................................................................................ 9

Results and Discussion: ....................................................................................... 11
  Figure 1: Perspectives on Profitability by Fish Species .................................
  Figure 2: Methods of Transportation Used by Informal Vendors .............
  Figure 3: Methods of Transportation Used by Formal Vendors .............
  Figure 4: Cost of Transportation for Formal Vendors ..............................
  Figure 5: Cost of Transportation for Informal Vendors .........................
  Figure 6: Methods of Storing Produce Used by Formal Vendors .........
  Figure 7: Methods of Storing Produce Used by Informal Vendors .........

Conclusion: .......................................................................................................... 28

Biases, Limitations, and Recommendations: ................................................... 29

Citations:

Appendix:
Introduction

Lake Victoria is the second largest freshwater lake in the world, spanning over 68,800 square kilometers, and falls under the jurisdiction of Tanzania, Uganda, and Kenya. The majority of this jurisdiction falls under Tanzanian and Ugandan rule, whom control 51% and 43% of the lake respectively. The lake serves as a major source of employment, food, water, and other basic necessities which fuel the short-term and long-term survival of millions of people along its shores. However, this region is one of the fastest growing in East Africa and this sustained population growth has put increased pressure on the lake through the form of pollution and over-utilization. This rapid degradation of Lake Victoria threatens the livelihoods and living standards of the millions of inhabitants that utilize the lake in some shape or form on a daily basis. In response, Tanzania, Kenya, and Uganda have initiated efforts to collaboratively record and track the health of the lake and enforce regulations designed to decrease the burden of the region's largest industry, fishing.

Historically, Lake Victoria has been a major source of income and food for local fishermen and fishing communities. From the onset the British colonial administration denoted particular importance to the lake as a source of revenue and profit in the region. In fact, fish stocks were in such peril in the 1940’s and 1950’s that the colonial government sought a number of solutions to improve the ecological efficiency of the lake, one of those ironically being the introduction of the Nile perch. While its introduction had ecological impetus, it also stemmed from the desire to have a larger, predatory fish that could be potentially harvested in the future. After its introduction, the immediate effect was relatively subdued and it appeared as a minor stabilizing success. But soon the lake began to experience serious ramifications for the populations of some of its most prominent types of fish, such as haplochromines. These populations began to crash and Nile Perch thrived due to plentiful sources of food, and it was during this period in the late 1970’s and 1980’s that the Lake Victoria region began to experience the era known as the “Nile perch boom”. In response to this ‘boom’ of the Nile Perch, the Lake Victoria region began to attract considerable attention from investors looking to profiteer off the harvest and export of this invasive species. While Uganda and Kenya began developing their fishing industries in the early 1980’s, Tanzania was comparatively late, with the growth of their fishing industries predominantly occurring in the early 1990’s as the Tanzanian government began to actively seek investors to develop domestic fisheries.

---

3 Ibid.
Despite the boom of the commercialized fishing industry in the 1990’s, rapid over-utilization and growing competition (from increased commercial fishery activity and more fishermen) resulted in a decreased abundance of legally sized Nile Perch and smaller annual catch sizes. In fact, factory capacity for Nile Perch has been in decline over the last few years with capacity at processing factories in the Mwanza region decreasing from a daily production of 700 tonnes per day to 700 tonnes per month. Additionally, these factories have cut operations to only three days each week. The increased pressure on mature Nile Perch populations has incited panic among industry, fishermen, and vendors, who are feeling the impacts of decreasing catch sizes coupled with rising prices.

In response the Tanzanian government has attempted to facilitate localized and regional regulation over the lake and its resources, acting both independently and in conjunction with Uganda and Kenya. Through the Fisheries act of 2002, 2007, and 2009 the Tanzanian government has sought to increase accountability starting from the community up through local, regional, and national fisheries offices implementing policies such as BMU’s (beach monitoring units) and other legislative enforcement. This legislation takes the form of various licensing requirements, restrictions on harvest techniques, and oversight of significant fishing locales (see figure 4 in the Appendix for more information). In addition, with the creation of the Lake Victoria Fisheries Organization (LVFO), the entire lake basin region has sought to standardize its regulation and goals regarding the Lake. The mission of the organization, mandated by the East African Community, is to research and manage fisheries in the pursuit of sustainable and long-term policies.

In the Lake Victoria region and Mwanza, there exists four main markets: local, domestic, regional, and international. The local market is specific to Mwanza city and the numerous landing beaches, villages, and market areas. The domestic market encompasses all of Tanzania and is dominated by urban centers, such as Arusha and Dar Es Salaam. The regional market consists of East and Central Africa and the various importing countries surrounding Tanzania (i.e., Zambia, Congo, Kenya). And finally, the international market refers to predominately European, Middle Eastern, and East Asian demand for Nile Perch and some of its byproduct. Within these markets, there are three dominant species: Nile Perch, Nile Tilapia, and Dagaa.

Firstly, the Nile Perch, as discussed before, has attracted the most interest from industrialized fisheries because of its abundance, size, and quality of meat. Nile Perch dominates Tanzanian fish exports, accounting for around 75% of all the fish exported out of the country, with its main markets existing

---

6 Ibid.
7 Personal Communication. Mukama Daro Ntara, Modesta M
in Europe, the Middle East, and China\(^9\). The rise of Nile Perch as an export has brought in serious revenue and investment to the region and has resulted in a massive boom in commercialized fishing in the Lake Victoria region, contributing to increased employment within the fishing industry as a whole, more fishermen out on the lake, and a rise in middle-men and broker services that act as a link between the small-scale fishermen and the large-scale factories\(^10\). It has also caused concerns over food security due to relative scarcity of Nile Perch in the local market because of rises in price.

Secondly, Nile Tilapia has come to dominate and fuel the local and domestic demand for fish in Tanzania. Tilapia is the most prevalent fish found in the local markets and in restaurants throughout Mwanza as it is considered one of the most delicious types of fish as well as comparatively affordable. While Tilapia is processed and exported in a similar manner to Nile Perch in Uganda, a moratorium on regional and international trade was placed on Tilapia by the Tanzanian government in order to address food security issues. However, this more impacts the fish processing plants, as regional traders continue to carry-out the illegal exportation of Tilapia to the region due to insufficient enforcement\(^11\). This moratorium has prompted the rise of Tilapia as the most popular fish in Tanzania and it is also often considered more profitable than other species of fish by vendors.

Finally, Dagaa, an anchovy species, is the third most prevalent fish that is produced and sold in local, domestic, and regional markets. Due to its high abundance in Lake Victoria (because of the elimination of its greatest rival for food, *haplochromines*), Dagaa has emerged as a cheap and accessible source of protein for residents of Mwanza and all of Tanzania. And in recent years, with the construction of Kirumba Mwaloni (a large-scale Dagaa market) and increased awareness, a regional market for Dagaa has seen considerable growth. In particular, countries from Central and East Africa such as the Congo, Zambia, and Kenya have begun to import more and more Dagaa each year, evidenced by the dozens of cargo trucks that come through Kirumba Mwaloni on a daily basis\(^12\).

While these are the three most dominant commercialized species of fish there still exists a market and demand for multiple other species of fish within Mwanza itself. In fact, prior to the introduction of both the Nile Perch and the Nile Tilapia nearly 500 species of fish existed in Lake Victoria\(^13\). However, many of these species have been heavily predated by the Nile perch and are no longer as abundant in local and domestic markets compared to the past. Currently, the other most prevalent fish

---

\(^9\) "Lake Victoria Fisheries: An Introduction."
\(^12\) Personal Communication. Formal Vendors at Kirumba Mwaloni Market, Mwanza.
\(^13\) "Lake Victoria Fisheries: An Introduction."
harvested and sold from Lake Victoria include: Fulu, Engene, Mumi, Nembe, Kamongo, Ningu, Gogogo, Perege, and Kunga (these are all of the local and Swahili names for the fish)\(^1\).

Within the City of Mwanza, the increasing local demand for fish has lead to a surge of sellers operating within the informal economy, positioning themselves as an essential component of the city’s micro-economy. In the context of Tanzania (and specifically Mwanza), the informal economy refers to small-scale vendors selling products while circumventing the required licenses and permits to sell. Many of these sellers exist within the informal market because of their inability to access the formal market areas due to lack of capital. While the informal economy is technically illegal, these peddlers are often permitted to occupy certain areas of the city in order to pursue their businesses with minimal political or police interference. The government tends to show a blind eye because it is understood that the informal economy is an essential source of income and (unofficial) employment for thousands of Mwanza residents. Additionally, informal vendors are increasingly difficult to regulate because of their inconsistency in location, time of sale, and product of sale. Because of their lack of permanence, informal vendors can open and close business rapidly and also change their location of sale depending on where human traffic is greatest.

On the other hand, individuals operating within the formal economy have obtained the necessary permits and documents for legal sale and are more closely regulated by the city government and market areas. While their formality provides them with prestige and a fixed selling locale, the high pressures of taxation through revenue garnering fees by the city, ward, and district government puts their business under considerable pressure (especially when the product is susceptible to seasonal fluctuations). These vendors make up a much smaller portion of the economy but render services that are essential to wealthier consumers and businesses who are searching for higher quality goods. And while the rise of this informal market has placed increased pressure on the viability of formal vendor’s businesses, it continues to offer essential services for consumers looking for affordable and quality food products in the local market.

This study looks at the micro-economy of fish in the city of Mwanza in the context of the formal and informal market place and the different ways in which fish are harvested, transported, stored, and then sold. I focused on the manner in which three different actors participated in these markets: fishermen, formal vendors, and informal vendors. In particular, I examined their different roles within the harvest, movement, and sale of fish and their perspectives on their own contributions and those of others at each stage. Additionally, this study looks at how the overall market for fish in Mwanza

operates on a daily, monthly, and annual basis and how it has evolved with the growth of demand locally, domestically, regionally, and internationally.
Study Site Description:

Lake Victoria is the second largest lake in the world, spanning over 68,800 square kilometers, and falls under the jurisdiction of Tanzania (51%), Uganda (43%), and Kenya (6%). It is the predominant reservoir of the Nile and is a major source of employment, culture, and basic necessities for its surrounding coastal communities. The lake brings in revenue by attracting tourists and fueling agricultural development, but the most dominant industry stemming from the Lake is fishing, which provides income and food for millions of individuals. The Mwanza region specifically is located on the southern shores of Lake Victoria in Northwest Tanzania and is one of the most industrialized regions in Tanzania, second only to Dar Es Salaam. Its two predominant businesses are industrialized food processing (including fishing industries) and agriculture. The expanding mining sector also has begun to attract considerable more investment over the last few years\(^\text{15}\). These in turn are attracting the agglomeration of banking services, service industries, and even tourism as the Mwanza region becomes more accessible with improved road and air infrastructure.

Commonly referred to as 'Rock City', the City of Mwanza is the largest in the Mwanza region and the second largest in Tanzania and has a population of roughly 500,000 people split between the Ilemela District in the north and the Nyamagana District in the south (see figure 2 in the Appendix for map)\(^\text{16}\). Founded in 1892 as an administrative and commercial capital in Northwest Tanzania, the city is the current epicenter of business and transit in the Mwanza region\(^\text{17}\). Additionally, it is the center of the formerly booming fishing industry and a major transit zone for fresh and dried fish produce that leaves the Mwanza region. Since the shift from mostly artisanal, subsistence fishing to more industrialized and commercial fishing since the 1990's, fishing has been dominated by industrial commercialized fisheries that have multiplied along the shores of Lake Victoria and it has impacted the livelihoods and living standards of hundreds of thousands of Mwanza region residents.


\(^{17}\) Ibid.
Within the City of Mwanza, I conducted my research at the various study sites I outlined in my methodology with my three sets of actors. These sites included: landing beaches, regulated market areas, unregulated market areas, and ferry terminal/transit locales. Firstly, I conducted interviews with fishermen and carried out participant observation at four different landing beaches. The first site was Luchelele, which is a small fishing village in the Nyamagana District. It is one of a number of landing beaches that provides Nile Perch and Tilapia to industries and local vendors in Mwanza City. It was recommended by the Tanzania Fisheries Research Institute as it is one of the landing beaches they visit to estimate annual catch biomass. The second site was a landing beach located at the Mwanza South-Terminal. It was owned and operated by a Dagaa fisheries middle-man and served predominantly as a site for the harvesting and production of dried Dagaa and supplied the local Mwaloni fish market in Nyegezi in the Nyamagana District. The third site was Bwiru, a small fishing village located in the Ilemela District. The village predominantly specialized in Dagaa production, however a number of Tilapia and Nile Perch fishermen also operated off this landing beach. Every morning the village is flooded with thousands of vendors from the local Mwanza market and collectors from various processing factories. The site in which I carried out my participant observation was Kayenze Beach, a large-scale commercial landing beach for Nile Perch and small fish species (i.e., Dagaa and Fulu). It is part of the Ilemela District, adjacent to Igombe which is another large-scale commercialized Nile Perch landing beach.

Secondly, I conducted interviews with formal vendors at five different regulated market locations. The first site was the Soko Kuu in the center of the City of Mwanza. The Soko Kuu is divided into a formal interior market and an unregulated outer market. Specifically, within the formal area of the market there is an allocated area for the sale of fish, both fresh and dried. It consists of handmade, wooden tables on which dried Dagaa and other dried fish are sold, surrounding a tiled center sale locale from which various species of fresh fish are sold (i.e., Kamongo, Tilapia, Nile Perch, Mumi). The second site was Mkuyuni Market in Nyegezi, which similarly to the Soko Kuu is divided between an interior formal market and an exterior unregulated market. The interior fish market consists of six to eight concrete tables and various wooden booths from which various species of fish are sold, both dried and fresh. The third site was Kirumba Market found in the Kirumba ward of Ilemela District. The fish market within Kirumba Market was smaller than both the Soko Kuu and the Mkuyuni Market and consisted of only four to five selling tables. Both Kirumba and Mkuyuni were recommended as an alternate site to find formal vendors by those in the Soko Kuu. The fourth site of interviews was the Kamanga Ferry Terminal located in downtown Mwanza City in the Nyamagana Ward of the Nyamagana District. It is a major transit location as various ferries and buses that transport goods and people between Mwanza and the surrounding islands come through this ferry and bus terminal.
Additionally, it is a major transit site between the local Mwanza vendors and the various landing beaches in the nearby fishing islands. The fish is transported to Kamaga via canoe, ferry, or bus from these beaches and then sold on site. Finally, the last location in which I conducted informal interviews and participant observation was Mwaloni Market, which was recently constructed in the Kirumba Ward of the Ilemela District with the assistance of Japanese aid. It serves as a trading location for mostly Dagaa as it is sold to local vendors and also shipped off in cargo trucks to other areas of Tanzania and neighboring countries (predominantly the Congo, Zambia, and Kenya). It is also a site in which Nile Perch is delivered, prepared into different cuts, and then dried before being sent out of the country. Mwaloni market and Kamanga ferry terminal were both frequently referred to in interviews when asked where they purchased their product each morning.

Finally, I conducted interviews with informal vendors at two different unregulated market areas. The first site was the exterior of the Soko Kuu in downtown Mwanza. As I described before, the Soko Kuu consisted of two locales: a formal interior that had an opening and closing time and an informal exterior in which small businesses and peddlers sold their goods on the surrounding streets. In the exterior market informal fish vendors would set up their selling locations around noon each day, setting up bags on which they laid out their produce for presentation and sale. There was minimal vehicle traffic on the roads (usually only trucks and trolleys dropping off produce for vendors), yet considerable foot traffic as vendors, customers, and middle-men transported goods in and out of the market. The second location in which I interviewed informal vendors was the Mkuyuni market in Nyegezi in the Nyamagana District. Although on a smaller scale, the structure of the Mkuyuni market closely resembled that of the Soko Kuu, with an interior formal market and then an unregulated informal market in the exteriors. Alongside a defunct rail track, the vendors sell their goods from hand-crafted tables and plastic bags.

I also utilized resources at the Tanzania Fisheries Research Institute, a government school in Ngaza Ward in the Nyamagana District. At the institute I used their library and also interviewed two socio-economic professors. The purpose of the institute is to gather data, work in conjunction with government and foreign research initiatives, and ascertain the health of the Lake. Its main areas of research include aquaculture, climate change, biodiversity and stability of the lake, and the socio-economics of the fishing market.
Methodology:

This study took place between November 9th and November 25th within the greater Mwanza region along the southern coast of Lake Victoria in Northwest Tanzania. I visited different sites within Mwanza where fish are harvested, stored, and sold in order to examine how the micro-economy of fish operates. These sites included landing beaches (i.e. Luchelele, Kayenze Beach, Bwiru, and South Mwanza Shore), ferry and transit locales (i.e. Kamanga and Kirumba Mwaloni Market), and sale locales (i.e. Soko Kuu, Kirumba Market, and Nyegezi Market). My sample frame included all males and females in the Mwanza region of Northwest Tanzania while my sample population consisted of fishermen, formal vendors, and informal vendors involved in the local and domestic Mwanza fish market. At the different study locations I outlined prior, I utilized non-random opportunistic sampling within my defined sample population when interviewing. Due to the size of the Mwanza fish market, non-random sampling is not representative of the population. Additionally, because of the sex divide within the fishing profession I did not attempt to acquire sex equality within my sampling population. In Mwanza, the majority of fishermen and formal vendors are male while the informal vendors are predominantly female.

At my study sites I utilized participant observation and direct interviews to accumulate qualitative data regarding the market for fish and the various ways that these actors participate. I began with personal and in-depth individual interviews with members from these sample groups. These interviews were designed to focus on the individual’s role in and perception on the three stages of fish production and preparation: the harvest; the transportation, storage, and purchase; and the sale. Additionally, these interviews were designed to inquire as to how the entire market operates and has evolved over time. Then, after completing the first round of interviews I returned to the Soko Kuu, visited the Tanzanian Fisheries Research Institute, and two new locales and utilized participant observation and another round of interviewing to inquire further into themes provided to me through my initial interviewing and formulated after doing two days of data analysis.

The first phase of interviewing took place over ten days. Over these ten days I interviewed members from each subpopulation at my study sites. I interviewed thirty fishermen at landing beaches such as Luchelele, Mwanza South-Terminal, and Bwiru; thirty formal vendors at regulated market areas such as the Soko Kuu, Kirumba Market, Mkuyuni Market, and Kamanga Ferry Terminal; and thirty informal vendors at the Soko Kuu and the Mkuyuni Market. I spent a total of three days interviewing fishermen with one day spent at each of the three landing beaches. I spent a total of six days interviewing formal vendors at the various regulated vending areas. And finally, I spent four days interviewing informal vendors at the Soko Kuu and the Mkuyuni Market. For three of the days
interviewing formal and informal vendors, I split the morning and afternoon between informal and formal vendors because informal vendors only begin selling after noon.

After the initial round of interviews, I spent two days analyzing my data, quantifying it, and then formulating recurring themes and trends that I wanted to pursue in my final days of data collection. I returned to the Soko Kuu, went to the Tanzanian Fisheries Research Institute, and visited two new locales with more specific topics that I pursued through participant observation and another round of interviewing. When I re-visited the Soko Kuu I conducted a second round of interviews with the formal vendors that pursued themes I drew from preliminary interviews. I conducted a total of eight interviews during the time I spent there. At the Tanzanian Fisheries Research Institute I interviewed two Socio-Economic Research Analysts. These interviews were designed to acquire more quantitative information about the market and its history and evolution over time. Finally, I visited two other locales over three days. I spent two days visiting the Mwaloni Kirumba market for Dagaa, using the first day for participant observation in the morning and the second day for another round of interviews in which I spoke with six individuals. I additionally spent one day at Kayenze Beach, a landing beach in the Ilemela District, observing the unloading of Nile Perch and the preparation of dried Dagaa. Additionally, I shadowed one fishermen in particular as he showed me around and answered my informal questioning.

Much of my research was conducted and collected through observation and interviews, so the majority of my data is qualitative. I therefore am analyzing this data as a means of identifying trends and themes within the local Mwanza market for fish through descriptive analysis of primary data.
Results and Discussion:

In order to analyze and discuss the information I have collected I have divided my data into two subcategories: trends and themes. The trends more closely analyze the data I collected through my initial interviews with fishermen, formal vendors, and informal vendors. This data was quantifiable because it followed a set list of interview questions which were divided into three categories: the harvest of fish; the purchase, movement, and storage of fish; and then the sale of fish. From this data, I have deciphered a number of trends which utilize descriptive statistical analysis to detail how these actors participate at each stage of the production of fish and how their perspectives differ. The themes I have noted developed out of my primary set of interviews and the trends I noticed within them. I then pursued each of these themes more closely during my participant observation days and my informal interviews with fishermen and vendors while re-visiting sites. This part of my data was more qualitative and collected through observation and more informal interviews.

Trends:

Fish Preference and Profitability: Diverging Perspectives

Throughout my initial interviews I inquired about what type of fish the actor either sold or harvested and which they perceived as the most profitable. While I observed quite a bit of differentiation and even seasonal variation in what types of fish vendors sold and fishermen harvested, I noticed a trend among what types of fish each of these actors believed to be the most profitable. Firstly, looking at formal vendors, figure 1 shows that seventeen individuals said that Tilapia was the most profitable fish species. This consisted of over 50% of the formal vendors I interviewed. Eight other formal vendors believed that the most profitable species were Tilapia and Nile Perch, while two others said that small fish species (such as Dagaa) were the most profitable. Three individuals provided no answer. Informal vendors provided a bit more of a mixed response. Eight informal vendors believed that Nile Perch was the most profitable species while six individuals said Tilapia. Five believed that Nile Perch and Tilapia were both the most profitable, five said small fish species like Dagaa, and four others provided no discernible answer. While no particular fish species was deemed the most profitable, Nile Perch and Tilapia accumulated a total of eighteen votes. 

![Figure 2: Fishermen, formal vendors, and informal vendors’ perspectives on profitability by fish species (n=30 for each sample population). Data was collected during my first round of structured interviews.](image-url)
together, accounting for 60% of the informal vendors I interviewed. Finally, fishermen provided an
alternate view about the most profitable fish species. Thirteen fishermen believed that Nile Perch was
the most profitable fish while only three individuals said Tilapia on its own. Five fishermen stated that
Tilapia and Nile Perch were the most profitable, six fishermen stated that smaller fish were the most
profitable, and three provided no answer.

The majority of formal vendors found Tilapia to be the most profitable fish species. This could be a
result of the fact that Tilapia is the most prevalent fish in the local and domestic market because of a
moratorium on trade put in place by the Tanzanian government. This has restricted companies and
businesses from mass-processing Tilapia and exporting it out of the country as companies have done
with Nile Perch. Because Tilapia is comparatively cheaper to Nile perch, has a more highly desirable
taste, and is more commonplace in the market, formal vendors have found the most profit in selling
Tilapia to hotels, restaurants, and individual consumers. Informal vendors provide a more mixed
response, contending that neither Nile Perch or Tilapia has a discernibly higher profit. This could be
because informal vendors don’t have the same capital nor prestige as formal vendors so therefore
either cannot afford Tilapia (which is relatively expensive) or have access to the right customers (i.e.,
hotels). Additionally, the Nile Perch that is often sold by the informal vendors is below legal size (i.e.,
50 cms for nile perch). Therefore, this is fish that formal vendors cannot access because the risk is too
great, while informal vendors operate more in the realm of illegality regardless. Finally, the majority
of fishermen in one way or another argued that Nile Perch was the most profitable type of fish, with
Tilapia and smaller fish species close behind. This is due to the fact that industries and international
demand are particularly focused on Nile Perch. Thus many fishermen are able to sell it in large
quantities and at very high prices to commercialized fisheries. However, decreases in catch sizes could
be resulting in fishermen moving to other species such as Tilapia and Dagaa, which respectively have
a growing domestic and regional demand.

**Transportation of Fish: Capital Intensive versus Time Intensive**

![Figure 3: Methods of transportation used by informal vendors to move their produce from purchasing point to selling point (n=30). Data was collected during my first round of structured interviews with informal vendors at Mikuyuni Market and the Sokoke Kun.](image)

When interviewing vendors, both formal and informal, I
focused on methods and cost of transportation. Everyday
it is essential that vendors transit their good from
purchasing points to the market itself. This is both a time
and money consuming venture and is essential to their
daily operations. Firstly, in regards to transporting fish to
the market, formal and informal vendors utilized a variety
of methods to do so. As shown by figure 2, informal
vendors predominately utilized piki pikis, which are a
type of motorcycle usually operated by young men in urban areas, with over 50% of these vendors saying they use them on a daily basis. In descending order, informal vendors also utilized dala dalas (~15%), walking (~15%), and buses (~3%). Formal vendors showed no preference as dominant as the informal vendors. As seen in figure 3, around 25% of formal vendors utilized piki pikiis and another 25% used boats to transport fish to their selling locales. 20% utilized a truck or car of some sorts, 10% utilized dala dalas, and then in descending order, boats/buses (~6%) and walking (~3%). In regards to costs there existed greater variation between the informal vendors and formal vendors. Looking at formal vendors in figure 4, around 36% spent 6,000 shillings or above on daily transportation, around 13% spent between 4,000 and 5,999 shillings, 30% between 2,000 and 3,999, and ~6% between 0 and 1,999. As seen in figure 5, informal vendors differed in terms of how much they spent on average on daily transportation. 11.5% spent 6,000 shillings or above, ~3% spent between 4,000 and 5,999 shillings, around 40% between 2,000 and 3,999, around 20% between 0 and 1,999, and over 15% paid nothing at all for their transportation (meaning they transported it by foot).

For formal vendors methods of transporting were more capital intensive than informal vendors. They tended to have more general funds to employ people to both buy and transport their product to the market. In fact, a major additional cost for the formal vendors was often the hiring of other individuals to carry out these tasks for them every morning. Additionally, they tended to use more expensive means of transportation, such as boats and trucks, as opposed to piki pikiis or dala dalas. This is a factor resulting from most formal vendors buying larger fish and in bulk. Therefore, because of their access to larger supplemental funds they were able to afford the luxury of hiring others to carry out these duties for them. Informal vendors, on the other hand, did not have the funds available to hire others to carry out the task of buying their goods. In actuality, some of these informal vendors didn’t even have enough capital to afford methods.
of transporting their fish beyond walking. Therefore, their means of transporting their product to the
market were far more time-intensive than the formal vendors -- due to lack of capital they must
conduct this side of their business absent of other labor. Additionally, this contributes to why most
informal vendors must sell later in the day. Often, the mornings are dominated by the formal vendors
who get their produce faster, while the afternoons and nights are dominated by informal vendors (who
aren’t restricted by the time barriers of the formal market area).

Storage and Purchase of Fish: The Trials of Perishable Goods

Another key factor in the transportation and sale of fish is the
means by which the vendors store and purchase their produce.
Essential to the sale of any food product is how fresh it is as
this dictates how fast and for what price vendors can sell it at.
Due to the difference in selling location and legitimacy of
formal and informal vendors, they utilize vastly different
means of storage. For formal vendors freshness is a
priority because it is one of the distinguishing factors
between their product and that of the competition. As figure 6 shows, over 70% of formal vendors
used containers with ice at their selling locale, around 16% utilized bags or baskets to store their
product, and then around 13% of the other vendors
interviewed used either containers with water, containers
without ice, buckets with ice, or did not provide an answer.
On the other hand, there was far greater variety among the
informal vendors. As seen in figure 7, around 34% of the
vendors interviewed used bags/buckets without ice, 23.1%
used bags/buckets with ice, 19.2% used buckets with water,
7.7% used containers with ice, and then 7.7% simply used
water to maintain wetness.

While there existed greater variety in techniques used among informal vendors, still roughly 61% of
those interviewed used some method of storage absent of ice. Among informal vendors freshness and
sanitation of the fish is a secondary concern as opposed to formal vendors who prioritize the freshness
and cleanliness of their product. The formal vendors sell mostly to hotels, businesses, and wealthier
consumers so the quality of their fish must be very high. Additionally, they often buy in bulk and
cannot always sell the entirety of their catch in one day. At this point storage becomes a necessity in
order for formal vendors to withstand fluctuating consumer demands on a daily, monthly, and annual
basis. The ability to buy in bulk enables these vendors to save both on transportation and labor costs.
and also to not have to contend with high and erratic beach prices. Informal vendors, however, do not possess the resources, space, nor capital to store their product with ice nor in larger containers. Due to their presence in an unregulated market area, they are not held to the same sanitation standards. And while this may save them on certain storage costs, this also means that because of the perishability of the product they are selling, it is susceptible to daily price fluctuations even between the morning, afternoon, and night. This places an alternative time-pressure on these informal vendors when selling (as opposed to the formal vendors who must contend with the market place and its mandated closing time).

**Evolution of Prices and the Sale of Fish:**

Coupled with a booming fishing industry and a rapidly growing regional population, demand for fish as a healthier source of protein has rapidly increased on a global, regional, domestic, and local scale. As a result, the market for fish in Mwanza and beyond has seen considerable growth with the entrance of sellers and fishermen. Both the increase in demand from industry and the rise in competition among these actors has resulted in explosive prices for Nile Perch and Tilapia. However, while all three actors noted changes in price from the past, the prices they provided per kilo and per piece differed depending on where in the chain of production they operated. For fishermen I looked at the prices they sold for at the landing beaches. For vendors I looked at the prices they sold for at the market.

The perspectives of fishermen on price were dependent on how accessible their landing beaches were to vendors from Mwanza, which type of fish was most commonly harvested at the specific beach, and how heavy a presence industry had at their beach. All of these factors influenced what price these fishermen can sell to both industry and to local vendors. Let us first take a look at Nile Perch in figure 8. While between all of the landing beaches the prices ranged from 4,000 to 7,000, there was variation at each beach. Fishermen at Luchelele provided the highest price per kilo, reaching up to 7,000 compared to Bwiru and South Mwanza where the highest documented price was 5,500 and 4,000 respectively. Of the three beaches, Luchelele had both the highest number of Nile Perch fishermen and largest industrial presence. These fishermen predominantly sold to industries and middlemen as opposed to South Mwanza and Bwiru, which mostly provided the local markets with fish and specialized in Dagaa which meant minimal industrial presence. Of the fishermen I interviewed, many mentioned the massive differentiation between the price that they sold Nile Perch to local vendors and middlemen, which was commonly around 5,500 shillings, and the price they sold to industries, which could range from 8,000 to 12,000 depending on the size of the Nile Perch. So at beaches like Luchelele, the prices are driven up by the presence of industry.
The price for Tilapia, on the other hand, was more consistent among the three beaches because its only demand comes from local vendors (because of the moratorium on trade mentioned earlier -- also other domestic markets purchase from within Mwanza itself). As seen in figure 8, at each of the three beaches, prices per 1 kilo of Tilapia ranged from 3,000 to 5,000 shillings. Similarly for Dagaa, price ranges didn’t vary between beaches. The price for Dagaa is constant at around 2,000 to 2,500 shillings per kilo, or around 10,000 shillings per bucket (which is a 20 litre bucket -- a common metric of measuring for Dagaa). While all of these prices fluctuate between seasons, these represent the general annual prices at which these types of fish are commonly sold at the landing beaches.

For vendors, the process of buying fish at the landing beaches is an essential factor in the success or failure of their business as it dictates their daily profits. Equally as important is the price at which they then sell at the market, as this margin provides them profit; so unsurprisingly, the prices at which vendors buy at is different from the price at which they sell. Looking at figure 9, it shows a higher price sold at the markets than at the landing beaches. More interestingly though is the difference between the prices the formal and informal vendors sold at. As discussed earlier, the quality in the fish that formal and informal vendors sold is quite different. Formal vendors often sold larger, fresher, and higher quality produce while informal vendors were content with smaller, less expensive fish. Additionally, formal vendors, who often utilized brokers to buy and transport the fish as well as more expensive methods of transport, they needed to sell at higher prices. Generally, for 1 kilo of Nile Perch formal vendors said they would sell for between 7,000 and 8,000. Sometimes this kilo would be cut up into multiple steaks and fillets when selling to increase profit when selling. Informal vendors, who often bought illegal Nile Perch, usually sold 1 kilo for between 5,500 and 6,500. Due to the fact that much of their Nile Perch was the legal limit of 1 kilo or 50 cm, the price at which they bought was usually lower so they could afford to sell it cheaply in comparison to formal vendors.
<table>
<thead>
<tr>
<th>Fish Species</th>
<th>Formal Vendors</th>
<th>Informal Vendors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nile Perch (shillings per kilo)</td>
<td>8,000 - 9,000</td>
<td>5,500 - 6,500</td>
</tr>
<tr>
<td>Tilapia (shillings per kilo)</td>
<td>7,000 - 8,000</td>
<td>4,000 - 6,000</td>
</tr>
<tr>
<td>Dagaa (shillings per kilo)</td>
<td>2,000 - 4,000</td>
<td>2,000 - 4,000</td>
</tr>
</tbody>
</table>

In regards to Tilapia, vendors generally sold by piece rather than by kilo. However, I was still able to gauge a range for prices per kilo from both formal and informal vendors. Formal vendors generally sold 1 kilo of Tilapia for between 7,000 and 8,000 shillings. Informal vendors generally sold 1 kilo of Tilapia between 4,000 and 6,000. The difference between the price for kilos could be attributed to the fact that informal vendors sell smaller Tilapia. Therefore, the kilo of Tilapia they buy consists of smaller pieces which they must sell at a reduced price. Formal vendors have higher quality, larger Tilapia; they are also selling the Tilapia to customers with more capital. For Dagaa, prices were consistent between formal and informal vendors. Both generally bought 20 litre buckets for between 5,000 and 10,000 shillings (around 1,000 to 2,000 per kilo) then sold for around a 10,000 and 20,000 respectively. Dagaa, in comparison to the other two types of fish, are more comparable in regards to quantity and price in the informal and formal market.

Finally, in regards to changes in price over time, all three actors expressed similar information. At each of the three landing beaches, fishermen reflected on the drastic rises in prices over the last decade or two. Stretching back twenty years, prices per kilo were pretty consistent among Nile Perch and Tilapia at around 300 to 500 shillings. Even in the last five years, many fishermen reflected on rises of nearly 2,000 to 3,000 shillings per kilo. Vendors on the other hand, who tended to have less experience in the market for fish, reflected on changes in price over the last five or so years. Many mentioned changes in prices from 3,000 shillings ten years ago for Nile Perch to costs now between 6,000 and 7,000; for Tilapia vendors mentioned changes in prices from around 3,000 to 4,000 five years ago to around 6,000 to 6,500 per piece now. Although most sellers could not reflect on price changes over ten years, hikes in prices closely matched those mentioned by the fishermen themselves.
Themes:

**Seasonal Volatility of Supply and Demand: Its Influence on Fishermen, Buyers, and Sellers**

Tanzania, due to its equatorial positioning, follows a bimodal rain pattern, which is driven by the Inter-Tropical Convergence Zone (ITCZ). Specifically, there exists two rainy seasons, one short and one long: the short rains that take place between November and December and the long rains that take place between March and May. In between these rainy periods, the country has an extremely dry climate and vegetation is sparse. Many ecological and even economical functions, such as agriculture, are dictated by this bimodal system. This is also true of the fisheries and fishermen operating on Lake Victoria. Not only do weather and rain patterns dictate how and when fishermen can access the lake, they also heavily influence the supply of fish. As a result, the market experiences monthly fluctuations in price, supply, and demand for specific species of fish, which ultimately impact fishermen, buyers, and sellers.

**Weather Dependency:**

The harvest of fish requires a considerable commitment of time and funds on a daily basis from fishermen. Everyday fishermen harvest for between six to twelve hours, usually in paddle canoes operated by four men. Once they arrive on the beaches they sell their produce to industries, brokers, or directly to Mamas, spend the remainder of the day resting, and then go back out around 6 p.m. to resume harvesting. The actual harvest itself is incredibly susceptible to climate and weather patterns. Climatic conditions influence the type of fish that is abundant, where it is abundant, what types of areas fishermen can access, and what types of techniques they can use. Those I interviewed mentioned their vulnerability to windiness, rain, lack of moonlight, and other unfavorable weather conditions that sometimes mean they can’t find large amounts of fish or any fish at all. Fishermen face these weather challenges on a daily basis and therefore their fundamental source of income, catch size, is constantly under the potential strain of weather. During particular seasons, such as the rainy season, these weather constraints are exaggerated and more commonplace.

**Seasonality of Supply:**

In response to seasonal bimodality, the markets for different species of fish react differently. In order for vendors and fishermen to be successful and withstand these seasonal differences, they must understand how demand, supply, and harvesting differ at different times of the year. Looking
specifically at the three major commercial species (i.e., Tilapia, Nile Perch, and Dagaa), my interviewees reflected on how the supply and price of fish reacted to different seasons. Firstly, both Tilapia and Nile Perch are far more plentiful during the wet seasons than during the dry season. Fishermen at Bwiru and professors at the Tanzanian Fisheries Research Institute noted that the influx of food to coastal regions was the main contributing factor to larger catches closer to the coast. Rivers, tributaries, and other sources of water for the lake are flooded by the increasing rains and this in turn feeds the lake with additional food and other resources. It is at this time that different fish species come closer to the shore in search of food, including Nile Perch and Tilapia. Throughout my interviews with both vendors and fishermen, I was consistently informed that the supply for these types of fish increase drastically during these rainy months, resulting in larger catches by fishermen, an influx of fish into the market, and a decrease in prices. One formal vendor noted that during the rainy season, 1 kilo of Nile Perch can be sold for as low as 2,000 to 3,000 shillings. This ultimately results in a dip in profits for vendors as prices are pressured down by the massive seasonal increase in supply. In contrast, the market for Dagaa reacts inversely to that of Tilapia and Nile Perch. The most popular iteration of Dagaa within the market is dried Dagaa and this is processed using the sun to dry it, making it vulnerable to seasonal rains. Once the rains begin, Dagaa fishermen and Mamas (who are the ones who dry, prepare, and sell the Dagaa) are unable to dry the Dagaa consistently and thus the supply drops. During the wet season prices for one bucket of Dagaa can reach up to 12,000 shillings, while during the hot season when supply is at its highest, prices can be as low as 5,000 shillings per bucket. However, in recent years wet Dagaa, which is still plentiful during the rainy season, has grown in demand in response to increasing interest from chicken feed and fish feed processing plants. This has provided Dagaa fishermen and vendors with alternate sale options during the otherwise sparse wet season.

Fluctuations Amongst Vendors:

Along with changes in prices between the wet and dry season, the quantity of informal vendors also fluctuates with the season. While overall numbers of informal sellers are increasing due to a growing local and regional market for fish, within each year the number of vendors reacts to seasonal changes in price and supply. Formal vendors in the Soko Kuu often said that due to their extensive experience with the market and large capital reserves, the seasonal fluctuations in prices have a limited impact on the overall sustainability of their business. However, informal vendors showed a greater vulnerability to seasonal changes in price, in particular during the hot season when prices become much higher. Due to generally having less experience and lower overall capital reserves, the quantity of informal vendors is more reactive to seasonal change and both formal and informal vendors reflected on the
seasonal oscillation of these vendors. The fixed costs and barriers to enter the informal market are extremely low so often these sellers can enter and exit the market in reaction to particular seasons or potentially low harvests.

**Formal Vs. Informal: Clash Between Sellers**

A major feature in the Mwanza micro-economy, both overall and for fish in particular, is the informal economy. This consists of peddlers operating outside the regulation of the city, ward, and district governments and free of any form of taxation. In reaction to a larger local demand for fish as a source of protein, an increased supply of fish to the local market, and factors such as low barriers to entry, high unemployment rates, and perceived wealth in the fishing industry, the local Mwanza market has been flooded with informal vendors at throughout the city. Usually these vendors agglomerate outside regulated market areas as a means of syphoning off customers who would otherwise buy from formal vendors. The informal market offers a more affordable option for the average consumer, but also acts as competition for formal vendors and threatens the survivability of their businesses.

**Taxation, Fees, and Regulation of Formal and Informal Vendors:**

In order to participate in the formal market, whether it be in the Soko Kuu, Kirumba Market, or any other regulated market place, vendors pay substantial fees to both the local market itself and the government. These marketplaces consist of formal selling areas where vendors are able to store their product in large containers with ice (even overnight) as well as sell from legitimate booths and tables. The location adds a level of prestige and accessibility to their business but it also comes at a significant cost. The fees these vendors must pay end up undercutting their overall capital and profit. I interviewed formal vendors at four different sites: the Soko Kuu, Mkuyuni Market, Kirumba Market, and the Kamanga Ferry Terminal. While vendors at all of these sites were required to have a buying license (which costs 30,000 shillings annually and allows them to buy from any landing sites), they also had to pay different taxes depending on the size and location of the market. At the Soko Kuu, vendors informed me that they generally have to pay 40,000 shillings per month to be able to sell at that locale. Additionally, they had to pay a collective table tax per month that was paid both to the market area and the city council (this is divided amongst all the sellers in the Soko Kuu). At Mkuyuni and Kirumba, both small to medium scale markets, vendors paid substantially lower fees than at the Soko Kuu. Vendors I interviewed at these sites had to pay between 200 to 300 shillings per day in order legally operate from a table, which is between 4,000 to 5,000 shillings per month. The cost of operating out of these smaller markets is notably less than the Soko Kuu because they don’t attract the same amount of foot traffic or business on a daily basis. Finally, at Kamanga I was told that they are not required to pay any form of tax beyond purchasing a buying license and then occasionally paying
a bag tax of around 1,000 shillings for the produce that is unloaded from the ferries, buses, and canoes from the various island landing beaches that feed this specific market. Technically, these vendors were not allowed to legally sell from this locale, but as per other sites, it went unenforced by the government. This highlights the existence of hierarchies of formality that exist within the formal and informal market, in which certain actors participate with full legality or illegality, and some with partial.

Outside of the regulated market, the informal vendors face little to no taxation nor surveillance from the government. While some of the informal vendors I spoke with had obtained buying licenses, the vast majority held no documentation or permits that enabled them to legally participate in the purchase and sale of fish. Instead of paying taxes, informal vendors I spoke with had to pay daily fees between 100 and 500 shillings to the market leaders. These fees were generally used to hire outside agents to ensure the security and the cleanliness of the market area. Beyond these fees, there were no other forms of formal taxation or regulation in these market areas. As a result of this laissez-faire regulation, many of these vendors are able to circumvent laws enforced within the regulated area that are designed to ensure the sustainability of the lake. One example of these types of regulations is the ban on the sale of fish beneath their designated sizes (Nile Perch = 50 cm; Tilapia = 25 cm). Informal vendors I interviewed said that by selling smaller fish they have access to a larger customer base because these illegal fish are more affordable. This does however mean that these informal vendors were constantly operating with the fear that their business was at risk of eradication and subject to a hefty sum of fees and penalties.

Informal vendors are more free to operate outside the realms of legality because of lack of oversight, documentation, and enforcement, whereas formal vendors are more closely watched and also risk more if caught operating outside the law. While both formal and informal vendors continually referenced punishment for circumventing the laws, the formal vendors expressed a greater concern with the implications it would have for their business and futures. Informal vendors addressed the threat of eviction and enforcement as simply part of conducting business.

*Price Competition: A Downward Pressure*

One of the prominent threats from the influx of informal fish vendors into the micro-economy of Mwanza is the downward pressure it has placed on market prices of fish whilst an upward pressure has been stemming from the landing beaches and growth of industry. All vendors noted that profits are heavily dictated by how they purchase at the landing beaches and with the upsurge in industry and market demand, prices have been increasing. These industries buy up the higher quality and larger fish, which has driven up the total price for many species fish as discussed earlier. Then, in
conjunction with these rising prices on the beaches, formal vendors have to deal with the downward price pressure that informal vendors have been inflicting on their prices in the market. Due to their ability to act outside of the realm of taxation and regulated market areas, informal vendors are not only able to sell smaller fish but also sell for longer periods of time each day. Informal vendors told me that this allows them to sell their product for lower prices and attract a larger customer base who are in search of cheaper alternatives. Formal vendors then have to contend with these lower prices whilst also maintaining profitability -- an increasingly difficult task it seems. Formal vendors I spoke with expressed dismay and worry over the future of their business and cited the rise of informal vendors as their biggest cause for concern. Despite demand increasing for fish, more and more customers were abandoning the inside, formal market for cheaper alternatives outside. Despite decreased sanitation and cleanliness outside, individuals customers can’t afford the cost of the larger and higher quality fish in the inside market. The majority of this quality fish is being sent out of Mwanza through formal vendors at transit sites like Kamanga or Mwaloni, which offer more accessible services for businesses transporting out of the region. Therefore, formal vendors I spoke with at the Soko Kuu and Mkuyuni Market cited decreasing numbers of formal sellers. This is due to the growing infeasibility of selling inside the regulated market areas whilst contending with rising prices at the landing beaches in conjunction with downward pressures on price stemming from the informal market.

So… What’s Next?

Upon returning to the Soko Kuu to inquire further about government taxation and regulation, I started to ask how the formal vendors saw the future of their business. Additionally, I asked what they wanted the government to do in order to assist them. Repeatedly I was told that the tax burden in the formal market was currently their greatest cause for concern. Sellers talked about decreases in the overall quantity of formal vendors and general fears that their businesses were becoming less and less feasible. In terms of action, there was a strong desire for the formalization of the entire sale of fish. While some desired a harsher policy of eviction and immediate seizure of informal businesses, others proposed potentially incorporating these sellers into the formal fish market. This would increase the tax base for the market and government and diminish the tax burden (especially in regards to the group tax). Overall, they simply desired some sort of accountability and monitoring of the sellers outside so they couldn’t continue to undermine the higher inside prices. Additionally, this idea of subsidization and loans with low interest was also very popular as vendors wanted assistance from the government in regards to expanding their business and providing extra cushion during particularly difficult dry seasons or bad harvests.
The Growth of the External Market and its Effect on the Local Market:

The boom of Tanzanian fishing industries in the 1990’s coupled with rapid population growth (of nearly 3% every year) and greater awareness of fish as a healthier source of protein has resulted in a rapidly increasing demand for fish on a local, domestic, regional, and international scale. The growth of these external markets has driven up the price for many of the different species of fish coming out of Lake Victoria and has had mixed effects on the different scaled vendors in the Mwanza region.

The External Market and the Big Three: Tilapia, Nile Perch, and Dagaa

Overall, the rise of these new markets has spurred general increases in prices for the three most commercialized species coming out of Lake Victoria: Tilapia, Nile Perch, and Dagaa. The international market and demand for Nile Perch has been the greatest contributor to the rise in commercialized fishing on Lake Victoria. However, this sudden burst in commercialized fishing without proper regulation has resulted in declines in catches with extensive overfishing by fishermen and industries flooding the market. While it looked rather promising even five years ago, the international market has receded in recent years. And in response, Nile Perch has begun to slowly return to the domestic and local markets. In regards to the regional market, this has had the greatest impact on Dagaa. As annual catches of Dagaa continue to increase (see figure 2 in the Appendix) the quantity of Dagaa being processed and sent out of the country through the Kirumba Mwaloni Market has been increasing and Dagaa fishermen are noting improved profits. Additionally, Dagaa has emerged as a primary resource for regional and domestic chicken and fish feed processing plants, which has abated some of the seasonal vulnerability of Dagaa (because these processing plants often utilize wet Dagaa rather than dried Dagaa). Finally, the domestic market continues to drive the demand for Tilapia and Dagaa. Dagaa persists as a cheap source of protein and the price remains comparatively lower than other species of fish. Dagaa vendors that I spoke with all insisted that despite fluctuations with other species of fish, Dagaa has continued to remain a consistent and popular food choice among Mwanza citizens. So while the regional demand is driving up the price marginally, its sheer abundance in terms of biomass means that it continues to persist as a cheap protein source for Tanzanians. In regards to Tilapia, due to the moratorium on international trade, its only markets are local and domestic. This demand has been sufficient to keep the price not only steady but increasing

---

over the last five years. Tilapia, because of its size and affordability in comparison to Nile Perch, has emerged as the most popular fish served by hotels and businesses throughout Mwanza.

Long Live the Local Market

In spite of the growing regional and international market for fish species from Lake Victoria, the local and domestic market have both persisted and in some sense grown. Although prices for the three main commercial species have all increased, the pace of population growth and influx of sellers to the market has resulted in an abundance of affordable fish for individual customers and businesses. Smaller fish species such as Dagaa and Fulu are increasing in biomass abundance (see figure 2 in the Appendix) due to decreased predation from the Nile Perch and despite increasing regional demand they remain a popular and cheap food source in the local market. For Tilapia, the moratorium on its regional and international trade has assisted in ensuring that it is abundant in the local and domestic market, in contrast to Nile Perch which rapidly became unaffordable for the local market and average consumer. Finally, even Nile Perch is returning to the local market as the international demand falters and annual catches decrease. As the average size of Nile Perch is decreasing (and becoming too small for factories to legally process), I was told that more fishermen are increasingly selling to local and domestic vendors. Additionally, the flexibility and return of power when selling to local vendors is actually assisting their profits. Fishermen are now able to divide larger fillets into smaller pieces when selling and they are also able to remove the bondo (which is the fish mouth), which is in huge demand in China and can provide up to 15,000 for 1 kilo.

Vulnerability of Fishermen: Declining Profits

Since the introduction of the Nile Perch and the massive boom of demand for fish species coming out of Lake Victoria, the perceived wealth associated with fishing has resulted in a drastic increase in the amount of fishermen (see figure 2 in the Appendix). Of the fishermen I interviewed, factors such as general unemployment, seemingly low barriers to entry, and visible accessibility were expressed as the reasons for their involvement. However, this massive influx of fishermen has begun to eat into their profits as increased competition has resulted in decreased daily catch sizes (despite increasing annual catch biomass). At Bwiru, the fishermen I spoke with talked about harvesting between 100 and 300 kilos on a daily basis five to ten years ago, and even finding up to 1,000 kilos on unique occasions. Now catches range between 20 and 40 kilos on a daily basis, never exceed 100 kilos, and can sometimes be as low as just 5 kilos. Even after improving equipment, boats, and increasing the quantity of nets and tools being used on a single trip, the overall catch size is down for most Nile

---

23 Ibid
Perch and Tilapia fishermen. Even Dagaa fishermen are beginning to feel the pressures of overcrowding. These declining profits are only amplified by hierarchies that exist within boat ownership and the prevalence of middlemen and brokers, who tend to eat much of the profit stemming from selling to industries and large-scale vendors.

**Middle-Men: A Deal with the Devil**

Despite the perception that the fishing profession has low barriers to entry, the actual costs of canoes and equipment are exceptionally high. When conducting interviews at the various landing beaches, I was informed that canoes can cost up to anywhere between 500,000 and 1,800,000 shillings, depending on the type and quality of the wood used to construct it. On top of this cost, fishermen are also required to buy and maintain equipment such as nets (i.e., *makakolo* -- large nets used for Dagaa), hooks, and various other tools. And finally, fishermen must also possess the proper licensing for their boats in order to legally fish. These costs altogether can reach up to millions of shillings and require a significant amount of capital. Therefore, wealthy businessmen have taken advantage of this predicament to offer services and contracts in which they buy the boats, the equipment, and the licenses and then rent all of this gear out to a team of fishermen (usually these canoes are operated by a team of four or so fishermen). In return, these fishermen are required to sell their catch at a set price directly to these bosses or middle-men at a price set by the middle-men (usually this is a significantly discounted price). These middle-men will then transport the fish from the landing beaches to the processing plants where they will sell at a higher price. During my interviews some fishermen told me that they can usually sell 1 kilo of nile perch at the landing beaches for 5,000 to 7,000 shillings. This same kilo is then sold by brokers or middlemen to industries for between 8,000 and 12,000 shillings, which means there is a profit of between 1,000 to 5,000 shillings that is being eaten by the middlemen. Fishermen in this scenario are price-takers -- they don’t set the price. Instead they react accordingly to those in positions of power, industry and middlemen, who dictate the prices.

In addition to being required to sell a certain quota of their catch (generally the fish large enough to be sold to the factories), the fishermen are also sometimes obligated to rent the equipment and canoes themselves. Fishermen at South Mwanza told me they had to pay around 3,000 shillings each day they used the boat and equipment to harvest. This is simply an additional expense that comes out of the ultimate profit that these fishermen split amongst themselves. They were often well aware of the fact that these contracts were heavily favored against them. Regardless, they were necessary in order to sustain their involvement in fishing. And rather than the situation improving, many fishermen now

---

25 Ibid
require motorized canoes and boats in order to travel out far enough from the shore to actually find enough fish. Therefore, there is even more dependence on investments and support from middlemen, who can assist them with purchasing these motors (which are both expensive in terms of purchasing and maintaining with a license).

*A Return to the Local Market?*

At the moment, the existence of brokers and middlemen creates this disconnect between the vendors in the local market and beyond, and the fishermen are extremely aware of this. Growing dissatisfaction with brokers and middlemen and their predatory business practices may be resulting in a shift back towards the local market and these vendors. As I discussed earlier, with industries in decline and the size of Nile Perch decreasing, fishermen are noticing the value that comes from the flexibility when dealing directly with local vendors, both informal and formal. When talking with fishermen at Bwiru, a common consensus among them was the predatory nature of brokers and how they threaten the profit and longevity of their businesses. Also, interestingly, the fishermen expressed the fact that brokers and industry were undermining the community itself and its essential for fishermen to reconnect and assist local vendors as a communal effort towards food and market security. While an appealing sentiment, this move back towards the local market doesn’t stem entirely from altruism or by choice. In fact, because more and more smaller Nile Perch are being caught, fishermen are forced to sell to the local market rather than industries. And also the rise in demand and value for *bondo*, or fish mouths, from the Chinese market is driving fishermen back to the local market as well because processing plants don’t let them remove the *bondo* before selling the fish (because of its value and also they don’t want them tampering with the fish). So as the international market recedes and middlemen and brokers continue to exploit fishermen, they may begin seeking more direct interaction with the market to fully profit off their catch. Unfortunately, circumventing middlemen will continue to be difficult absent of government or non-profit subsidies for fishermen to purchase equipment and canoes.

**Clashing Perspectives of Fishermen and Vendors:**

Despite operating within the same industry, I noticed during my interviews a disjunction between the perspectives of fishermen and vendors on the lake and the operations of the market as a whole. Firstly, in regards to the health of the lake, the fishermen and vendors I interviewed reflected diverging opinions on its sustainability. While fishermen and vendors were equally aware of sustainability legislation, such as size restrictions on certain species of fish, the intentions of these laws were

---

interpreted differently (see Appendix figure 4 for more detail on legislation). Fishermen, who have been dealing with declining catches on a daily basis, understood that the laws were designed to improve the health of the lake. The size of fish and the total quantity are in decline and these fishermen often expressed fears about the future of their profession. Vendors, on the other hand, didn’t quite grasp the full intent behind the size restrictions on fish. There was a common consensus among many of the vendors that I spoke with that the difficulty to find both large fish and larger catches stemmed from poor equipment and inexperience rather than degradation of the lake. In fact, on a number of occasions, I was informed that the lake is so big that it will never run out of fish. Their main goal is the sale of more fish and therefore they require more supply at all costs -- their livelihoods depend on it. One potential reason for this disconnect is that the full picture of how catches are decreasing isn’t being communicated with the market. Since the inception of commercialized fishing on a large-scale, the largest Nile Perch have always been sent to the factories. The market has always received the smaller, by-product Nile Perch that isn’t suitable for processing and therefore, while they are still receiving these more immature Nile Perch (which is increasingly a larger part of the overall catch biomass), the full extent to which Nile Perch and other fish species have been impacted by overfishing isn’t entirely evident. Additionally, fishermen have more access to information and awareness campaigns regarding the legislation because of the existence of BMU’s and direct services that monitor their catch.

Secondly, the disjunction between the market and the landing beaches is being exacerbated by brokers. Formal vendors often talked about rising prices on the landing beaches and the pressures this was placing on their business -- additionally, it's these vendors that utilize carriers and brokers to buy and transport their produce for them. They said that fishermen were selling at higher prices on the beaches because they held the power as a result of increased industry demand. On the other hand, fishermen distrusted some vendors and brokers because they believed they were deceptive about what prices the fish was sold in the market as a means of not allowing the fishermen to react accordingly. In reality, in both scenarios the parties faced exterior pressures unknown to the other. For the fishermen, they were often constrained by the middlemen and boat bosses who would dictate their price and also divide their profit, forcing them to sell at higher prices. In the case of the vendors, in particular formal ones, they were facing a downward pressure due to competition from informal vendors so in order to protect their business they had to bargain aggressively and conceal their own prices and profits to a degree. Due to each actor operating in different locales, overlap is very limited in regards to time and space so while they are intrinsically linked there is not complete clarity over how each functions.
Biases, Limitations, and Recommendations:

Observational Biases:

- My translator had no prior knowledge of fishing so at first not all of the vocabulary was immediately translated correctly into English. Additionally, other information was either mistranslated or not relayed to me because of his own judgement on what was valuable and not valuable information.
- I was interviewing illegal vendors and also asking questions to all three actors about illegal techniques so at times I was addressed with caution and suspicion (that I was a secret government agent for Magufuli). This lead to potential misleading and dishonest data during interviews.
- When interviewing vendors, they were often conducting business simultaneously. Therefore, whenever customers arrived the interview would be interrupted and halted until they were able to resume. This at times hurt the flow of the interviews which limited how much information I could gather.

Methodological Biases:

- My interviews were often rather lengthy and interviewees, particularly vendors who had business to conduct, would occasionally end the interviews abruptly or become disinterested in the interview. Additionally, my interviewees were sometimes difficult to isolate as they must stay around their vending area. This lead to interruptions and distraction from surrounding people.
- My opportunistic sampling didn’t take into account the length at which individuals had been involved in their particular field (whether it be selling or fishing). That meant that sometimes I would be interviewing individuals with only a few months of experience.
- Additionally, my sample population and interview questions didn’t take into account how the actors are involved with the sale and harvest of different fish. These actors have significantly different experiences with the market based off what type of fish they are dealing with.
- My original interview questions had a few errors within their make-up. At times they were repetitive and others just didn’t effectively address specific themes and ideas that I intended. This meant that my interviews were susceptible to improvisation and going off track. Additionally, sometimes the interviews changed depending on the different sites for different actors because they deal with different circumstances and markets.
Limitations:

- My first limitation was language and the necessity of a translator. While my Swahili skills were adequate to carry out a few participant observation days and informally interview actors independently, I required a translator for the bulk of my data collection. Due to the fact that my translator was primarily a university student, I was required to alter my initial interview schedule because he had to take exams on certain days. This simply caused my to shift around my interview schedule.

- My second limitation was gaining municipal permission to conduct interviews as certain sites, such as Igombe landing beach. While dealing with the city government, the walls of bureaucracy and language divide proved insurmountable. Therefore, certain sites remained inaccessible due to lack of proper permitting.

- My third limitation was monetary as I was limited by the budget in regards to the number of days I could go out with my translator and the amount of interviews I could compensate for.

Recommendations:

- Increasing the sample groups to include all the actors involved in the harvest, movement/storage/purchase, and sale of fish would paint a more encompassing picture. This would mean including boat owners, brokers, middlemen, and collectors who all play roles in the hierarchy and function of the market for fish locally, domestically, regionally, and internationally.

- Gain access to the municipal fisheries office in order to see how buying and selling licenses are distributed, how market areas and formal vendors are taxed and regulated, and also to see their perspectives on the local market for fish. It would be helpful to talk with regulatory bodies like the BMUs that operate on the beaches as well in order to gain their perspective on sustainability and the effectiveness of legislation.

- Focus more closely on one of the three main commercialized fish and examine the evolution of their market and the actors involved in it. It would provide an even more focused look at a specific part of the micro-economy for fish in Mwanza.
Conclusion:

The purpose of this study was to gain a better insight into how the formal and informal market for fish contribute to the micro-economy in Mwanza and how these markets function on a daily, monthly, and annual basis. By gauging the perspectives of fishermen, formal vendors, and informal vendors on different elements of the market, I was able to outline five major themes. Firstly, there is seasonal volatility for the supply of fish in Mwanza and this leads to vulnerability amongst informal vendors and monthly fluctuations in profits and tastes. Secondly, the influx of informal vendors is undermining the business of formal vendors as they contend with downward price pressures in conjunction with the burdens of tax and regulation. Thirdly, the growth of the domestic, regional, and international demand for fish has driven the price up and spurred the market for particular species, like Dagaa and Nile Perch, but growing local demand and receding international markets ensures the stability of the local Mwanza market. Fourthly, the massive increase of fishermen on the lake, overfishing resulting from the growth of commercialized fishing, and the prevalence of middlemen and brokers is undermining the profits and survivability of the profession. Finally, the perspectives of fishermen and vendors differ on the profitability of each profession and the sustainability of the lake; this disjunction is perpetuated by the existence of brokers and carriers who create disconnect between the harvest and the sale of fish in Mwanza.

In the next few years the micro-economy of fish in Mwanza will have to contend with increasing pressures stemming from a variety of factors. Firstly, increased population growth and growing demand for fish as a source of food and profit will continue to put duress on the lake and threaten the longevity of the industry. Additionally, this was continue to spur the influx of informal vendors and outside buyers, which will maintain pressure on formal vendors through increased price competition and rising prices. Secondly, as a result of a growing necessity for middlemen and overutilization of the lake, fishermen and fishing villages will become increasingly vulnerable, in regards to food and job security. While these processes have been underway for years already, the emergence of a larger domestic and regional demand are putting increased pressures on other fish species besides the Nile Perch and the recent surge of informal vendors poses newfound threats for formal vendors. In going forward, it could be beneficial for the local and national government to pursue programs that increase awareness of sustainability among vendors, improve job security for formal vendors and fishermen, and subsidize the local market in the case of being overshadowed by the domestic, regional, and international market.
Citations:


Appendix A:

Figure 1: Catch Biomass and the Number of Boats and Fishermen

Figure 2: Legislation Rank Chart for Formal Vendors, Informal Vendors, and Fishermen

<table>
<thead>
<tr>
<th>Fishermen</th>
<th>Formal Vendors</th>
<th>Informal Vendors</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Fish Size Limitation (Nile Perch + Tilapia)</td>
<td>1. Fish Size Limitation (Nile Perch + Tilapia)</td>
<td>1. Fish Size Limitation (Nile Perch + Tilapia)</td>
</tr>
<tr>
<td>4. Lake Boundaries / Illegal Instruments (i.e., timber)</td>
<td>4. Ban on Dynamite / Hook Size</td>
<td>4. Ban on Dynamite / Hook Size</td>
</tr>
<tr>
<td>5. Ban on Dynamite / Hook Size</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Figure 3: Rank Chart of Transportation Methods Used by Formal and Informal Vendors

<table>
<thead>
<tr>
<th>Formal Vendors</th>
<th>Informal Vendors</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Piki Piki (26.7%) / Boat (26.7%)</td>
<td>1. Piki Piki (53.8%)</td>
</tr>
<tr>
<td>2. Truck / Car</td>
<td>2. Dala Dala / By Foot</td>
</tr>
<tr>
<td>4. Dala Dala</td>
<td>4. Truck / Car</td>
</tr>
</tbody>
</table>

---

28 Ntara, Modesta
Appendix B: Interview Questions

Fishermen:

*Harvest:*

1. How long have you been fishing for? How did you become involved in fishing?
   ○ Umeuza samaka kwa miaka ngapi?
2. When and where do you fish?
   ○ Unavua samaki wapi na lini?
3. How many hours or days do you fish for?
   ○ Kwa kawaida unavua masaa mangapi? Au siku ngapi?
4. What type of fish do you predominately look for? Why?
   ○ Kwa kawaida unatafuta aina gani ya samaki? Na kwa nini?
5. What kind of methods do you use to fish?
   ○ Unatumia mbinu gani ili kuvua?
6. How have methods changed over the last few decades? Why have they changed?
   ○ Mbinu za uvuvi zimebadilika je? Kwa miaka michache iliopita? Kwa nini zimebadilika?
7. Are there any new government regulations? Are they enforced?
   ○ Kuna sheria ya serikali mpya? Zilizowekwa?
8. Does any competition exist for harvesting fish?
   ○ Kuna ushidani katika uvuvi?

*Movement/Storage:*

1. What type of boat do you use? How much did it cost?
   ○ Unatumia utumbwi gani? Ni bei gani?
   ■ Ungependa kubadalisha kuwa ‘motor boti’?
2. After you catch fish how do you store it?
   ○ Unahifadhije samaki baada ya kuvua?
3. Do you sell fish the same day that it is caught or do you store it?
   ○ Unauza samaki siku hiyo hiyo baada ya kuvua au unahifadhi?
4. After you sell the fish how is it transported to factories or the main market?
   ○ *Baada ya kuuza samaki wanasafirishwaje kwenda sokoni au kiwandani?*

*Sale:*

1. Where do you sell your fish?
   ○ Unuza samaki wapi?
2. Which fish is the most profitable? Which is in highest demand?
   ○ Samaki yupi ana faida zaidi? Na yupi anapendwa zaidi?
3. How much do you sell your (type of fish) for?
   ○ Unauza samaki shilingi ngapi?
4. How much do you make from your average catch?
   ○ Unapata shilingi ngapi jumla kwa siku?
5. Who do you predominately sell fish to?
   ○ Unauza samaki kwa nani?
6. Is there a difference between the fish you sell to companies as opposed to Mama’s and vendors?
   ○ Kuna tofauti kati ya kuuza samaki kwa wafanyabiashara wadogo au kwa kampuni?
7. Do you sell fish at a different price to companies as opposed to Mama’s and vendors?
   ○ Unauza samaki kwa bei tofauti kwa wafanyabiashara wadogo au kwa kampuni?
8. Have you noticed any changes in prices while you’ve been fishing? How have they changed?
   ○ Kuna utofauti wa bei kwa nyakati tofauti wakati wa kuvua? Bei gani? Kwa nini bei tofauti?

Informal Vendors:

Harvest:

1. When and where do fishermen usually fish?
   ○ Wapi na lini wavuvi wanavua kwa kawaida?
2. How many hours or days do they fish for?
   ○ Wanavua kwa siku ngapi au masaa mangapi?
3. What type of fish is the most popular? Why?
   ○ Aina gani ya samaki ni inapendawa zaidi? Kwa nini?
4. What kind of methods do fishermen use to fish? Does it differ by type of fish?
   ○ Wavuvi wanatumia mbinu gani kuvua? Ni mbinu tofauti kwa aina ya samaki?
5. How have methods changed over the last few decades? Why have they changed?
   ○ Mbinu za uvuvi zimebadilika je? Kwa miaka michache iliopita? Kwa nini zimebadilika?
6. Are there any new government regulations?
   ○ Kuna sheria mpya za serikali?
7. Does any competition exist for harvesting fish?
   ○ Kuna ushindani katika uvuvi?
8. Has it become harder to find certain types or sizes of fish?
   ○ Kuna ugumu kupata aina ya samaki au samaki wa kubwa?

Movement/Storage:

1. Where do you buy fish from? What types of fish do you buy and from whom do you buy?
   ○ Unanunua samaki wapi? Unununua samaki aina gani na kutoka kwa nani?
2. How do you transport fish from the loading beaches to the main market?
   ○ Unasafirshaje samaki kutoka ziwani mpaka sokoni?
3. How much does it cost to transport fish from the loading beaches to the main market?
   ○ Ni shilingi ngapi kusafarisha samaki kutoka ziwani mpaka sokoni?
4. Each day how long do you spend purchasing and transporting the fish?
   ○ Unatumia muda gani kununua na kusafarisha samaki?
5. How is the fish stored before you purchase it? How is it stored while you transport it to the market?
   ○ Samaki wanahifadhije kabla ya kununua? Wanahifadhije wakati wa kusafirisha mpaka sokoni?
6. How do you store the fish after its arrived at the market?
   ○ Unahifadhije samaki baada ya kufika sokoni?
**Sale:**

1. How long have you been selling fish for? How did you become involved in the market for fish?
   - Umeuza samaki gani kwa muda gani/miaka mangapi? Uliingiaje kwenye biashara hii?
2. Where do you sell your fish? What type of fish do you sell?
   - Unauza samaki wapi? Unauza aina gani ya samaki?
3. Do you have to pay for a position to sell fish in the market? If so how much does it cost?
   - Unalipia mahali pa kuuzia samaki sokoni? Shilingi ngapi?
4. Which fish is the most profitable? Which is in highest demand?
   - Samaki gani ana faida zaidi? Samaki gani ana pendwa zaidi?
5. How much do you buy (type of fish) for? How much do you sell (type of fish) for?
   - Unununua shilingi ngapi kwa aina ya samaki? Unuuza shilingi ngapi kwa aina ya samaki?
6. Who do you predominantly sell fish to?
   - Kwa kawaida unauza samaki kwa nani?
7. Are you able to sell all your fish each day? What do you do with leftover fish?
   - Unauza samaki wote kila siku? Kama hapana wengine unepeleka wapi?
8. Have you noticed any changes in prices while you’ve been selling fish? How have they changed?
   - Kuna mabadaliko kwa bei wakati wa kuuzuza samaki? Mabadaliko gani? Kwa nini bei tofauti?
9. Have you noticed any changes in profit? Has it become more or less profitable?
   - Kuna mabadaliko kwa faida? Ni faida kubwa au ndogo?
10. Do you face any competition in selling fish or restrictions? If so with and from whom?
    - Kuna ushindani katika mauzo ya samaki? Au sheria? Kutoka wapi?
11. Has there been an increase or decrease in fish vendors?
    - Wachuuzi au wauzaji wanaongezeka au wanpunguwa?
12. Are you taxed or regulated at all when selling fish?
    - Unalipa ushuru baada ya kuuzza samaki?
13. What do you do with the profits acquired from selling fish?
    - Unafanyia nini faida unayopata baada ya kuuzuza samaki?

**Formal Vendors**

**Harvest:**

1. When and where do fishermen usually fish?
   - Wapi na lini wavuvi wanavua kwa kawaida?
2. How many hours or days do they fish for?
   - Wanavua kwa siku ngapi au masaa mangapi?
3. What type of fish is the most popular? Why?
   - Aina gani ya samaki ni inapendawa zaidi? Kwa nini?
4. What kind of methods do fishermen use to fish? Does it differ by type of fish?
   - Wavuvi wanatumia mbinu gani kuvua? Ni mbinu tofauti kwa aina ya samaki?
5. How have methods changed over the last few decades? Why have they changed?
   - Mbinu za uvuvi zimebadilika je? Kwa miaka michache iliopita? Kwa nini zimebadilika?
6. Are there any new government regulations?
   - Kuna sheria mpya za serikali?
7. Does any competition exist for harvesting fish?
8. Has it become harder to find certain types or sizes of fish?
   ○ Kuna uguumu kupata aina ya samaki au samaki wa kubwa?

**Movement/Storage:**

1. Where do you buy fish from? What types of fish do you buy and from whom do you buy?
   ○ Unanunua samaki wapi? Unununua samaki aina gani na kutoka kwa nani?
2. How do you transport fish from the loading beaches to the main market?
   ○ Unasafirshaje samaki kutoka ziwani mpaka sokoni?
3. Do you employ people to buy and transport your fish for you? If so, for how much do you pay them?
   ○ Unaajiri watu kukununulia na kukusafirishia samaki? Unawalipa shilingi ngapi?
4. How much does it cost to transport fish from the loading beaches to the main market?
   ○ Ni shilingi ngapi kusafarisha samaki kutoka ziwani mpaka sokoni?
5. Each day how long do you spend purchasing and transporting the fish?
   ○ Unatumia muda gani kununua na kusafirisha samaki?
6. How is the fish stored before you purchase it? How is it stored while you transport it to the market?
   ○ Samaki wanahifadhiwaje kabla ya kununua? Wanahifadhiwaje wakati wa kusafirisha mpaka sokoni?
7. How do you store the fish after its arrived at the market?
   ○ Unahifadhije samaki baada ya kufika sokoni?

**Sale:**

*(Same as informal vendors)*
Nuts and Bolts:

Karibu Mwanza! In past years there haven’t been as many students who have gone here to conduct studies but now it's far easier than before. There are two main ways to get there: by airplane or by bus ride. Going by plane is very easy yet a little more expensive. If you book early enough in advance the plane tickets can cost up to around 50 - 60 dollars, but you also have to factor in the prices of taxis. It takes about two hours and they run pretty smoothly. However, if you want to stick to budget the bus is definitely the way to go. It only costs about 30,000 shillings to get there and the buses usually leave at around 6 a.m. The best company to take is Isamilo, which is far more trustworthy and safe than other companies. We took one bus and it felt like death was near the whole time.

Once you get to Mwanza there are plenty of options to stay. There are the more fancy, unaffordable options. These are the New Mwanza Hotel and the Gold Crest hotel, which are also good places to go if you’re looking for free wi-fi and a bad cup of coffee. There are also a number of other cheaper guest houses in the area. Two of these are Lake Hotel, Kishamapanda, and Geita Lodge. These are about ten minutes away from Samaki roundabout, the main market, and the center of Mwanza. They are all around 15,000 - 20,000 per person per night. They are both secure and the areas are very safe during the day.

In terms of translators, you should look at Dani Levi’s ISP for the contact information of George and Issac. These are both incredibly skilled, motivated, and connected men in Mwanza. They are generally reserved for more expensive research but they were very willing to assist us at lower prices. If you are looking for other translators, going to various travel agents and other locations is a great way to find out about translators and other sources. Overall, Mwanza is an incredibly vibrant, fun, and active city. It's in a beautiful location, the people are incredibly fun and hospitable, and it's a very clean and safe city. I couldn’t recommend the city enough as an ideal location for ISP.