COMPETITIVENESS OF FARMED AND WILD CAUGHT FISH IN DESIGNATED MARKETS OF KAWEMPE DIVISION

BY
NANTEGE WINFRED
15/U/21388

SUPERVISOR:
DR. GODFREY K. KUBIRIZA

A RESEARCH DISSERTATION SUBMITTED TO THE DEPARTMENT OF ZOOLOGY, ENTOMOLOGY AND FISHERIES SCIENCES IN PARTIAL FULFILLMENT FOR THE AWARD OF THE BACHELORS DEGREE IN FISHERIES AND AQUACULTURE SCIENCES OF MAKERERE UNIVERSITY

SEPTEMBER 2018
DECLARATION

I, NANTEGE WINFRED, declare that the findings presented herein have not been submitted to any other university or institution of higher learning for any academic award.

Signature: ........................................

Date: 3rd/09/2018
This research has been supervised and is submitted with the approval of my supervisor.

Dr. GODFREY K. KAWOOYA

Date: 03/09/2018
DEDICATION

I dedicate this work to my mother Mrs. Nakacwa Pauline; father Mr. Ssebuliba Joseph; Uncle Mr. Yiga Herman Victor and family for the care, support and prayers throughout my academics.
ACKNOWLEDGEMENT

I thank the almighty god for the gift of life, family, grace and provisions he has given me. Great thanks to Eng. Yiga Harman Victor and my family for the support and guidance throughout my academic studies at Makerere University.

I am grateful to the academic staff of Makerere University specifically Zoology, Entomology and Fisheries Sciences Department for the job well done during the course of the study. In a special and a humble way, I really thank Dr. Kubriza Kawooya Godfrey for the great job done through guidance and support throughout my research and report writing.

Thanks go to the administrators of Kawempe Division, Urban Council under Kampala Capital City Authority for permitting me to execute my research in the two markets and to interact with fish farmers in the division.

To all my fellow students, particularly my classmates, thank you for the guidance, support, and endurance you showed me throughout the three years. I appreciated and I am indebted to you all.

Finally, I thank my mother for the care, love and financial support.
# TABLE OF CONTENTS

DECLARATION

APPROVAL

DEDICATION

ACKNOWLEDGEMENT

TABLE OF CONTENTS

ABSTRACT

CHAPTER ONE

1.1 Introduction and Justification of the Study

1.2 Objectives

1.2.1 General objectives

1.2.2 Specific objective

1.3 Research questions

CHAPTER TWO

LITERATURE REVIEW

2.1 Wild fish production

2.2 Fish importance, consumption and demand

CHAPTER THREE

MATERIALS AND METHODS

3.1 Study area

3.2 Data collection
3.4 Data analysis ........................................................................................................................... 11

CHAPTER FOUR......................................................................................................................... 12

RESULTS ..................................................................................................................................... 12

4.1 Consumer knowledge and perception about farmed and wild caught fish on local markets. 12

4.2 Modes through which farmed and wild caught fish is sold/bought........................................ 14

4.2.1 Marketing channels for farmed fish ................................................................................. 16

4.2.2. Marketing channel for wild caught fish .......................................................................... 17

4.3 Monterey change along the dominant distribution channel................................................... 18

4.5 Gross profit margin distribution among actors in the distribution of farmed and wild ....... 19

4.5.1 Gross profit margin distribution actors in the distribution of farmed tilapia ................. 20

4.5.2 Gross profit margin distribution actors in the distribution of farmed catfish................... 21

Appendix 1: Questionnaire 1 ........................................................................................................ 37
# LIST OF TABLES

Table 1: Consumer knowledge and perception about farmed and wild caught fish..................... 12
Table 2: Modes in which farmed and wild caught tilapia fish was sold at different node .......... 14
Table 3: Forms in which farmed and wild caught catfish was sold at different distribution....... 15
Table 4: Prices along the distribution channels of farmed and wild caught tilapia .................18
Table 5: .......................................................................................................................................................19
LIST OF FIGURES

Figure 1: Location of Kawempe Division in Kampala District .................................................... 10

Figure 2: Distribution channels for farmed tilapia ................................................................. 16

Figure 3: Distribution channels for wild caught tilapia (Oreochromis niloticus) ................. 17

Figure 4: Distribution of profit margins along distribution channels of farmed Tilapia ........... 20

Figure 5: Distribution of profit margins along distribution channels of farmed catfish ........... 21

Figure 6: Distribution of profit margins along distribution channels of wild caught tilapia .... 22

Figure 7: Distribution of profit margins along distribution channels of wild caught catfish .... 23

Figure 8: Forces failing farmers attain desirable margins ..................................................... 25
ABSTRACT

Fish farming is growing at a faster rate. For continuity, marketing of farmed fish should be prioritized for profitability. The main objective of the study was to investigate consumer knowledge and marketing of farmed fish on local markets of Kawempe Division Urban Council where wild fish is sold. It aimed at assessing consumer knowledge about farmed fish, benchmarking marketing channels of farmed fish and determining monetary change along the dominant distribution channel. Questionnaires were administered to 15 fish farmers, 100 consumers, 40 mongers from Kalerwe and Kalinabiri markets, 20 middlemen, and 15 fishers from Lwampanga and Zzengebe landing sites on Lake Kyoga. Data was analyzed using chi-square.

Results indicated that most consumers are aware of farmed fish existence. Farmed fish reach consumers through direct selling to them, farmers-distributers-mongers, farmers carrying and selling fish on markets and farmers-mongers in different forms and prices. Mongers enjoy higher market shares than farmers. Consumers have little influence on farmed fish marketing but inconsistent supply, farmers’ low competence and middlemen influence were found determining competition and profitability of farmed fish on local markets. Synchronization of production, avoiding middlemen will improve pricing and flow of information between farmers and consumers for profitability.

Key words; farmed fish, market channels, profit margins and profitability, competitiveness
CHAPTER ONE

1.1 Introduction and Justification of the Study

Between 1990 and 2016, the world human population had increased from five to seven billions (Bloom, 2016), and has further increased to date. This portrays a high demand for not only high quality food but earning a living both socially and economically. Among the food stuffs, fish even when consumed in small quantities, it offers high quality proteins by providing essential amino acids. It also provides omega-3 fatty acids critical for preventing low birth weight and boosting neurological development in infants (FAO, 2006). It provides a basis for the livelihoods and foreign exchange to developed and developing countries with no considerations of gender aspects (FAO, 2007).

Unfortunately, a significant share of wild fish stocks is under threat. They can no longer sustainably support the ever growing demand from existing population. This is because natural resources functionality and productivity have continuously reduced as a result of anthropogenic activities like introduction of Nile perch (*Lates niloticus*) into Lake Victoria which disrupted its ecosystem. Over fishing beyond maximum sustainable yields of natural resources and pollution in catchment areas as Taabu Munyaho et al, (2014) explained for East Africa too contribute to the case. In addition, unsustainable management practices and weak policies cause natural resources collapse (Fribauer, 2011) where by destructive fishing activities like use of wrong fishing gears and methods still exist on natural resources contributing to reduction in catches and biodiversity of native fish species (FAO, 2014, FAO, 2016).

Though further increases in capture fisheries production are unlikely, demand for fish is projected to increase. (World Bank, 2006) As a result, concerned sectors farmed out ways of supplementing wild fish catches crisis to prevent fish food insecurity and alleviate poverty. Aquaculture was sought a dependable and viable alternative to complement wild fish supply. This started on a small scale in many developing countries but many farmers have upgraded to profitable commercial producers by 2016. For example, about 20 to 30% of fish farmers in Uganda were reported to have upgraded from subsistence to profitable small scale producers (FAO, 2016) The advancement has been through socio-economic and technical support from...
not only government agencies but non-governmental and private sectors too to ensure motivation and industry health. (UIA, 2005).

Therefore, the industry now provides nutrition, trade and employment to a number of people of different categories including literates and illiterates. This is because it involves among others hatcheries for provision of fingerlings for stocking, ponds, tanks and cage construction, fish feed formulation, trade, and research. (Pers. observation) In addition it has reached a certain extent in bridging the gap of scarce wild catches and supplies crisis. This is because its productivity and contribution towards total fish production is expected to even go beyond 46.8 percent as it was by 2016 reported by FAO (2014).

Regardless of support and the significant contribution that aquaculture make to employment, nutrition, trade and towards total fish production, the sector is constrained by high production cost well elaborated by Kubiriza (2017). Critically, poor quality but expensive feed and seed together with marketing of table size fish put tensional force and stress to farmers. This is because though the prices for fish are high, the production costs are always greater than the revenues generated as explained by Ssebisubi (2011). While these could be overcome through a laid-out aquaculture business management structure and increased involvement of technocrats, marketing of farmed fish is a critical concern that needs to be addressed as Sserwambala (2017) reported hence the study.

1.2 Objectives

1.2.1 General objectives
To investigate consumers’ knowledge and characterize the alternative marketing channels for farmed and wild caught fish available in the local markets of Kawempe Division Urban Council.
1.2.2 Specific objective

1. To assess the consumers’ knowledge and perceptions that influence their interest in buying of farmed fish availed in local markets.
2. To define and characterize the alternative marketing channels for farmed and wild caught fish.
3. To determine the profitability of the alternative marketing channels for farmed and wild caught fish in selected markets of Kawempe Division Urban Council.

1.3 Research questions

1. Does consumer knowledge and perception influence marketing of farmed fish on local markets?
2. Are marketing channels for farmed and wild caught fish the same?
3. Are the alternative marketing channels for farmed profitable?
CHAPTER TWO

LITERATURE REVIEW

2.1 Wild fish production.
The world has over years experienced reduction in catches from natural resources. (FAO, 2017) In Uganda, a 26.5% and 2.4% decline in catches from Lake Kyoga and Lake Albert respectively was experienced, whereas catches from Lake Wamala decreased by 18% between 2010 and 2014 as MAAIF report (2016) explained. This underscores its importance in supplying fish food to people of different parts of the word. The stagnation of capture fisheries is due to reduction in natural functionality and productivity partially attributed to difficult of regulating fisheries and preventing their exploitation. (Freibauer, 2011, FAO, 2014) Even with improvements in regulation, however, pressure on capture fisheries still remain.

The pressure is accompanied by unsustainable fishing involving that is beyond maximum sustainable yields of natural resources using wrong fishing gears and methods as elaborated by FAO (2016) Furthermore, anthropogenic activities like introduction of invasive species like Nile perch in Lake Victoria and pollution of catchment areas contribute to reduction in catches and biodiversity of native fish species as Taabu Munyaho et al, (2014) explained. Thus, they can no longer sustainably support the ever growing population due to declining catches and reduced bio-diversity of fish species landed (Balirwa, 2004; FAO, 2010) hence fish food insecurity.

2.2 Fish importance, consumption and demand
Though further increases in capture fisheries production are unlikely, demand for fish is projected to increase. (World Bank, 2006) This is due to its great importance portrayed in various ways. These are of health, social and economic aspects. It is a highly nutritive food having many potential health benefits in human diets compared to other kinds of animal proteins, including meat (Wim et al., 2007). Fish even when consumed in small proportions, it offers high quality protein rich in many indispensable amino acids like methionine and lysine the most
important limiting amino acids for synthesis of proteins. They are relevant in protecting liver damage and collagen formation among others for not only early child growth but elders too (Gill, 2003). Furthermore, it provides Omega-3 polyunsaturated fatty acids (PUFA) crucial in preventing low birth weights and boosting neurological development in infants (FAO, 2006).

In addition, it is a source of income to livelihoods for an estimated number of 56.6 million people who engage in its production and distribution (FAO, 2016). This is through provision of employment in terms of production, trading locally, regionally and internationally. Researchers, policy makers and implementers too happily spend life because of fish.

Therefore, many consumers have understood values for their well-being and their healthy deity is now at inclination receiving cumulative considerations in the world (Franz and Nowak, 2010, Kaimakoudi et al., 2013) Trade and research have been promoted and increased due to fish’s benefits. Together with increasing population growth rates mostly in developing countries Uganda inclusive where by its population reached 37.7million in 2017, with a growth rate of 3% per year as the National Population Council reported in 2017. Implying a high fish demand from all corners (Abdallah, 2017) pressuring the natural resources yet they cannot sustain such demand due to dwindling catches. Therefore, a supplement from dependable and viable alternatives to bridge the gap and for their wellbeing was of a great need. (Kubahenda & Hüsken, 2009)

**Aquaculture**

Nearly 60% of the global fish stocks are browbeaten to full capacity and 30% are virtually tapped out. However the human population is anticipated to have raised up to 10 billion and the climate changes shrinks the fish populations at a rate of 20 to 30 per cent for every one degree Celsius in natural waters. To nourish the word sustainably and farm way out of the wild fisheries crisis, effort on aquaculture was implemented to match the current landings from wild caught fisheries (Olive Heffernan, 2017).
Indeed aquaculture is considered a dependable and highly valuable alternative to bridge the gap present. This is because its contribution to the 170.9 million tones produced globally from capture and aquaculture by 2016 was 80 million tons of showing an increase of five percent growth as compared to what it contributed in 2015 (FAO, 2016 fish start). This is evidenced by the average growth rate of world aquaculture production of 5.8 percent for the year 2016 and a 5.2 percent annual growth rate of the same year hence a rise contribution to the total capture production from 25.7 percent in 2000 to 46.8 percent in 2016.

This was due to increased production from different countries whereby China was the leading producer with 49.2 million tones followed by Viet Nam (3.6 million tones), Bangladesh, Egypt, Norway, Chile and Myanmar and Thailand producing (2.2,1.4,1.3,1, and 0.96) million tones respectively. These made the top ten world aquaculture producers who correctly contributed 89.3 percent and the rest of the countries contributed 10.7 percent world production by quantity in 2016 (FAO, 2016). This was dominated by finfish with 67.6 percent, followed by mollusks with 21.4 percent, crustaceans with 9.8 percent and others which contributed only 1.2 percent. Its productivity and contribution towards total fish production is expected to even go beyond as FAO (2014) elaborated. This means that it will be able to counteract the declining wild production (Merino et al, 2012).

However African countries are still behind in terms of aquaculture production since the leading producer can only avail 1.4 million tones as FAO (2016) reported. For the sub Haran region in particular, aquaculture used to supplies only 3% of fish production to meet only local demand of 7.8kg per capita value (Mallya, 2007). In East Africa, Uganda and Kenya have shown rapid progress to be pronounced as major aquaculture producers in the region, while in Uganda, 20 and 30% of the farmers have upgraded from subsistence farms to profitable small scale units hence an increase in fish supply (FAO, 2016).
In Uganda, aquaculture was introduced as a non-traditional farm technology in the 1950’s (Jagger and Pender, 2001), exercised on a subsistence scale using extensive production systems and negligible production volumes were yielded. (Balarin, 1985) It comprised of ponds but now tanks and cages exist. At present about 14,000 fish farmers in the country with a total of over 30,000 ponds and about 2,135 cages in Lake Victoria alone (Kubiriza, 2017 and Mbowa, et al, 2017) Notably the most cultured fish species are the African catfish (*Clarias gariepinus*) with 50% of the production volume and Nile tilapia (*Oreochromis niloticus*) with 48% of the production volume (Dalsgaard *et al.,* 2012; FAO Fishstat, 2016) among others. These are raised either in polyculture or monoculture systems in ponds or cages.

Kubiriza Kawooya (2017) estimated the aquaculture production to be about 30,000 MT in 2013 based on reports from the Ministry of Agriculture Animal Industry and Fisheries (MAAIF) an impact of about 20% of the total fish production in Uganda, reported to have improved from 31 MT to 117,590 MT from 1984 to 2015 (Kasozi, et al, 2017 and FAO, 2017). Though Ssebisubi (2011) complained that it could be an overestimate and the actual production may be considerably lower. This makes it a long lasting solution to improve fish supplies for about 75 percent of people residing close to the city (Kampala), the whole Ugandan population too in a long run. (Ssebisubi, 2011) hence its ability to neutralize wild catches drop meeting the Ugandan demand (Merino et al, 2012).

However due to notable reasons, the sector is challenged by several factors related to production and marketing costs (Dalsgaard *et al.,* 2012, Sserwambala 2017). These include among others input factors mostly though related challenges do exist. These are mostly in terms of production and marketing. Feed only constitute about 50 percent of total production costs of which it’s expensive, scarce and of poor quality as Shipton and Hassan (2013) explained. Poor seed quality together with little access, management and labour importantly for production and harvesting are of high concern. (Kubiriza, 2017) Packaging, transport, storage, rent and net purchase on the side of marketing greatly stress the industry. (Hyuha, 2011). In addition most of these costs are variable in relation to prices attached, economic stand of the nation yet they in most cases inevitable (Sserwambala, 2017). Thus, if summed up, subtracted from the total revenue a farmer
expects to earn a profit which varies with production system, units a farmer owns and total volumes at harvest as Hyuha et al (2011) reported.

As a result, concerned sectors to ensure health of the industry have tried to solve the challenges though some have endured for years and still in existence. The solutions have been through social, economic, and technical support (Isyagi, 2007, Claret et al., 2014). This has been seen by for example the Uganda Investment Authority encouraging large commercial scale investment in the sector through providing tax holiday with a strategy that targeted a yearly production volume of 100,000 tones by the year 2017 (USAID-FISH, 2009). Kampala Capital City Authority too offers free sessions, teaching people how to make money from aquaculture at Kyanja Demonstration Farm (personal observation). The government has also committed its self to develop aquaculture through campaigns like ‘operation wealth creation’ which funds have to be returned. It also funds sequential research about diseases attacking fish causing loses to many farmers. All these are done to transform the sector into a self-sustaining commercial aquaculture industry attracting interest and investment from individuals, private sector and public institutions in the country (UIA, 2005).

Regardless of the effort employed to solve such problems, total production costs have remained so high not only to small fish farmers but semi-intensive fish farmers too although farmed fish prices continue rising. (ssebisubi, 2011) This is due to poor quality but expensive feed with unpredictable supply, in addition to a struggle for break-even/profits from the investments as reported by Dalsgaard et al., (2012) and Kubiriza (2017). The brawl has been due to poorly developed market where by middlemen dominate fish marketing in that most of the margins are consumed up by them yet they delay and sometimes terminate the flow of information between farmers and consumers. This is accompanied by socio demographic characteristics of consumers to whom fish is produced. (Hammerle et al., 2010, Rajani, 2014, Claret et al., 2016) This means that market fails very many farmers from attaining a desirable profit margin yet it is the main driver of aquaculture investment as is for any other business (Ssebisubi, 2011) although local, regional and international markets are available for fresh and value added farmed fish products.
Therefore, it is important to define substitute strategies for operating viable aquaculture enterprises and marketing of its products as Sserwambala (2017) claimed. This may be through market and services development which have limited the expansion of aquaculture in Uganda. Hence the study attempted to put into perspective of competitiveness of farmed fish on local markets where wild caught fish are sold in order to come up with alternative channels best for marketing farmed fish hence profitability by profit analysis of the existed marketing channels for farmed fish, consumer knowledge, modes and price by which it was sold.

The analysis included the cost of investment, production methods, production cost and market prices of aquaculture fish in Uganda.
CHAPTER THREE
MATERIALS AND METHODS

3.1 Study area

The study was conducted in Kawempe Division Urban Council under Kampala Capital City Authority (KCCA) in Kampala district. Two registered local fresh fish markets (Kalinaabiri and Kalerwe) were used to reach out to mongers, consumers and middlemen/distributers. A few farmers who are known to supply fish in Kalinaabiri and Kalerwe markets were interviewed about their different marketing strategies. Fishers from Lwampanga and Zzeniebe landing sites on Lake Kyoga (the main sources of wild fish sold in Kawempe Division) were also interviewed about their marketing strategies.

The study was done in Kawempe Division with a high human population and escalated demand for fish. About 22% of Kampala’s populations reside in Kawempe Division, provides market and derive fish traders to deliver fish from farms and fish landing sites.
3.2 Data collection

Fresh fish was traced from the farms and landing sites until it reached the two selected fresh fish markets (Kalerwe and Kalinabiri) in Kawempe Division Urban Council.

Data on costs of marketing, price levels and revenue were collected from farmers, middlemen and mongers. Randomly selected consumers were also interviewed about the knowledge and perceptions they had about farmed fish and they were found on market. This was done using semi-structured questionnaires.

It involved fifteen fish farmers, forty fish mongers, one hundred consumers, twenty middlemen, and fifteen fishers. Registered fish farmers were interviewed on the marketing channels, associated costs, fish selling prices and revenue got from the venture after the cycle. Mongers and middlemen were interviewed on whether they sell farmed fish, profits made, consumers’ interest in farmed fish and sources of farmed fish sold in different markets. This information was used to assess the profitability of marketing farmed fish.

At every stage of a dominant fish distribution channel, gross margins were calculated. Maximum, average and minimum gross margins were compared along the distribution channel for farmed and wild caught fish. Consumers’ interest and purchase of fish were assessed.

3.4 Data analysis

Data were coded and analyzed using Stata version 11. Proportions of respondents of different categories along the different fish chains of distribution were expressed as percentages. Associations were explored using chi-square test.
CHAPTER FOUR
RESULTS
4.1 Consumer knowledge and perception about farmed and wild caught fish on local markets

Generally, consumers assign value to fish products put on market. This is in relation to health benefits, origin and economic stand; they buy the product placed on market depending on its price. Therefore, they are price sensitive and understand their needs as shown in table below.

Table 1: Consumer knowledge and perception about farmed and wild caught fish

<table>
<thead>
<tr>
<th>Knowledge and perception</th>
<th>Response</th>
<th>Percentages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Have you ever consumed fish?</td>
<td>Yes</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>0</td>
</tr>
<tr>
<td>How often do you eat fish a month?</td>
<td>Once</td>
<td>65</td>
</tr>
<tr>
<td></td>
<td>3-5 times</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>I can take a month without eating fish</td>
<td>21</td>
</tr>
<tr>
<td>Are you aware of farmed fish on local markets?</td>
<td>Yes</td>
<td>70</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>30</td>
</tr>
<tr>
<td>Have you ever consumed farmed fish</td>
<td>Yes</td>
<td>3634</td>
</tr>
<tr>
<td></td>
<td>Not sure</td>
<td></td>
</tr>
<tr>
<td>Where do you obtain farmed fish from?</td>
<td>Farm</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>Market</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>Both</td>
<td>15</td>
</tr>
<tr>
<td>When buying fish, I prefer farmed to wild caught fish</td>
<td>Yes</td>
<td>26</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>74</td>
</tr>
<tr>
<td>How often do you eat farmed fish a yeah?</td>
<td>1-3 times</td>
<td>13</td>
</tr>
<tr>
<td></td>
<td>3-4 times</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>I can take a year without eating farmed fish</td>
<td>3</td>
</tr>
<tr>
<td>Which size of farmed fish do you prefer?</td>
<td>340 grams and below</td>
<td>13</td>
</tr>
<tr>
<td></td>
<td>500 grams and above</td>
<td>23</td>
</tr>
</tbody>
</table>
As presented on the table above, 100 percent of the consumers interviewed had ever consumed fish, 65 percent of them often consume it once, and 14 percent consume it 3-5 times a month while 21 percent of the consumers take a month without consuming it. 70 percent of consumers knew the existence of farmed fish on local markets and only 30 percent did not know. Out of which only 36 percent could identify farmed fish if presented together with wild fish and 34 percent couldn’t identify. Hence only 36 percent were sure of having eaten it and 34 percent were not sure. Those sure of having eaten it often take it 1-3 times (13), 3-4 times (20), and 3 percent reported to spend a year without consuming it, 23 percent of which prefer fish of 500 g and above while 13 always consume that of 340 g and below. 20 percent reported good taste whereas 16 percent reported a muddy smell on consumption. These obtain farmed fish from
farms (12%), markets (9%) and others do access it from both places. The 34 percent who were not sure of having eaten it claimed for not being capable of identifying it on market.

90 percent of the consumers complained for higher prices of farmed fish and 10 percent comparable while no consumers reported for low prices. 87 percent added that it is scarce and hard to find on markets, and 13 percent could not tell its supply. Farmed fish was reported to be of the best quality (39), better quality (29) while 32 complained for poor quality. Fish is expensive and scarce as 70% of consumers while only 30% reported for scarce but expensive fish.

4.2 Modes through which farmed and wild caught fish is sold/bought

Availing fish to different nodes of distribution, both farmed and wild caught fish (tilapia and catfish) were observed to be sold/ bought in various modes. Farmed fish was sold only in two modes i.e. weights and whole fresh fish and wild caught fish shared the two modes only that it had batches as an exception as shown by Table 2 & 3.

Table 2: Modes in which farmed and wild caught tilapia fish was sold at different node of distribution

<table>
<thead>
<tr>
<th>Farmed tilapia</th>
<th>Wild tilapia</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Distribution stages</strong></td>
<td><strong>Forms</strong></td>
</tr>
<tr>
<td>Direct selling to consumers</td>
<td>Whole fresh fish</td>
</tr>
<tr>
<td>Farmers to distributers</td>
<td>Weights</td>
</tr>
<tr>
<td>Distributer to mongers</td>
<td>Weights</td>
</tr>
<tr>
<td>Farmers to mongers</td>
<td>Weights</td>
</tr>
<tr>
<td>Monger to consumers</td>
<td>Whole fresh fish and weights</td>
</tr>
</tbody>
</table>
Farmed tilapia was sold in only weights and whole fresh fish while Wild caught tilapia in addition to weights and whole fresh fish, was sold in batches from one node of distribution to another. The distribution nodes for farmed fish included farms, distributors and mongers while fishers, middlemen, mongers were the nodes of distribution for wild caught tilapia. There was no direct contact between fishers and consumers in Kawempe Division while observed for farmed tilapia fish.

**Table 3: Forms in which farmed and wild caught catfish was sold at different distribution node**

<table>
<thead>
<tr>
<th>Farmed catfish</th>
<th>Wild catfish</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Distribution stages</strong></td>
<td><strong>Modes</strong></td>
</tr>
<tr>
<td>Direct selling to consumers</td>
<td>Whole fresh fish</td>
</tr>
<tr>
<td>Farmer to distributor</td>
<td>Weights</td>
</tr>
<tr>
<td>Distributer to monger</td>
<td>Weights</td>
</tr>
<tr>
<td>Farmer to monger</td>
<td>Weights</td>
</tr>
<tr>
<td>Monger to consumers</td>
<td>Whole fresh fish and weights</td>
</tr>
</tbody>
</table>

Distribution of farmed and wild catfish involved different nodes at which fish was sold in different modes. i.e. farmers, distributor and mongers were the distribution nodes for farmed catfish while fishers, middlemen and mongers were for wild caught tilapia. Farmed catfish was only sold as whole fresh fish and weights and wild caught fish was sold in batches in addition to weights and whole fresh fish. However, batches were used to sell small fish of less than 340 g. Direct contact between farmers and consumers of Kawempe division was observed not for wild caught catfish.
Fish marketing channels

Regardless of the source, fish marketing is achieved through different distribution channels. These may be price or consumers influenced and have strict characteristics that influence trade. In this study, the different marketing channels through which fish landed in Kawempe division markets of Kalinaabiri and Kalerwe were studied. The findings are summarized in charts below.

4.2.1 Marketing channels for farmed fish

Five distribution channels were identified for availing fresh farmed fish to two local fresh fish markets in Kawempe Division Urban Council. On average, 9000 kilograms of farmed fish (Oreochromis niloticus and Clarias gariepinus) are harvested a production cycle as said by farmers. 17.9% of it reach consumers through channel 1 (direct selling to consumers on farms), 29.2% through channel 2 (farm, mongers to consumers), 38.9% through channel 3 (farms, distributors, mongers to consumers), 11.2% through channel 4 (farms, farmers carrying and selling farmed fish on market to consumers) and 2.9% (others) are given to workers on farm or eaten by family.

![Figure 2: Distribution channels for farmed tilapia (Oreochromis niloticus) and catfish (clarias gariepinus).]
Therefore, the dominant distribution channel was channel 3 involving farmer as a producer, distributors as middle men and consumer the end users and determinants of its value for consumption.

4.2.2. Marketing channel for wild caught fish

There were three distribution channels identified. They avail fresh wild caught fish to the two local fresh fish markets in Kawempe Division Urban Council. On average, fishers land 12000 kilograms of fish a week, 12% of which reach consumers through channel 1(fishers, monger to consumers), 47.5% through channel 2(fishers, retailer, mongers to consumers) and channel 3 availed a proportion of 40.5 to consumers in other parts of Uganda.

![Diagram of distribution channels](image)

**Figure 3 : Distribution channels for wild caught tilapia (Oreochromis niloticus) and catfish (clarias gariepinus).**

Therefore, channel 2 is the dominant channel used to avail wild caught fish to consumers in Kawempe. There was no direct contact seen between fishers at the landing sites and consumers of Kawempe division as seen for farmed fish.
4.3 Monterey change along the dominant distribution channel.

Farmed and wild caught fish marketing along the distribution channels, experienced variation in prices. Price variations for farmed fish were far greater than those for wild caught fish along and at different nodes of dominant distribution channel as explained in figure 2 & 3 for wild caught and farmed fish respectively.

Table 4: Prices along the distribution channels of farmed and wild caught tilapia

<table>
<thead>
<tr>
<th>Stages of distribution</th>
<th>Farmed tilapia</th>
<th>Wild caught tilapia</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Average price/kg (Ushs)</td>
<td>%change in prices</td>
</tr>
<tr>
<td>Farmers/fisher to distributor/middlemen</td>
<td>9000</td>
<td>_</td>
</tr>
<tr>
<td>Distributor/middlemen to mongers</td>
<td>10000</td>
<td>3.1</td>
</tr>
<tr>
<td>Mongers to consumers</td>
<td>12500</td>
<td>11.4</td>
</tr>
</tbody>
</table>

Currency exchange rate: USD 1 = 3650/. Source: Bank of Uganda website

At different nodes of a dominant distribution channel observed to avail both farmed and wild caught tilapia to consumers (3 for farmed fish and 2 for wild caught fish) [figures 2 and 3], prices differed hence a variation expressed as percentage change in prices. This depended on source of fish dealt with at a particular level. I.e., farmers were selling a kilogram of tilapia at 9000/= to distributors who sold it at 10000/= to mongers. This led to a 3.1 percentage change in tilapia pricing from farmers to mongers. Mongers were selling a kilogram at 12500/=to consumers, raising the percentage of its pricing from distributors to consumers to 11.4. Wild caught tilapia distribution however, fishers were selling a kilogram at 7500/= to distributors. These sold it at 8000/= to mongers which led to a 3.2 percentage change in wild tilapia pricing from farmers to mongers. Mongers were selling a kilogram at 11000/=to consumers, hence a 7.9 raise in the percentage change of pricing wild caught tilapia.
Table 4: Prices along the distribution channel of farmed and wild caught fish catfish

<table>
<thead>
<tr>
<th>Stages of distribution</th>
<th>Farmed catfish</th>
<th>Wild caught catfish</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Average prices/kg (Ushs)</td>
<td>Average price/kg (Ushs)</td>
</tr>
<tr>
<td></td>
<td>%change in prices</td>
<td>%change in prices</td>
</tr>
<tr>
<td>Farmed/fisher to distributor/middlemen</td>
<td>9000</td>
<td>6000</td>
</tr>
<tr>
<td>Distributor/middleman to mongers</td>
<td>9500  6.2</td>
<td>7500  1.6</td>
</tr>
<tr>
<td>Mongers to consumers</td>
<td>12000  10.4</td>
<td>10000  8.2</td>
</tr>
</tbody>
</table>

Currency exchange rate: USD 1 = 3650/. Source: Bank of Uganda website

Following farmed catfish distribution, farmers were selling a kilogram at 9000 /= to distributers. These sold it at 9500 /= to mongers. This led to a 6.2 percentage change in catfish pricing from farmers to mongers. Mongers were selling a kilogram at 10000 /= to consumers, raising the percentage catfish pricing from distributers to consumers. For wild caught catfish distribution however, fishers were selling a kilogram at 6000 /= to distributors. These sold it at 7500 /= to mongers which led to 1.6 percentage change in its pricing from farmers to mongers. Mongers were selling a kilogram at 10000 /= to consumers, raising the percentage change in pricing from distributers to consumers.

4.5 Gross profit margin distribution among actors in the distribution of farmed and wild caught fish (*Oreochromis niloticus* and *Clarius gariepinus*)

As shown by figures 2 & 3, the dominant distribution channel to avail farmed and wild caught fish on market were 3 & 2 respectively. These involved farmers, distributors and mongers, fishers, middlemen and mongers for farmed and wild caught fish respectively. Generally, as fish
is availed to consumers regardless of the source, gross profit margins increased from upstream to downstream actors. However, farmers gained far less gross profit margins compared to fishers though both are downstream actors as shown in the graphs below.

### 4.5.1 Gross profit margin distribution actors in the distribution of farmed tilapia

As farmed tilapia fish was availed to consumers, farmers attained a minimum gross profit margin of 9.5, an average of 33.49 and a maximum of 45.06 while distributors attain 34.37 as a minimum gross profit margin, 41.34 on average and 49.9 as their maximum. Mongers attain the highest gross profit margin in that 40.9 was their minimum gross profit margin, 49.43 on average and 59.5 as their maximum gross profit margin.

Currency exchange rate: USD 1 = 3650/=. Source: Bank of Uganda website

**Figure 4: Distribution of profit margins along distribution channels of farmed Tilapia**
4.5.2 Gross profit margin distribution actors in the distribution of farmed catfish

Figure 7 illustrates that Farmers earn a maximum profit margin of 44.9, an average of 29.75, and a minimum of 8.07 while distributors attain a maximum profit margin of 48.47, 44.76 on average and a maximum margin of 38.47. Mongers obtained a maximum profit of 57.9, an average of 50.4 and a minimum profit margin of 46.8. Hence farmers attain the least profit margins compared to other actors involved in the distribution channel.

Currency exchange rate: USD 1 = 3650/=. Source: Bank of Uganda website

Figure 5: Distribution of profit margins along distribution channels of farmed catfish
4.5.3 Gross profit margin distribution actors in the distribution of wild caught tilapia

Fishers earn a maximum profit margin of 56.2, an average of 50.5, and a minimum of 47.9. Distributers attain a maximum profit margin of 74.3, 67.5 and average and a maximum margin of 63.1. Mongers obtain a maximum profit of 89.5, an average of 85.5 and a minimum profit margin of 78.3.

Currency exchange rate: USD 1 = 3650/. Source: Bank of Uganda website

Figure 6: Distribution of profit margins along distribution channels of wild caught tilapia

This means that fishers attain least profit compared to other actors
4.5.4 Gross profit margin distribution among actors in the distribution of wild caught catfish

As wild caught catfish was availed to consumers, fishers earned a maximum profit margin of 42.1, an average of 37.1, and a minimum of 30.7. Middlemen attain a maximum profit margin of 78.9, 70.3 as an average and a maximum margin of 67.6. Mongers obtain a maximum profit of 85.4, an average of 76.9 and a minimum profit margin of 72.8.

Currency exchange Currency exchange rate: USD 1 = 3650/=. Source: Bank of Uganda website

Figure 7: Distribution of profit margins along distribution channels of wild caught catfish

This means that fishers are inferior actors since the margins earned are so low.
CHAPTER FIVE

DISCUSSION, CONCLUSION AND RECOMMENDATION

5.1 Discussion

5.1.1 Consumer knowledge and perception

All consumers interviewed had ever bought and consumed fish in general. Most of them claimed that they eat it at least once a month. The study also reveals that almost of all consumers knew farmed fish existence on local market. However, a big number buy wild caught fish in preference to farmed fish. Only 36% out of the 100 interviewed consumers were sure of having consumed farmed fish most of which obtained it from either farms or markets. The most preferred size of farmed fish by customers who were sure of having eaten it was 500 g and above, many gave it a credit in terms of taste.

Consequently, some consumers claimed an infrequent supply and a muddy smell during consumption forcing them consider it an alternative to wild caught fish. 80% of the consumers could not differentiate farmed from wild caught fish. Consumers capable of differentiating it were using colour and taste. Most of them acknowledged that farmed fish is of low quality and expensive though others assigned it better quality. Consumers concluded that fish is not scarce but expensive to be obtained by many and farmed fish is inconsistently supplied or available for consumption.

“Why farmed fish is expensive with an inconsistent supply?” The main complaints from most consumers interviewed.

“Farming inputs are always high in terms of maintenance, labour and time to rise one kilogram of fish. Therefore, for sustainability and long last existence in business, farmers have to turn the inputs into profits by raising farm gate prices which ranged from 9500/= to 11000/= . In the process of its distribution, additional marketing costs are inevitable, rising the market price for farmed fish at monger node of distribution. Farmers also receive no/little feedback from the end users of their product and so there is no relationship between the two. The fact that farmers receive a tensional force from north, south, west and east of their business both socially and economically. They are then centered and forced to make their own decision on how, when to
sell their fish without knowing who he/she is selling the fish to, hence a business dilemma throughout. Farmers replied” farmers. Therefore, market greatly affects their margins as shown below.

![Diagram](image_url)

**Figure 8: Forces failing farmers attain desirable margins**

Farmers claimed for being on tension of buying expensive but poor quality seeds and feed. The equipment bought always stands for un worthy usable time compared its price yet they lack management skills. In addition, they said that if consultation was free and market was organized, management and markets for their products would have died rich but due to consultation scarcity, and expense, they chose to work on their own or else rely on media.

**Distribution channels**

Low volumes were observed to be supplied from aquaculture while high volumes from capture. These were expressed in terms of weight. Farmed and wild caught fish were sold at different prices hence price variations at different nodes of fish distribution depending on the species dealt with and its source. Farmed fish was sold in weights and/as whole fresh fish. This was the same for wild caught fish. This implies that a profit at every node depends on prices and forms in which fish is sold together with the total market costs. However, no batches were observed during selling of farmed fish but common for wild caught fish mostly at middlemen and mongers nodes of distribution. Generally, consumer and farmed fish prices are higher compared to wild caught fish and producer prices. [Table 4&5] Auctioning was the order of the day for wild caught fish which really affected marketing of farmed fish on local markets.
Farmed and wild caught fish almost followed almost the same distribution patterns/Channels though five distribution channels were observed to avail farmed fish to the consumers and only two channels for wild fish. The dominant distribution channel for both farmed and wild caught fish involved producers (farmers and fishers), distributers/middlemen, and mongers to the final consumers. This is due to high proportion of fish that go through it i.e. 38.8% [channel 3, fig 2] for farmed fish and 47.5% [channel 2, fig 3] for wild caught. Middlemen bridge a gap between producers and customers. Therefore, greatly affect flow of information between the two. Direct contact between farmers and consumers of Kawempe through on farm selling of farmed fish to consumers was observed for farmed fish not for wild fish though seen to people around the landing sites.

**Monetary change along the distribution channel**

Profit margins increased from upstream to downstream actors i.e. farmers and fishers attain the least profit margins compared to middlemen and mongers. Nevertheless, farmers receive margins far less compared to fishers. In fact if the fixed costs were considered, their margins would be negligible if not negatives hence working in total loses. Farmers claimed for the high cost but poor quality feeds yet not easily accessed. Poor public extension services and relationship between farmers, upstream actors, middlemen and final consumers force them go for private and media consultation ending up working in losses. This is because they cannot internalize and implement what is told to them and for any assistance, there is no way of contacting media and private consultants hence no room for help calling for low yield and inconsistent supply a major factor for low profit margins attained by farmers.

Research related to/about competitiveness of farmed fish from small, medium and large scale farmers on local, regional and international markets where wild caught fish is sold has been done and many agreed with results presented above. I.e. the study revealed that consumers assign value to the product (fish) put on market in relation to money to be spent on it. (DFID, 2008) Therefore, consumers are price sensitive, and due to the economic crisis present, they opt to substitute farmed fish with wild caught fish strengthening its niche in markets affecting marketing of farmed fish Asche *et al* (2012) concluded.
Inconsistent supply of farmed fish on local markets due to low and unsynchronized production has changed preferences, knowledge and perception of consumers toward farmed fish lowering market penetration of farmed fish. (FAO, 2016) Those together with little or no free flow of information i.e. no relationship between consumers and product producer though very crucial (Knútsson et al., 2010) and an uncoordinated fish marketing, customers ranked farmed fish incompetent on local markets. This calls for collaboration development among farmers, middlemen and consumers as reported by Owani (2013). However this free flow of information (feedback) is delayed by the middlemen for their own benefit of making profits. Consumers acknowledged the main considerations when buying farmed fish. These included production systems, fish safety and health benefits, social responsibilities, its origin and supply and price. Therefore, if farmed fish supply increases, size and quality improves, they will admit to buying it at a set price (Asche and Bjorndal, 2011) since their expectations will be meet.

Consequently, fish markets are dynamic influencing fish distribution, supply, consumption and profits earned by different actors at different nodes. (FAO, 2016) The dominant distribution channel for both farmed fish and wild caught fish involved up and down stream actors as reported by Feller et al. (2006) which verify that farmed and wild caught fish follow almost the same channels of distribution (Asche et al., 2001) Pricing and categories in which fish was sold varied due to influence of difference in marketing costs in turn affecting profitability (Isyagi, 2007) but due to low profit margins earned by farmers, some opt to reach out to markets fetching for desirable profits. (Vallasante et al 2013) concluded a price variation between farmed and wild caught fish. Their research emphasized that high costs of production determine farm gates prices since they need to obtain profits for sustainability of the business. Nonetheless, the mode of auctioning wild caught fish doesn’t favour positive competition of farmed fish on local markets as Bukenya, and Hyuha, (2013) explained and confirmed. Therefore, however much gate prices are raised for profitability; it is only consumption rates that drop since consumers are price sensitive causing loses to many farmers.

Essentially, profit margins increase along the distribution channel of farmed fish. Farmers attain far less profit margins compared to fisher though all are producers. (Ssebisubi, 2011) yet the upstream actors enjoy higher profit margin. This is because production costs reduce along the distribution chain while sales/revenue increases along the chain. This verifies a zero sum
relationship among actors involved in supply and distribution of farmed fish. Middlemen and mongers were seen to over exploit not only consumers but farmers too due to their high bargaining power over fresh fish product. (Gummeso 2002) This is also connected to perishability of fresh fish because once harvested, poorly stored and not sold to either consumers or middlemen, it gets spoilt. There, farmers incur total losses yet the inputs were much and others opt to beg middlemen to buy their fish.

Therefore, farmers using the observed dominant distribution channel depend on middlemen (distributors and mongers) for profitability, which the two actors use as an advantage to totally determine farmed fish marketing and profitability. Middlemen have a strong belief about the aspects of their business demonstrated by past experience for being important for obtaining goals they always lookup for. (skytte and Bore, 2004). They restrict free flow of information between farmers and product end users ending up with margins that largely exceed market costs of providing marketing services in Kalinabiri and Kalerwe markets for farmed fish. These imperfections in the markets interpret low producer prices and high consumer prices hence incompetent marketing of farmed fish on local markets. This shows that the middlemen are a necessary evil in marketing of farmed fish on local markets though in cases of huge amounts of harvest, they cannot be avoided
CHAPTER SIX

CONCLUSIONS AND RECOMMENDATIONS

6.1 Conclusion

Consumer knowledge, preferences and perceptions about fish change over time. This is because fish availability and marketing, consumer income and social characteristics change continuously. Consumers are price-sensitive and economic downturn amongst them have produced changes in farmed fish demand, strengthening wild fish demand on local markets since farmed fish prices are higher than that of wild caught fish though the size could be the same.

Fish consumption among consumers of Kawempe Division Urban Council is dependent on their income abilities, family sizes, fish size and its price, distance where they are buying it, quality and quantity they attain at a time. This is accompanied by inconsistence in its supply hence a growing interest among certain consumers in buying wild caught fish in particular as Asche et al., 2012 confirmed

Farmers are not ready to set down the prices for they need to earn a profit from the business for its sustainability. The study revealed that farmed fish is supplied in only two categories i.e. whole fresh fish and weights at all nodes of distribution but wild caught fish went beyond the two categories up to batches which was not seen for farmed fish. This gives chance to all categories of consumers buy wild fish at a given price in preference to the latter.

Although there are a big percentage of consumers who are aware of farmed fish and willing to buy it on local markets, farmers suffer scarce resources to produce table size fish and attain a low market share. This is because farmers are over dependent on middlemen who always have a higher bargaining power over a product imposing almost a negative profit to farmers. This is because, the dominant distribution channel for farmed fish involved distributor and mongers who influence communication between production and consumption nodes. This concludes that farmed fish follow the same distribution channels with wild caught fish.
Therefore, internal forces like low production volumes leading to inconsistent supply of farmed fish are not only the determinant factors affecting fish farming profitability. External forces mostly from middlemen, existence of wild fish on local markets and a combination of factors like improper information flow from the consumers to farmers, poor interactor relationship and coordination together with poor governess in marketing of fish in the Division and uncoordinated markets too affect competitiveness and profitability of farmed fish in Kawempe Division Urban Council. Hence monopolizing farmed fish marketing by downstream actors (mongers), leading to imbalanced and an imperfect market as consumers are exploited by mongers on local markets.

6.2 Recommendation

Premeditated and operative ways of generating profits should be thought of. This should not only be done by farmers only but the entire mass of actors in the chain of fish farming as a business. In this, quality and quantity feed and seed accessibility by farmers should be improved for they are the most internal forces influencing profitability. Consultation (public) general management and marketing from concerned Authorities should be made available, easily accessible, and effective to cut off reliance on media, privately organized conferences and private consultants which are undependable. This could be done through effective extension services provided by extensional workers hence free flow of information among actors for a bound interact or relationship.

There is a need for farmers to cut off middlemen however much channel 3; fig. 2 is dominantly used to avail farmed fish on the markets. This is to improve pricing and free flow of information between a producer and a consumer building up knowledge, good consumer-farmer relationship for consumer satisfaction. This is because value for any product is created by consumers and these make the target market. Therefore, satisfaction of customer needs in relation to value for their money to be spent on fish for consumption will be a farmer’s priority towards making more profits. This can be through on farm product value addition a sequential activities pertaining to turn farm in puts into profits targeting benefit of their customers. However, this calls for support from the concerned agencies to ensure quality through dissemination of information and skills by extension workers for example organizing workshops, field days and ensure interaction among farmers capable of doing so.
For the failure of the above and in cases of huge harvests, collaboration among traders (producer, middlemen and end user) should be a priority for a fair and competitive price. Orders should also be made before farmers do the harvesting.

Direct selling of farmed fish by farmers or farm agents to consumers will increase profits attained by farmers. However, this should be associated reduction on taxes related to fish marketing. This is because aquaculture not benefits the farmers but the whole country in terms of recognition.

Lastly, synchronization of production for a consistent supply of quantity and quality farmed fish at a good price. This will inspire consumers and increase penetration farmed fish on local markets. This can be through supporting farmers to attain raw materials used to raise fish, its marketing by providing them with storage of fish facilities, reduce on tax holidays to motivate and increase on market shares they attain.
REFERENCES


analysis: exploratory study of the importance of country of origin, obtaining method, storage conditions and purchasing price. Food Quality and Preference, 26(2): 259–266


Cluster in Uganda, Boston, Massachusetts.


DFR. 2002. Department of fisheries resources annual report. Ministry of agriculture, animal industry and fisheries Uganda, Entebbe, Uganda


Freibuaer. 2011. Sustainable food consumption and production in a resource constrained world, food, agriculture and fisheries and fisheries and biotechnology.


UIA. 2005. Investing in Uganda’s Fish and Fish Farming Industry, Kampala, Uganda.


Appendix 1: Questionnaire 1

FISH FARMERS

Dear respondent,

As aquaculture development takes shape in Uganda, the competiveness of farmed against the considerable volumes from the wild needs to be assessed. Kawempe division is one of the key fish marketing centres in Kampala, and has been identified as a strategic area for the intended assessment.

I am Nantege Winfred, a student from Makerere University, Department of Zoology, Entomology and Fisheries Sciences. To assess the competitiveness of farmed fish, I am collecting data through a survey in which I am required to gather information from fish farmers, mongers, folks and consumers. The main elements are peoples’ opinions about the farmed fish in regard to a number of aspects. Thus, you are one of those identified. Your opinions shall be confidentially protected and only be used for academic purposes. All responses will be presented and reported as summaries. Thank you for participating in this survey.

Name………………………………., Gender………………., Age……………..,
District…………………Division………….Village…………Telephone…………………

When did the farm start? ...................................................

Which system do you have?

……………………………...

What were the total investment costs to start it up?

……………………………...

Did you make any marketing strategy for your fish before starting it?

a) Yes

b) No
What are those strategies used?

1) ........................................
2) ........................................

Do you implement the strategies?

a) Yes.
b) No

How best do you sell your fish?

..............................................

How do you often stock your farm?

............................................

For how long do you hold your fish in the system?

........................................

What is the total cost of production for the season?

..............................

What is the common size do you harvest the fish?

..............................

What is the common quantity got on harvesting?

..............................

What channels do you use to avail fish to your customers?

1) ........................................
2) ...........................................
How do you always sell your fish?

........................................................

At what price do you sell the fish?

........................................................

Which market(s) do you supply the fish?

1) ....................................................

2) ....................................................

What are some of the challenges faced as a fish farmer?

1) ....................................................

2) ....................................................

3) ....................................................

Do you see any opportunity in the activity?

a) Yes
b) No

What are those opportunities?

1) ....................................................

2) ....................................................

3) ....................................................

Questionnaire 2

FISH RETAILERS

Dear respondent,

As aquaculture development takes shape in Uganda, the competitiveness of farmed against the considerable volumes from the wild needs to be assessed. Kawempe division is one of the key fish marketing centres in Kampala, and has been identified as a strategic area for the intended assessment.
I am Nantege Winfred, a student from Makerere University, Department of Zoology, Entomology and Fisheries Sciences. To assess the competitiveness of farmed fish, I am collecting data through a survey in which I am required to gather information from fish farmers, mongers, folks and consumers. The main elements are peoples’ opinions about the farmed fish in regard to a number of aspects. Thus, you are one of those identified. Your opinions shall be confidentially protected and only be used for academic purposes. All responses will be presented and reported as summaries. Thank you for participating in this survey.

Name………………………………., Gender……………………., Age …………….,
District………………………..Division………………., village……………. Market …………….,
stall no……………. Telephone………………

Where do you purchase the fish from?
   a) Farm
   b) Landing site
At which price do you purchase the fish from?
Farmers,……………………………….. fishermen,………………………………

What is the quantity of fish you get from?
Farmers,………………………………..fishermen……………………………………

How much do you sell the fish on market?
Farmed……………………………., wild caught………………………………

Do you get farmed fish on a daily basis?
   a) Yes
   b) No
Do you receive equal profits from farmed and wild caught fish?
a) Yes  
b) No  

Which channels do you use to avail fish to your customers?

1) ……………………………………………………………
2) ……………………………………………………………
3) ……………………………………………………………

Which channel(s) gives you more profits?

1) ……………………………………………………………
2) ……………………………………………………………

What are the risks associated with selling farmed against wild caught fish?

1…………………………………………………………
2…………………………………………………………
3…………………………………………………………
CONSUMERS

Dear respondent,

As aquaculture development takes shape in Uganda, the competitiveness of farmed against the considerable volumes from the wild needs to be assessed. Kawempe division is one of the key fish marketing centres in Kampala, and has been identified as a strategic area for the intended assessment.

I am Nantege Winfred, a student from Makerere University, Department of Zoology, Entomology and Fisheries Sciences. To assess the competitiveness of farmed fish, I am collecting data through a survey in which I am required to gather information from fish farmers, mongers, folks and consumers. The main elements are peoples’ opinions about the farmed fish in regard to a number of aspects. Thus, you are one of those identified. Your opinions shall be confidentially protected and only be used for academic purposes. All responses will be presented and reported as summaries. Thank you for participating in this survey.

Name………………………………., Gender………………., Age ……………,
District…………………………Division………………., village…………… Market ……………,
stall no…………. Telephone………………

How often do you eat fish?

.................................................................

Do you prefer farmed to wild caught fish?

a) Yes
b) No

Why?

1.................................................................

2.................................................................

3.................................................................

4.................................................................Do you differentiate wild caught and farmed fish?

a) Yes
b) No

How do you differentiate them?

1.................................................................
How much do you buy farmed fish?

Which size do you prefer most?

a) Small
b) Medium size
c) Big size

Reasons

1.

2.