A Comparative Study on the Effects of Size and Sources or Traceability on the Price of Identified Fish Species Sold at Muñoz Market, Quezon City

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introduction

This paper is a third-iteration study concerning the diversity of fish, specifically in Muñoz Market, Quezon City. The first being a study by Arcangel, Caleja, Ignao and Orejudos in 2019, the second being a study by Valenzuela, Veluz, Villanueva and Villarama in 2020, and this study in 2021. Both studies being equally comprehensive, distinct, and well-advised, the conclusions and analyses of both papers provided well-rounded and intricate insights on said topic. There are natural uncontrollable factors that contribute to the changing markets. However, there are factors which can be managed, such as the administration of the fishermen here in the Philippines. Given that fishermen play a significant role in the economy, the issue concerning the security of the fishermen in relation to the government is at large. Fishermen are not given the due amount of care or protection when it comes to their welfare. Studying the trends and parameters inside the markets allows the monitoring of the effects of said disputes, and can inform the authorities about what is critical to protect not only the rights of the Filipinos but also, the economy and help improve its state as of now.

abstract

The diversity of fishes in fish markets and wet markets alike are constantly dynamic in nature by virtue of several factors. The study aims to find the correlation of these factors and their effects with the selection of fishes found in Muñoz Market. This study adopted the research design of the two previous studies to ensure consistency in assessing the gathered data. The researchers utilized premade questionnaires that were given to the vendors working inside Muñoz Market. In analyzing the data, the researchers applied Pearson's correlation coefficient for the assessment of the factors' correlation between them. The results showed an increase in both the number of identified species, as well as the price and size range of the fish identified in the market. This implies that the domain of the market is constantly increasing. The market is more diverse as compared to the past, where new species are introduced to the market and being made accessible to the general public at Muñoz Market.

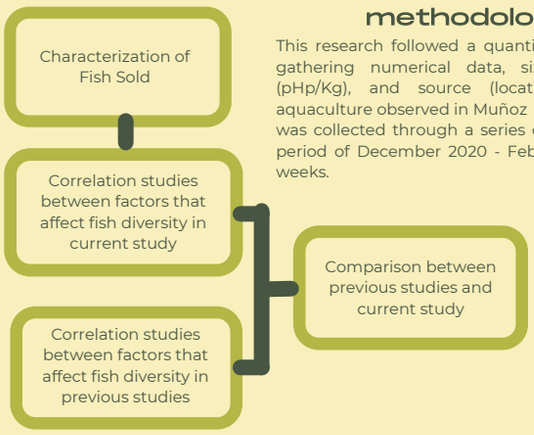
Objectives

This study aims to not only determine what factors cause direct or indirect changes to the variety of fish available in the Muñoz wet market, but also analyze the trends and parameters of the fish within Muñoz Market in relation to the past two studies by deriving patterns and trends in the fish's attributes and traceability.

a.) Determine what factors cause direct or indirect changes to the diversity of fish available in the Muñoz wet market.

b.) Examine the parameters of the fish within Muñoz Market in comparison to the past two studies by deriving patterns and trends in the fish's qualities and traceability.

methodology



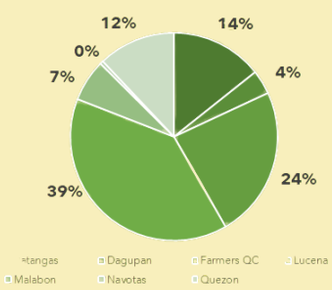
This research followed a quantitative design by gathering numerical data, size (mm), price (pHp/Kg), and source (location), from the aquaculture observed in Muñoz Market. The data was collected through a series of surveys in the period of December 2020 - February 2021, or 13 weeks.

The researchers first characterized the species identified, where grouped them by family, then by species according to their sources, size ranges, and prices. The data was run through correlation tests to see if any significant relations emerged. With this, the correlation tests of the current study were compared to the results of the two past studies, to see if there were any trends that showed throughout the three years of data gathering. In correlating the data, the researchers used Pearson's correlation coefficient to infer if there was a significant relationship between the factors, namely; first the average price and source per family, second the average price and source per species, third the average size and average price per family, and fourth, the average size and average price per species.

$$r = \frac{n(\Sigma xy) - (\Sigma x)(\Sigma y)}{\sqrt{[\,n\Sigma x^2 - (\Sigma x)^2\,]\,[\,n\Sigma y^2 - (\Sigma y)^2\,]}}$$

results and discussion

Sources of Fish



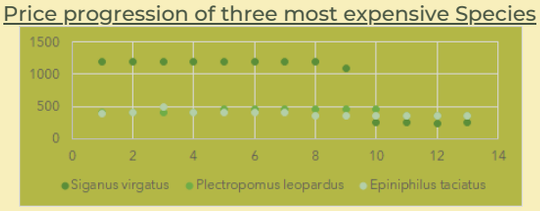
Price by Length of Fish

Species	R
Nibea soldado	0.9981
Pomadasys argenteus	0.9631
Pomadasys kaakan	0.8267
Pterocaesio digramma	0.9918
Stolephorus waitei	0.9304
Priacanthus hamrur	0.7917
Plectropomus leopardus	0.7569
Selar crumenophthalmus	0.9516
Lutjanus madras	0.7321
Upeneus moluccensis	0.9859
Sphyraena obtusata	0.8042
Katsuwonus pelamis	0.8041

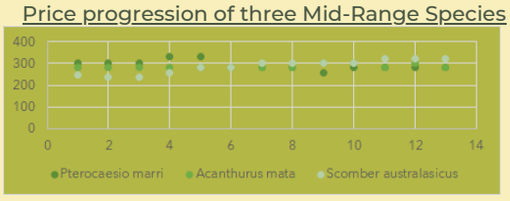
Price by Source of Fish

Species	R
Engraulidae	0.91122
Priacanthidae	0.99662
Serranidae	0.91129

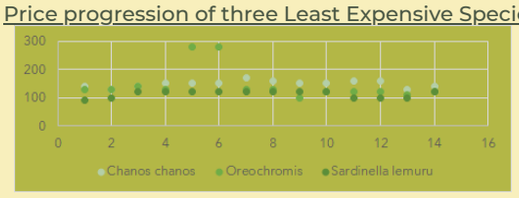
Price progression of three most expensive Species



Price progression of three Mid-Range Species



Price progression of three Least Expensive Species



There were 74 individual species identified which were classified into 29 different families. The prices ranged from Php 90- Php 1200. The length of the observed fishes ranges from 40-890mm. The family Belonidae showed to have the highest value length among all families, averaging at 880.87mm.

Parameters	Arcangel, Caleha, Ignao, & Orejudos (2019)	Valenzuela, Veluz, Villanueva & Villarama (2020)	Current Study
No. of identified species	59	66	74
Price range (Php/kg)	90-443.32	80-500	90-1200
Size range (mm)	63-565	25-563	40-890
No, of Sources	7	8	7
Period of the Study	Nov 2018 - Feb 2019	Sept 2019 - Jan 2020	Dec 2020 - Feb 2021

Price by Length of Fish

As organized by family, the correlation study showed a coefficient of 0.0152 or a negligible correlation but, when re-organized according to their respective species, 12 species showed a high to very high positive correlation between the length and price of fish sold in the market.

Price by Source of Fish

Correlated according to their respective families, the species under the families *Engraulidae*, *Priacanthidae* and *Serranidae* showed a very high positive correlation. This was interpreted as the source being a factor in the quality of the fish sold, which implies a higher price. Logistically, it is more efficient to source aquaculture from closer sources, such as Navotas or Malabon, both being in the vicinity of Metro Manila. However, the quality of water found in these places is questionable. In comparison, the water pollution levels of Metro Manila are at 83.56%, while that of Lucena is at 70.45% making the aquaculture from Lucena safer and more fit for consumption. As per individual species, only Priacanthus hamrur showed a significant correlation value of 0.9966.

Price Progression of Fish

In the more expensive range, the prices were at a steady constant, except for Siganus virgatus, which experienced a steep drop. The mid-range priced species on the other hand showed a steady but significant increase in price, similar to those in the lower price range. Despite the increase in species observed in the market, the prices are still at a steady increase despite the predicted decrease due to the supply-demand relationship. The cause of increased prices is the escalating difficulty in providing these quantities, due to the rapid degradation of our aquatic ecosystems.

conclusion and recommendation

The market is more diverse as compared to the past, new species have been identified and successfully farmed. However, cross-regional transportation still poses a threat to the efficiency of the market, which in turn affects the processes of the economy. Since the aquacultural aspect of the biosphere is subject to change every day, monitoring the fish once per week may not be sufficient. As such, to improve the research in possible future continuations, the researchers think that it is best to conduct the monitoring of the sector more frequently. In addition to this, the researchers think that observing them in a laboratory to assess their overall health and condition will add a more in-depth assessment of the quality of fish in the study.