

An economic inquiry to the status quo of selected fisherfolks in the Municipality of Rosario, Cavite: A pandemic situation

Jerico B. Tadeo¹, Xavier Lawrence D. Mendoza¹

¹*BSBA Program, Cavite State University – CCAT Campus, The Philippines*



Received 10 April 2024
Revised 16 May 2024
Accepted 30 May 2024

Citation: Tadeo, J. B., & Mendoza, X. L. D. (2024). An economic inquiry to the status quo of selected fisherfolks in the Municipality of Rosario, Cavite: A pandemic situation. *Journal of Management, Economics, and Industrial Organization*, 8(2), 106-128. <http://doi.org/10.31039/jomeino.2024.8.2.6>



Copyright: © 2024 by the authors. This article is an Open Access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>).

corresponding author:
jerico.tadeo@cvsu.edu.ph
xavierlawrence.mendoza@cvsu.edu.ph

Abstract

The Philippines has crafted various studies and policies to aid in increasing the productivity of the fishing sector. The COVID-19 pandemic has brought many nations and states into challenging their economic and health structures. Considerably, it has also impeded the growth of various businesses and economies worldwide, not to mention the many lives it claimed, hunger, poverty, and increased societal inequality. Hence, the authors seek an avenue to undertake this study to understand the pandemic status quo of fishers in aid of economic recommendations that are sound for the pandemic situation. The researchers used a survey-descriptive research design to conduct this study. The researchers concluded that the fisherfolks were middle-aged, dominated by males, did not complete their basic education, had 9 to 15 years of fishing experience, and earned below 5,000.00 pesos or less than 100 US dollars monthly. Muzon 1 and Muzon 2 were generally identified as the challenged barangay where local projects should be focused and prioritized.

Keywords: Fisherfolks, Pandemic, Education, Health, Standard of living, Status quo

JEL Classification: O1, O2, R1

1. Introduction

The member countries of the Association of Southeast Asian Countries (ASEAN) are bestowed with bountiful aquatic resources attributed to their geography and economic position. Fisheries occupy a large portion in aggregate values of the economic performance of the region: Thailand, Indonesia, Malaysia, Vietnam, and the Philippines (Southeast Asian Fisheries Development Center, 2023) are the top fishery-dependent countries in the region through local exportation, intra-regional and inter-country trades (Bureau of Fisheries and Aquatic Resources, 2021). Through decades of innovation, improved fishery practices, and welfare promotion of economic players, this sector of the economy grew, especially within Indonesia and Thailand (Association of Southeast Asian Nations, 2021). Despite the economic challenges of demographic participation, the product yield increased on year-to-year statistics from 2015 to 2019 but fell when economic crises doomed the global economies (The World Bank, 2019).

The Philippines has crafted various studies and policies to increase fishing productivity. Undertakings of various studies concerning practice, process, and implementation, as well as species-based scientific studies, were executed to address the increasing demand for fishery resources. Increasing trends through volume production were observed from 2010 to 2018 (BFAR, 2021). However, the COVID-19 pandemic changed this trend and the country's fishery growth landscape. People's movement due to quarantine restriction posits a slowdown or an occultation of the process; hence, production is affected. However, the direct and main impact absorbers of this economic disturbance were the fishers themselves. Thus, understanding the impact on economic agents is necessary for a sound policy to enable them to return to their previous status quo.

Fisheries boomed in the early 80s in the Municipality of Rosario, Cavite, because of technology in industry. Today, Rosario, Cavite, is one of the key fish ports in the province. Most of its inhabitants rely on the sea for their livelihood. The fishery is considered one of the essential sources of livelihood and income in the area. According to Tadeo (2018), the fisherfolks in the Rosario, Cavite coastal community were characterized by low savings and investment behavior and faced various livelihood challenges. The COVID-19 pandemic prompted several countries and states to reconsider their economic and health structures. Significantly, it has hampered the growth of different enterprises and economies around the world, not to mention the many lives lost, hunger, poverty, and exacerbated societal inequality. As a result, the authors are looking for a way to conduct this study to better understand the pandemic status quo of fishermen and make reasonable economic recommendations for the pandemic situation. Considerably, the researchers look at the perspective of determining the status quo of the fisherfolks in the coastal community

of Rosario, Cavite, through an economic inquiry that will provide policy briefs and baseline information for systematic, planned, and effective policy interventions for the vulnerable sectors in the municipality of Rosario, Cavite.

1.1 Objectives of the Study

Generally, the author aimed to determine the status quo of fisherfolks in the selected coastal communities in Rosario, Cavite.

Specifically, the researchers have attempted to:

1. Determine the socioeconomic profile of the participants in terms of;
 - a. age;
 - b. sex;
 - c. educational attainment;
 - d. years of being a fisher and
 - e. monthly income from fishing;
2. Craft profile map of selected coastal communities in Rosario, Cavite.
3. Determine the economic-pandemic status of fisherfolks in terms of;
 - a. health;
 - b. education; and
 - c. standard of living.
4. Identify policy or program intervention intended for fisherfolks.

2. Literature Review

The study used available academic literature and studies that enabled an in-depth understanding of the status quo of fisherfolks in the coastal community.

2.1 Changing Landscape of Fisherfolks

The COVID-19 virus has quickly spread around the world, wreaking havoc on social and economic systems. Based on global news and observations, this study examines how the pandemic may affect small-scale fishermen, specifically in terms of marketing and processing aspects of the business and coastal fishing communities. Negative effects to date include the closure of entire fisheries, decreased vulnerability to other social and environmental difficulties, increased risks to the health of fishers, processors, and communities, increased implications for marginalized groups, and an increase in illicit, unreported, and unregulated fishing. Even though

the news is largely negative, there have been some positive outcomes as well: food sharing, the resurgence of regional food networks, increases in local sales through direct marketing and delivery, group actions to defend rights, partnerships between local governments and the community, and lower fishing pressure in certain areas. While the crisis unfolds, effective short- and long-term actions must be coordinated, planned, and implemented immediately. As a result, governments, development organizations, funders, the commercial sector, and researchers were urged to mobilize quickly in support of small-scale fishermen, coastal fishing communities, and related civil society organizations, as well as possible actions (Bennett et al., 2020).

Even though COVID-19 does not affect fish and has not caused fish consumption, the fish industry is still affected by the pandemic's indirect effects, such as altering consumer desires, market access, and logistical issues connected to transportation and border restrictions. Because of the measures implemented by countries to restrict the rate of infection, such as home confinement, travel bans, and business closures, the COVID-19 pandemic has produced a public health catastrophe followed by an ongoing economic crisis (Food and Agriculture Organization of the United Nations, 2020). The COVID-19 pandemic's safety measures have most harmed small-scale fisherfolk's livelihoods.

The study of the International Institute for Environment and Development (2021) aimed to assess the effects and suggest ways to help small-scale fishermen rebuild their businesses. The COVID-19 problem has triggered unprecedented global lockdowns with disastrous economic implications. Fresh fish fisheries and supply chains have been particularly heavily hit, as seafood products are among the most widely traded foods on the planet, accounting for 38 percent of total fish production. Although necessary, restrictive measures to combat the pandemic are particularly harmful to small-scale fishing. The sector is critical to people's nutrition, food security, sustainable livelihoods, and wellness worldwide, as it employs 90 percent of fishery workers (about 36.7 million), with hundreds of millions more indirectly involved.

2.2 Fishing as a Livelihood in the Pandemic

The pandemic triggered an economic, health, and food crisis that increased the incidence of poverty, particularly in the Philippines. Based on the study conducted by Macusi et al. (2022), fishermen were highly affected by the pandemic because the government implemented the lockdown. Fishermen were hit by the strict lockdown, which greatly affected the fishermen's catch volume or harvest, access to transport, fishing expenditure, and emotional state because they were frustrated. It was also found that restricted fishing access had a considerable detrimental impact on the fishing operations of both fishers and middlemen due to the low fish prices and restricted mobility of the fish dealers. On the other hand, the study by Naz (2022)

found that the most common problems of fishermen were the cost of crude oil, fishing gear, and the volatility of the price of fish.

Moreover, the study by Ferrer et al. (2021) revealed the effect of COVID-19 on small-scale fishing households in the selected Southeast Asian countries, namely Indonesia, Malaysia, Myanmar, Philippines, Thailand, and Vietnam. The inadequate resources of fisher households limit their capacity to mitigate the negative impacts of crises. Fishermen responded adaptively by offering home delivery services, online marketing, and direct fish marketing. Although financial aid and food assistance were useful as short-term responses still, a long-term and pandemic-sensitive policy and action plan are required to address the challenges of fishing households (Ferrer et al., 2021 & Hossain et al., 2022).

The limitations set by the pandemic made the existence of digital tools to overcome the challenges of small-scale fisheries. It opened the idea of a technological transition of fisherfolks from traditional trade channels into modernized, more functional, and diverse supply chains (Costa et al., 2022). Furthermore, interventions were suggested by the study of Ferrer et al. (2021) to deal with problems brought on by a pandemic or other crises in the future. These include diversifying livelihoods to lessen reliance on fishing and provide additional sources of income and food (Manlosa et al., 2023); promoting financial inclusion through savings, credit, digital payment products, and insurance; and value chain upgrading through post-harvest fish handling and procedure.

2.3 National Interventions/Policies for Fisherfolks Amidst Pandemics

In an attempt to mitigate the socioeconomic effects of the COVID-19 pandemic, the Department of Social Welfare and Development (DSWD) keeps strengthening its initiatives to assist the most vulnerable and the marginalized, including fishermen and farmers. In order to provide a social protection program for fishermen and their families during emergencies where they are unable to go out to sea, negatively affecting their income and way of life, the Department of Social Welfare and Development (DSWD) and the Department of Agriculture - BFAR signed a Memorandum of Agreement that includes the provision of livelihood, financial, and medical assistance, among others. Moreover, the Department of Agriculture provided Php 2.8 billion for the SURE Aid Program. It provides loans of up to Php 25,000 to smallholder farmers and fishermen affected by the crisis, including the COVID-19 pandemic. This initiative entails a one-year moratorium on the repayment of small farmer and fisherfolk borrowers' unpaid loan commitments of Php2.03 billion under the ACPC Credit Program (Department of Agriculture - Agricultural Credit Policy Council, 2020). Meanwhile, according to the United States Agency for International Development, the U.S. government has created an online marketplace so Filipino fishermen can

sell their catch to customers while the COVID-19 community quarantine is still in effect (USAID, 2020).

3. Methodology

3.1 Research Design

The researchers conducted this study using a survey-descriptive research design. Specifically, they used a modified research questionnaire based on the basic economic survey of households consisting of three dimensions: health, education, and standard of living, as elucidated in the economic theorem of development, as purported by Sen and cited by Stewart and Deneulin (2002). Cronbach alpha was calculated at 0.87, which is deemed reliable based on the prevailing statistically accepted decisions.

3.2 Sampling Design

The researchers used convenience sampling, and 133 participants' respective responses were gathered and prepared into tables for further interpretation and analysis. Initially, total enumeration was targeted; however, due to the limitations met by the study and the prevailing pandemic, those who wanted only to participate as representatives of their respective households formed part of the study.

3.3 Data Gathering

The questionnaire was distributed to the key coastal local government components of Rosario, Cavite, namely; Kanluran, Muzon 1, Muzon 2, Sapa 2, Sapa 3, and Wawa 2. These locations are strategic, and most of the fisherfolks in the municipality cover the western fishing site of the municipality.

4. Results and Discussion

Table 1. Age of the fisherfolks

AGE	FREQUENCY	PERCENTAGE
18 years old and below	3	2.30
19 to 29 years old	30	22.60
30 to 40 years old	32	24.10
41 to 50 years old	35	26.30
51 to 60 years old	22	16.50
61 years old and above	11	8.30
TOTAL	133	100.00

Table 1 shows that most of the fisher folks who participated in the study belong to the 41 to 50 years old age bracket, which has 26.30 percent of the total participants. As shown in, there was a shift in age to a younger bracket. The previous study by Tadeo (2018) showed that the 50 to 60 years old bracket would be attributed to the pandemic effect where the elderly were affected; thus, the participation of other younger members of the household in fishing was increased (Sok & Yu, 2021).

Table 2. Sex of the fisherfolk

SEX	FREQUENCY	PERCENTAGE
Female	9	6.80
Male	123	92.50
No response	1	0.80
TOTAL	133	100.00

Table 2 shows that the majority of the fisher folks were male, 92.50 percent of the total participants. This implies that fishing, even at the time of the pandemic, is a male-dominated livelihood, as also shown in the studies conducted by (Tolentino et al., 2022).

Table 3. Educational attainment of the fisherfolks

EDUCATIONAL ATTAINMENT	FREQUENCY	PERCENTAGE
Did not finish elementary	26	19.50
Elementary Graduate	39	29.30
Did not finish high school	52	39.10
Did not finish college	13	9.80
College graduate	1	0.80
No response	2	1.60
TOTAL	133	100.00

Table 3 shows that most of the fisher folks in the municipalities of Rosario Cavite did not finish secondary school (Grade 7 to Grade 12), with 39.10 percent of the total participants. It can be observed that participants did not complete their respective basic education years.

Table 4. Length of fishing

LENGTH OF BEING A FISHERFOLK	FREQUENCY	PERCENTAGE
1 year below	11	8.30
1 to 3 years	12	9.00
More than 3 years to 5 years	14	10.50
More than 5 years to 9 years	20	15.00
More than 9 years to 15 years	38	28.60
More than 15 years to 20 years	9	6.80
Above 20 years	29	21.80
TOTAL	133	100.00

Table 4 shows that the fisherfolks in the municipalities of Rosario Cavite have more than 9 to 15 years of fishing experience. This finding coincides with the study of Capanzana et al. (2018), which revealed that most of the fishers in the coastal communities were 10 years into their livelihood practice. Considerably, more experienced fishers continued their activity even with restrictions brought on by the pandemic.

Table 5. Monthly income of fisherfolks

MONTHLY INCOME	FREQUENCY	PERCENTAGE
5, 000 pesos below	90	67.70
5, 000 pesos to 10, 000 pesos	37	27.80
More than 10,000 pesos to 15, 000 pesos	3	2.30
More than 15, 000 pesos to 20, 000 pesos	2	1.50
Above 20, 000 pesos	1	0.80
TOTAL	133	100.00

Table 5 shows that most of the fisher folks earn below Php 5,000.00 (87 U.S. dollars) every month. This validates the status quo as purported by Tadeo (2018), who noted that fisherfolks were earning below Php 5,000.00.

Table 6. Other sources of income for fisherfolks

OTHER SOURCES OF INCOME	FREQUENCY	PERCENTAGE
No other source of income	109	82.00
Driver	1	0.80
Furniture	1	0.80
Fish vendor	6	4.50
Employed in EPZA	2	1.50
Construction	12	9.00
Trading	1	0.80
Barangay Tanod	1	0.80
TOTAL	133	100.00

Table 6 shows that 82.00 percent of the fisher folks in the municipality of Rosario only rely on their livelihood with fishing. Considerably, 18.00 percent have alternative sources of income, of which being a construction worker is prevalent, followed by being a vendor. The same situation was evident in the study conducted by the Philippine Institute for Developmental Studies (2019).

Table 7. Status quo of the fisherfolks - health

CATEGORY	MEAN	DESCRIPTIVE VALUE
My body, with my family, is in the healthiest condition.	3.04	Agree
My family and I meet our health needs.	2.96	Agree
My family and I have access to various medicines, hospitals, clinics, and health services.	2.68	Agree
I give priority to my health and my family.	2.74	Agree

In general, table 7 showcases the health of the fisher folks in the municipality of Rosario, Cavite, in terms of assessment of attainment, accessibility, and prioritization. It shows mean values of 3.00 on assessment of the attainment with a descriptive value of agree, including their healthiest condition and health needs. Moreover, a mean value of 2.68 on accessibility with a descriptive value of Agree indicated that they have access to various medicines, services, and medical facilities. In addition, health prioritization has a mean value of 2.74 with a descriptive value of agree. Overall, this implies that fisherfolks in the municipality of Rosario agree that they are in excellent health and have access to medical facilities and services. According to Untari et al. (2021), fisherfolks can access community health centers and health services for free. In relation to this, the study of Ngaruiya et al. (2019) stated that fisherfolks in Kenya experience numerous health hazards and risks while doing their job, affecting their productivity, including minor injuries that could lead to serious long-term health risks. This includes cuts from hooks and blades, sunburns, extreme colds, and musculoskeletal injuries.

Table 8. Status quo of the fisherfolks - education

CATEGORY	MEAN	DESCRIPTIVE VALUE
The learning of the students in our family is well met, absenteeism is avoided, and schoolwork is done well.	3.26	Highly Agree
The needs of students are met in our home.	3.09	Agree
Students in our family have access to school to have continuous learning.	3.30	Highly Agree
I give priority to the education of students in our family.	3.13	Agree

Table 8 shows the fisher folks' education in the Rosario, Cavite municipality. It showcased a mean value of 3.18 in terms of the assessment of the attainment of the participants, with a descriptive value of Agree, regarding the learning of the students in the family is well met, absenteeism is avoided, and schoolwork is done well, and the needs of students are met in their home. Moreover, the accessibility of the participants revealed a mean value of 3.30, interpreted as Highly Agree in terms of the students in the family having access to school to have continuous learning. Additionally, the table presented a mean value of 3.13 regarding the prioritization of the participants, interpreted as Agree, in terms of prioritizing the education of students in the family. Generally, the findings showed that the participants agreed that they could prioritize the needs of the students in their families. The tables' result is similar to the study by Untari et al. (2021), which stated that the level of fishermen's children demonstrates the importance of education in the fishing family. Fishermen hope that education will change the course of their children's lives.

Also, the study’s finding of Nismawati (2023) revealed that the Liukang Loe Island fishing community prioritizes children’s education, as evidenced by the community’s, particularly families’, efforts to ensure children’s education completion. The family’s commitment to making a living and meeting the children’s educational needs reinforces, and communities encourage their children to achieve the highest level of success possible.

Table 9. Status quo of the fisherfolks – standard of living

CATEGORY	MEAN	DESCRIPTIVE VALUE
Our family can eat enough for a day.	3.35	Highly Agree
We have a proper home, toilet, and room for our family's daily life.	3.35	Highly Agree
Our family has savings.	1.96	Disagree
Our family earns enough to meet our needs.	2.87	Agree
Our family can buy what we need.	2.91	Agree
Our family can buy more than we need.	2.57	Agree

Table 9 presents the standard of living of the fisher folks in the municipality of Rosario, Cavite. It revealed a mean value of 3.35, with a descriptive value of Highly Agree, in terms of having a proper home, toilet, and room for the family’s daily life, and the family can eat enough for a day. Moreover, the accessibility of the participants showcased a mean value of 2.58, interpreted as Agree, regarding the family having savings, earning enough to meet the needs, and the family can buy what they need. Lastly, the table revealed a mean value of 2.57, with a descriptive value of Agree, regarding the prioritization of the participants in terms of buying more than the needs of the family. In general, the study's result showed that the participants agreed that their standard of living was in excellent condition and could meet their necessities. According to Onsay et al. (2022), most fisherfolks earn less than the poverty line, indicating that they belong to the poor or low-level income earners. According to Alvina (2022), the earnings of fisherfolks are only enough for their day-to-day lives. Sok and Yu (2021) stated that several fisherfolks admitted that they could not earn enough money to survive due to different restrictions on fishing gear, grounds, and the high costs of fishing equipment and gasoline.

Table 10. Segment analysis according to the sex of the fisherfolks

SEX	KANLURAN	WAWA 2	MUZON 1	MUZON 2	SAPA 2	SAPA 3
Male	95.70	85.20	100.00	100.00	85.20	66.70
Female	4.30	14.60	0	0	14.60	33.30

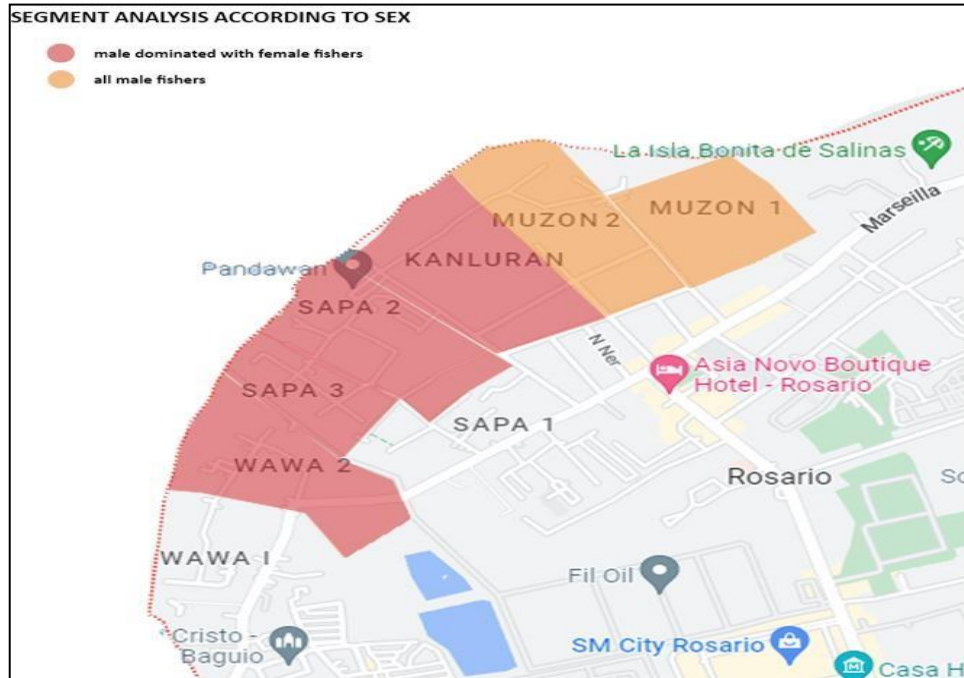


Figure 1. Segment Map of Sampling Area According to Sex

Table 10 and figure 1 show the sex of the fisher folks in the municipality of Rosario, Cavite. It indicated that most of the participants from Barangay Kanluran were male, with 95.70 percent, while 4.30 percent were female. Moreover, most of the participants from Barangay Wawa 2 were male, with a total percentage of 85.20. Additionally, the total responses from Barangay Muzon 1 and 2 were male. Also, most of the participants from Barangay Sapa 2 were male, with a percentage of 85.20, while the other 14.60 percent were female. Lastly, most of the participants from Barangay Sapa 3 were male, with a percentage of 66.70, and 33.30 percent were female. Generally, most of the participants were male. This conforms to the study of Igejongbo (2024) and Ikeogu et al. (2022), which found that most of the fisherfolks were male.

Table 11. Segment analysis according to educational attainment of the fisherfolks

EDUCATIONAL ATTAINMENT	KANLURAN	WAWA 2	MUZON 1	MUZON 2	SAPA 2	SAPA 3
Did not finish elementary	13.00	30.00	15.60	25.00	18.50	11.10
Elementary Graduate	30.40	26.70	25.00	41.70	18.50	66.70
Did not finish high school	34.80	33.30	53.10	33.30	44.40	22.20
Did not finish college	17.40	10.00	6.30	0	18.50	0
College graduate	4.30	0	0	0	0	0

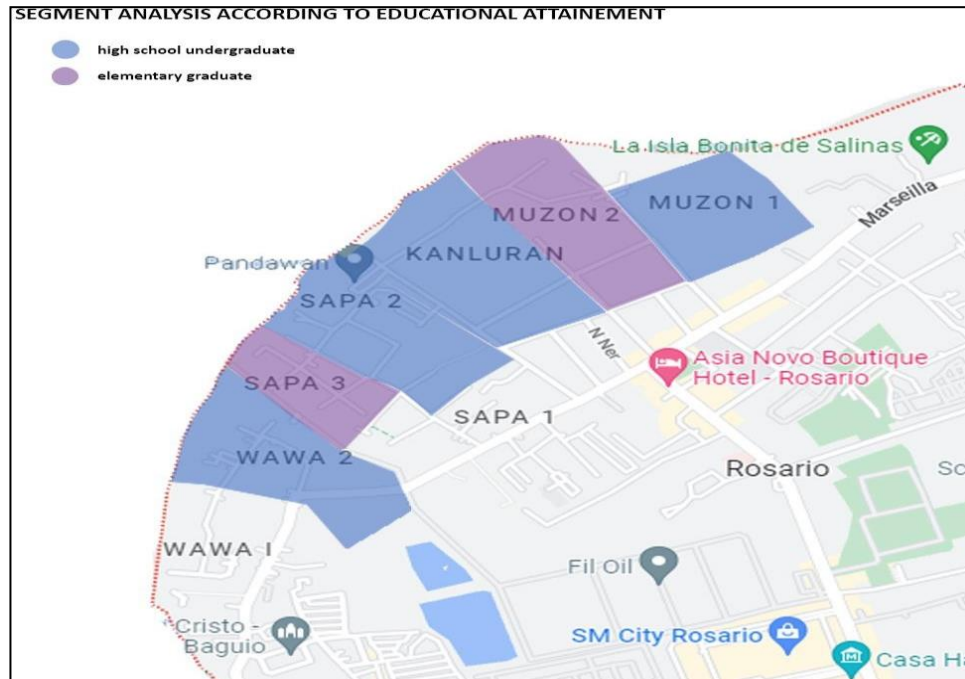


Figure 2. Segment Map of Sampling Area According to Sex

Table 11 and figure 2 present the educational attainment of the respondents. It reveals that 34.80 percent of the participants from Kanluran, 33.30 percent from Wawa 2, 53.10 percent from Muzon 1, and 44.40 percent from Sapa 2 did not finish high school. The fishermen from Muzon 2, with 41.50 percent, and Sapa 3, with 66.70 percent of the total response,s are elementary graduates. In addition, 4.30 percent of the respondents from Kanluran are college graduates, and respondents from Wawa 2, Muzon 1, and Sapa 2 did not finish college, with 10 percent, 3.60 percent, and 18.50 percent, respectively. 25 percent of the participants from Muzon 2, 18.50 percent from Sapa 2, and 11.10 percent from Sapa 3 did not finish elementary. The fishermen from Sapa 2 are elementary graduates, with 18.50 percent of the total respondents. The findings revealed that the fishermen from the selected area of Rosario, Cavite, did not finish high school. This contradicts the study of Amadu et al. (2021) and dela Vega et al. (2019), which revealed that the common education of fisherfolks was primary education.

Table 12. Segment analysis according to length of fishing

LENGTH OF FISHING	KANLURAN	WAWA 2	MUZON 1	MUZON 2	SAPA 2	SAPA 3
1 year and below	26.10	0	3.10	0	14.80	0
More than 1 year and 3 years	30.40	3.30	6.30	0	7.40	0
More than 3 year and 5 years	30.40	6.70	3.10	0	14.80	0
More than 5 year and 9 years	13.00	23.30	28.10	0	18.50	33.30
More than 9 year and 15 years	0	16.70	37.5	50.00	29.60	55.60
More than 15 year and 20 years	0	0	9.40	0	0	0
More than 20 years and above	0	50.00	12.50	50.0	14.80	11.10

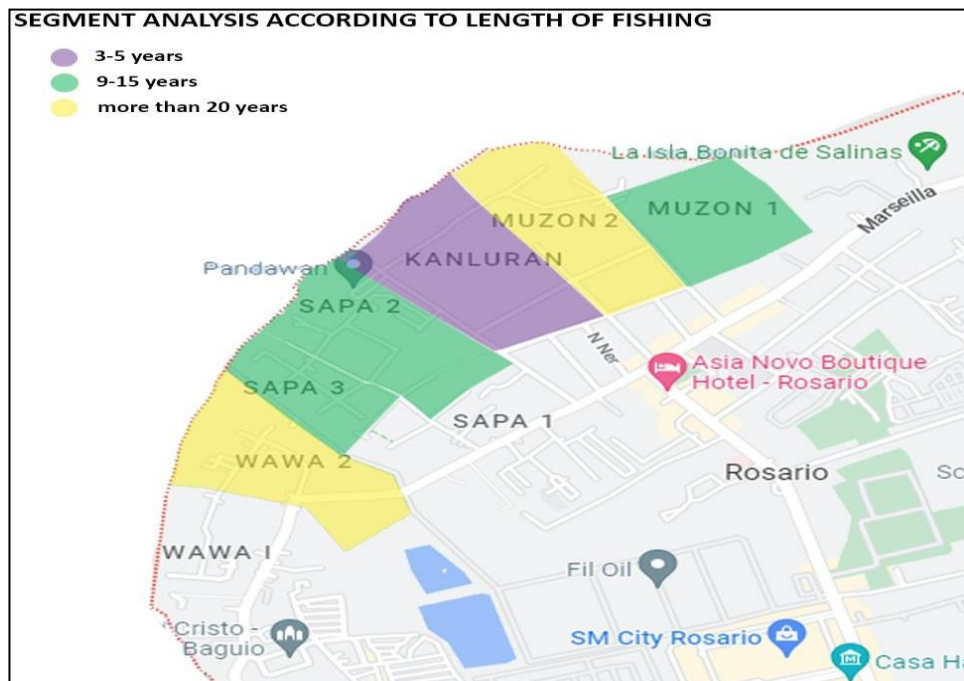


Figure 3. Segment Map of Sampling Area According to Length of Fishing

Table 12 and figure 3 show the length of being a fisherman. It reveals that the participants from Kanluran have been fishermen for more than 1 to 3 years and 3 to 5 years, with both 30.40 percent. The majority of the respondents from Wawa 2 have been a fisherman for more than 20 years and above. 37.5 percent of the participants from Muzon 1 and half or 50 percent of the

respondents from Muzon 2 have been fishing for more than 9 years and 15 years. Similarly, 50 percent of the respondents from Muzon 2 have been a fisherman for more than 20 years and above. On the other hand, 29.60 percent of the fishermen from Sapa 2 and 55.60 percent from Sapa 3 has been a fisherman for more than 9 years and 15 years. Moreover, 13 percent of the participants from Kanluran have been a fisherman for more than 5 years and 9 years, 3.30 percent of the fishermen from Wawa 2 and Sapa 2 have been fishing for more than 1 year and 3 years, 3.10 percent of the respondents from Muzon 1 has been a fisherman for 1 year and below and the other 3.10 percent have been fishing for more than 3 years and 5 years, and lastly, respondents from Sapa 3 have been fishing for more than 20 years and above. Overall, the results indicated that the fishermen from the selected areas of Rosario, Cavite, have been fishing for more than 9 years and 15 years. In relation to this, the study of Amadu et al. (2021) revealed that the fishermen have 1 to 15 years of experience in fisheries. The study of Aban et al. (2017) showed that the fisherfolks have been fishing for 11 to 15 years.

Table 13. Segment analysis according to monthly income of fisherfolks

MONTHLY INCOME	KANLURAN	WAWA 2	MUZON 1	MUZON 2	SAPA 2	SAPA 3
₱5,000 and below	69.60	80.00	75.00	83.30	59.30	88.90
More than ₱5,000 to ₱10,000	30.40	6.70	25.00	16.70	37.00	11.10
More than ₱10,000 to ₱15,000	0	3.30	0	0	3.70	0
More than ₱15,000 to ₱20,000	0	6.70	0	0	0	0
More than ₱20,000 and above	0	3.30	0	0	0	0

Table 13 presents the monthly income of the fisherfolks in Rosario Cavite. It shows that 69.60 percent of participants have a monthly income of P5,000 and below in Barangay Kanluran. Noticeably, the least responses belong to the monthly income of more than P5,000 to P10,000. Moreover, the table reveals the monthly income of the fisherfolks in Barangay Wawa 2. It indicates that the monthly income with the lowest percentage belongs to more than P10,000 to P15,000 and more than P20,000 and above. In addition, the table showcases the monthly income

of the fisherfolks in Barangay Muzon 1. It showed that most participants have a monthly income of P5,000 and below, with 75 percent of the total responses. It implied that the lowest percentage of responses was from more than P5,000 to P10,000. Additionally, the table illustrates the monthly income of the fisherfolks in Barangay Muzon 2. It reveals that 83.30 percent of the total responses belong to P5,000 and below, and the lowest percentage belongs to more than P5,000 to 10,000. Moreover, the table showcases the monthly income of the fisherfolks in Barangay Sapa 2. It reveals that most participants have a monthly income of P5,000 and below, with 59.30 percent of the total responses. Noticeably, the least responses belong to the monthly income of more than P10,000 to P15,000. Finally, the table presents the monthly income of fisherfolks in Barangay Sapa 3. This indicates that most participants have a monthly income of P5,000 or below, with 88.90 percent of the total responsibilities. Considerably, the lowest percentage of responses belongs to a monthly income of more than P5,000 to P10,000. Generally, most of the participants in Rosario Cavite have a monthly income of P5,000 and below. The study's results were somewhat similar to the study of Pendi (2022) that the fishermen in the coastal municipalities in Bangsamoro had an average monthly income of P5,414.70. Aban et al. (2017) demonstrated the low monthly family income of Infanta, Pangasinan's fishermen, which varied from PHP 1,000 to PHP 5,000.

Table 14. Segment analysis according to other sources of income of fisherfolks

OTHER SOURCE OF INCOME	KANLURAN	WAWA 2	MUZON 1	MUZON 2	SAPA 2	SAPA 3
Construction	8.70	6.70	6.30	8.30	18.50	5.36
Fish seller	13.00	0	0	0	11.10	2.35
Employed in EPZA	4.30	0	0	0	3.70	0
Trading	0	0	0	0	3.70	0
Barangay Tanod	0	0	0	0	3.70	0
Driver	4.30	0	0	0	0	0
Furniture	4.30	0	0	0	0	0

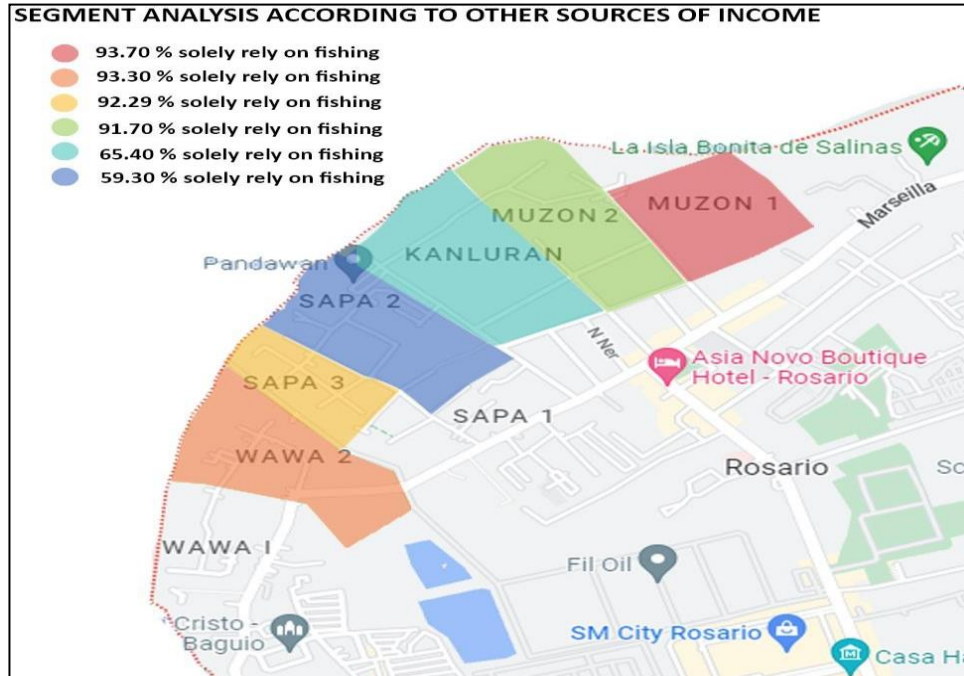


Figure 4. Segment Map of Sampling Area According to Other Sources of Income of Fisherfolk

Table 14 and figure 4 present the other sources of income of the fisherfolks in Rosario Cavite. It reveals that most of the participants' responses have other sources of income, such as construction workers, which showed a total of 8.70 percent in Barangay Kanluran. Considerably, the most negligible percentage of the total responses have other sources of income such as employed in EPZA, driver, and furniture. Moreover, the table showcases the other sources of income of the fisherfolks in Barangay Wawa 2. It shows that 6.70 percent of total responses have other income sources, such as construction. Additionally, the table illustrates the other sources of income of the fisherfolks in Barangay Muzon 1. It shows that 6.30 percent of the respondents have other sources of income, namely construction. In addition, the results show that the fisherfolks in Muzon 2 have other sources of income, including construction, with 8.30 percent of the total responses. Moreover, it implied that most fisherfolks in Sapa 2 have other sources of income, such as construction, with 18.50 percent of the total responses. Considerably, the lowest percentage of total respondents have other sources of income, namely, employed in EPZA, trading, and Barangay Tanod. Lastly, the table revealed the other source of income of the fisherfolks in Sapa 3. It showcases that most participants have other income sources, such as construction, with 5.36 percent of the total responses. Considerably, the lowest percentage of responses have other income sources, such as a fish seller, with 2.35 percent of the total responses. Most of the participants have another source of income, namely construction. The results of the study contradict the study of Gbedomon et al. (2024) that 60 percent of the fisherfolks in Benin, West Africa, have no alternative livelihood or other sources of income to sustain their lives.

Table 15. Segment Analysis - Health

HEALTH	CATEGORY	KANLURAN	WAWA 2	MUZON 1	MUZON 2	SAPA 2	SAPA 3
Assessment of Attainment	My body with my family is in the healthiest condition	3.44	3.87	3.63	3.35	3.19	3.44
	My family and I meet our health needs	3.23	3.50	3.44	3.32	3.33	3.32
Accessibility	My family and I have access to a wide variety of medicines, hospitals, clinics, and health services	2.81	3.10	2.47	2.42	2.96	2.82
Prioritization	I give priority to my health and my family.	3.40	3.86	3.56	3.45	3.30	3.40
GRAND MEAN		3.22	3.58	3.28	3.14	3.20	3.25

Table 15 illustrates the summary of mean values regarding the health condition of the participants. It shows that the fisherfolks in Kanluran, Wawa 2, Muzon 1, Muzon 2, Sapa 2, and Sapa 3, in terms of assessment of attainment, highly agreed that their health is in the healthiest condition and can meet their health needs, having mean values of 3.44, 3.69, 3.54, 3.34, 3.26, and 3.39, respectively. Moreover, in terms of accessibility, the fisherfolks in Kanluran, Wawa 1, Sapa 2, and Sapa 3 have mean values of 2.81, 3.10, 2.96, and 2.82, which can be interpreted as agree. It indicates that they have access to various medicines and health facilities, except Muzon 1 and Muzon 2, with mean values of 2.47 and 2.42. Additionally, the fisherfolks in the six municipalities highly agreed that they prioritize their health and their families' health, with computed mean values of 3.40, 3.86, 3.56, 3.45, 3.30, and 3.40. Overall, the health condition of fisherfolks in Wawa 1, Muzon 1, and Sapa 3 has a grand mean of 3.58, 3.28, and 3.25, which can be interpreted as highly agree. Considerably, the participants in Kanluran, Muzon 2, and Sapa 2 agreed that they have good health conditions, with a grand mean of 3.22, 3.14, and 3.20, respectively. The result negates the study of Capanzana et al. (2018), which revealed that the children of fisherfolks had a higher malnutrition prevalence than the overall prevalence among children in the Philippines, except for being overweight. Likewise, Premjith and Saisree (2018) demonstrated that fishermen have poor health and hygiene status, leading to high morbidity and mortality rates among fisherfolk, as shown by the low proportion of the elderly population.

Table 16. Segment Analysis - Education

EDUCATION	CATEGORY	KANLURAN	WAWA 2	MUZON 1	MUZON 2	SAPA 2	SAPA 3
Assessment of Attainment	The students' learning in our family is well met, absenteeism is avoided, and schoolwork is done well.	3.33	3.70	3.22	3.20	3.15	3.34
	The needs of students are met in our home.	3.29	3.70	3.19	3.15	3.14	3.29
Accessibility	Students in our family have access to school to have continuous learning	2.95	2.83	2.56	2.20	3.26	2.95
Prioritization	I give priority to the education of students in our family.	3.38	3.77	3.35	3.32	3.30	3.38
GRAND MEAN		3.24	3.50	3.08	2.96	3.21	3.24

Table 16 shows the education of the participants in terms of assessment of attainment, accessibility, and prioritization. It showcases that most of the fisherfolks highly agree, which has a mean value of 3.70, while the lowest average is 3.15, which is an agreement in terms of the learning and needs of the students. Moreover, it reveals that most fisherfolks highly agree, with a mean value of 3.26, while the lowest average is 2.20, which is agreed regarding access to school for continuous learning. Furthermore, it demonstrates that most fisherfolks highly agree, with a mean value of 3.50, while the lowest average is 2.96, which agrees in terms of priority on education. This implies that most of the fisherfolks in the Rosario, Cavite municipality agree on the assessment, accessibility, and prioritization of education. However, Amal et al. (2022) stated that it is quite uncommon for children in the fishing community to attend school, which reportedly happens because parents' knowledge of their children's schooling is still incredibly low.

Table 17. Segment Analysis – Standard of Living

STANDARD OF LIVING	CATEGORY	KANLURAN	WAWA 2	MUZON 1	MUZON 2	SAPA 2	SAPA 3
Assessment of Attainment	Our family can eat enough for a day	3.52	3.97	3.53	3.24	3.22	3.52
	We have a proper home, toilet, and room for our family's daily life	3.39	3.70	3.31	3.30	3.19	3.39
Accessibility	Our family has savings	1.73	1.40	1.34	3.23	2.26	1.73
	Our family earns enough to meet our needs	3.07	3.27	3.13	3.20	2.85	3.07
	Our family can buy what we need	3.12	3.20	3.28	3.50	3.00	3.12
Prioritization	Our family can buy more than we need	2.42	2.70	2.13	2.40	2.56	2.42
GRAND MEAN		2.88	3.04	2.79	3.08	2.85	2.88

Table 17 showcases the standard of living of participants in terms of assessment of attainment, accessibility, and prioritization. In the assessment of attainment, the majority of the fisher folks highly agree with a mean value of 3.84, located in Wawa 2, while the lowest average is 3.21, indicating that they agree; these are the residences found in Sapa 2. Moreover, in accessibility, the highest mean value is 3.37, which is highly agreed; these are the fisher folks located in Muzon 2, while the lowest average is 2.58, which implies that the respondents agree. Lastly, in prioritization, the highest mean value is 2.70 in Wawa 2 with a descriptive value of agree. The lowest average is 2.13 in Muzon 1, which is described as disagreeing. Overall, it implies that most fisher folks in the Municipality of Rosario Cavite agree with the way of the standard of living in terms of assessment of attainment, accessibility, and prioritization. According to Teh et al. (2020), fishers are not the poorest of the poor in general. According to the average fishing income from 89 countries, their income levels vary. The income of large-scale sector fishing was 2.2 times higher than that of small-sector fishing and 9 times more in high-income countries compared to low-income countries.

5. Conclusion and Recommendations

After the presentation and analyses of data, the study found that most fisherfolks in the selected areas of Rosario, Cavite were middle-aged, dominated by males, have been fishing for over 9 years to 15 years, and earned below 5,000.00 pesos or less than 100 US dollars monthly. In Sapa 2 other income sources were construction, manufacturing employees, fish vendors, and Barangay Tanod. Moreover, the fisherfolks in the six barangays were in good health and had access to medical facilities and services. They prioritize the needs of their families and believe their standard of living is in excellent condition, meeting their necessities. Furthermore, the study reveals that most fisherfolks highly agree in terms of access to school for continuous learning and prioritization of education. This implies that most fisherfolks in the Rosario, Cavite municipality agree on the assessment, accessibility, and prioritization of education.

Hence, based on the conclusion of this study, the researchers recommend several measures to boost fisherfolks' productivity in the local areas of Sapa 2, Muzon 2, and Muzon 1. These include creating economic stimulus programs, providing financial support for enterprise and product innovation, strengthening fishing-friendly policies, offering social insurance, entrepreneurial training, and financial literacy training. Additionally, enhancing fishing-related production activities through LGU-Industry-Academe partnerships can further enhance fisherfolks' productivity.

References

- Aban, S. M., Garcia, A. C., Mercado, R. A., & Ferrer, M. M. (2017). Resource assessment of Tambac Bay in Western Pangasinan, Philippines. *Pangasinan State University Journal of Natural and Allied Sciences*, 1, 23–31. https://psurj.org/wp-content/uploads/2018/01/JONAS_0005.pdf
- Aban, S., De Vera, R., Guarin, Y.M., & Flores, J.R., (2017). Sustainability of municipal fisheries resources of the coastal municipality of Infanta, Pangasinan, Philippines. *Asia Pacific Journal of Education, Arts and Sciences*. 4(4), 1-5. <https://apjeas.apjmr.com/wp-content/uploads/2018/07/APJEAS-2017.4.4.2.01.pdf>
- Alvina, K., Clemente, R., Fabian, M. C., Ong, L. A., Rivas, T. M., & Pinlac, P. A. (2022). Fishing Methods and Occupational Safety Practices of Fishermen in a Coastal Municipality of Central Luzon. *Acta Medica Philippina*, 56(5). <https://doi.org/10.47895/amp.vi0.1336>
- Amadu, I., Armah, F. A., & Aheto, D. W. (2021). Assessing livelihood resilience of artisanal fisherfolk to the decline in small-scale fisheries in Ghana. *Sustainability*, 13(18), 10404. <https://doi.org/10.3390/su131810404>
- Amal, B. K., Rambe, T., Ampera, D., Purba, A. S., Ridho, H., & Daud, D. (2022). Parents' perceptions of children's education and parents' attitudes towards the education of fishermen's children. *Jurnal Pendidikan, Sains Sosial, dan Agama*, 8(1), 85-97. <https://doi.org/10.53565/pssa.v8i1.456>

Tadeo, J. B., & Mendoza, X. L. D. (2024). An economic inquiry to the status quo of selected fisherfolks in the Municipality of Rosario, Cavite: A pandemic situation. *Journal of Management, Economics, and Industrial Organization*, 8(2), 106-128. <http://doi.org/10.31039/jomeino.2024.8.2.6>

- Association of Southeast Asian Nations (ASEAN). (2021). ASEAN Statistical Yearbook 2021. https://asean.org/wp-content/uploads/2021/12/ASYB_2021_All_Final.pdf
- Bennett, N. J., Finkbeiner, E. M., Ban, N. C., Belhabib, D., Jupiter, S. D., Kittinger, J. N., ... & Christie, P. (2020). The COVID-19 pandemic, small-scale fisheries and coastal fishing communities. *Coastal Management*, 48(4), 336-347. <https://doi.org/10.1080/08920753.2020.1766937>
- Bureau of Fisheries and Aquatic Resources. (2021). *Philippine Fisheries Profile 2020*. Bureau of Fisheries and Aquatic Resource - Fisheries Planning and Economics Division. <https://www.bfar.da.gov.ph/wp-content/uploads/2022/02/2020-Fisheries-Profile-Final.pdf>
- Capanzana, M. V., Aguila, D. V., Gironella, G. M. P., & Montecillo, K. V. (2018). Nutritional status of children ages 0–5 and 5–10 years old in households headed by fisherfolks in the Philippines. *Archives of Public Health*, 76(1), 1-8. <https://doi.org/10.1186/s13690-018-0267-3>
- Costa, A., Soares, J., Salas-Leiton, E., Bordalo, A., & Costa-Dias, S. (2022). The COVID-19 as a driver for alternative trade networks in the small-scale fisheries: Portugal as a case study. *Sustainability*, 14(11), 6405. <https://doi.org/10.3390/su14116405>
- Department of Agriculture - Agricultural Credit Policy Council. (2020). *DA-ACPC Offers Loan Payment Moratorium Amidst COVID-19 Crisis*. <https://acpc.gov.ph/da-acpc-offers-loan-payment-moratorium-amidst-covid-19-crisis/>
- FAO. 2020. *The impact of COVID-19 on fisheries and aquaculture – A global assessment from the perspective of regional fishery bodies: Initial assessment*, May 2020. No. 1. Rome. <https://doi.org/10.4060/ca9279en>
- Ferrer, A. J. G., Pomeroy, R., Akester, M. J., Muawanah, U. M. I., Chumchuen, W., Lee, W. C., ... & Viswanathan, K. K. (2021). COVID-19 and small-scale fisheries in Southeast Asia: impacts and responses. *Asian Fish. Sci*, 34(1), 99–113. <https://doi.org/10.33997/j.afs.2021.34.1.011>
- Gbedomon, R. C., Salako, K. V., Gnansounou, S. C., Gandji, K., Failler, P., Assogbadjo, A. E., & Kakai, R. G. (2024). Small-scale marine fishing in Benin, West Africa: A comprehensive assessment of the processed fish value chain. *Marine Policy*, 161, 106032. <https://doi.org/10.1016/j.marpol.2024.106032>
- Hossain, M. T., Lima, T. R., Ela, M. Z., Khan, L., Ahmed, F., Al Masud, A., ... & Islam, M. N. (2022). Livelihood challenges and healthcare-seeking behavior of fishermen amidst the COVID-19 pandemic in the Sundarbans mangrove forest of Bangladesh. *Aquaculture*, 546, 737348. <https://doi.org/10.1016/j.aquaculture.2021.737348>
- Igejongbo, T. (2024). Socioeconomic characteristics of artisanal fisher folks in Igbokoda Ondo State. *Adan Journal of Agriculture*, 2(1), 146–155. <https://doi.org/10.36108/adanja/1202.20.0141>
- Ikeogu, C. F., Uzoma, O. S., Okpala-Ezennia, K. P., Ogbonnaya, H. F., & Nwankwo, C. G. (2022). Socioeconomic assessment of fisherfolks in Anaku Community, Ayamelum local government area of Anambra State, Nigeria: A base for potential aquaculture development. *International Journal of Environmental and Agriculture Research*, 4 (3). https://ijoear.com/assets/articles_menuscripts/file/IJOEAR-MAR-2022-1.pdf
- International Institute for Environment and Development (2021). *Evaluating the impact of the COVID-19 pandemic on small-scale fisheries and its markets*. <https://www.ied.org/evaluating-impact-covid-19-pandemic-small-scale-fisheries-its-markets>

Tadeo, J. B., & Mendoza, X. L. D. (2024). An economic inquiry to the status quo of selected fisherfolks in the Municipality of Rosario, Cavite: A pandemic situation. *Journal of Management, Economics, and Industrial Organization*, 8(2), 106-128. <http://doi.org/10.31039/jomeino.2024.8.2.6>

- Macusi, E. D., Siblos, S. K. V., Betancourt, M. E., Macusi, E. S., Calderon, M. N., Bersaldo, M. J. I., & Dical, L. N. (2022). Impacts of COVID-19 on the catch of small-scale fishers and their families due to restriction policies in Davao Gulf, Philippines. *Frontiers in Marine Science*, 8. <https://doi.org/10.3389/fmars.2021.770543>
- Manlosa, A. O., Albrecht, J., & Riechers, M. (2023). Social capital strengthens agency among fish farmers: Small scale aquaculture in Bulacan, Philippines. *Frontiers in Aquaculture*, 2, 1106416. <https://doi.org/10.3389/faquc.2023.1106416>
- Naz, G. M. (2022). Effect of COVID-19 Pandemic to the Fishers in a Coastal Municipality in the Philippines. *International Journal of Multidisciplinary: Applied Business and Education Research*, 3(6), 967–976. <https://doi.org/10.11594/ijmaber.03.06.02>
- Ngaruiya, F. W., Ogendi, G. M., & Mokuu, M. A. (2019). Occupational health risks and hazards among the fisherfolk in Kampi Samaki, Lake Baringo, Kenya. *Environmental Health Insights*, 13, 1178630219881463. <https://doi.org/10.1177/1178630219881463>
- Nismawati, N., Oruh, S., Kamaruddin, S., Andi Agustang, A. A., & Wirda, M. A. (2023). Awareness of the importance of children's education in the small island fisherman community (Case study of Liukang Loe Island). *Jurnal Geografi*, 15(1), 12-25. <https://doi.org/10.24114/jg.v15i1.34027>
- Onsay, E., Baltar, K. C., Medroso II, K. P. L., & Pesino, I. R. C. (2022). Economic Behavior of Fisherfolks that Govern their Decisions to Practice Accounting: Evidence from Probit Models. *Journal of Mathematics Instruction, Social Research and Opinion*, 1(3), 163-174. <https://doi.org/10.58421/misro.v1i3.42>
- Pendi, N. G. (2022). Socioeconomic Status of Fishing Communities in Bangsamoro. *Randwick International of Social Science Journal*, 3(1), 176–183. <https://doi.org/10.47175/rissj.v3i1.353>
- Premjith, S., & Saisree, K. G. (2018). Weak supportive system and livelihood status among fisherfolk in Poovar Fish Landing Centre, Kerala. *IOSR Journal of Humanities and Social Science*. 23(1), 1-6. <https://doi.org/10.9790/0837-2301070106>
- Sok, S., & Yu, X. (2021). Co-management of small-scale fishery in the Tonle Sap Lake, Cambodia. *Regional Sustainability*, 2(1), 1-11. <https://doi.org/10.1016/j.regsus.2020.12.002>
- Southeast Asian Fisheries Development Center. (2023). *Fishery Statistic Summary 2020: Overview of the fisheries sector of Southeast Asia in 2020*. <http://www.seafdec.org/stat2020/>
- Stewart, F., & Deneulin, S. (2002). Amartya Sen's contribution to development thinking. *Studies in Comparative International Development*, 37(2), 61–70. <https://doi.org/10.1007/BF02686262>
- Tadeo J.B. (2018). *The savings and investment behavior of selected fisherfolks in the municipality of Rosario, Cavite*. Unpublished. <https://doi.org/10.13140/RG.2.2.36295.37281>.
- Teh, L. C., Ota, Y., Cisneros-Montemayor, A. M., Harrington, L., & Swartz, W. (2020). Are fishers poor? Getting to the bottom of marine fisheries income statistics. *Fish and Fisheries*, 21(3), 471-482. <https://doi.org/10.1111/faf.12441>
- The World Bank. (2019). *Philippines economic update October 2019*. <https://www.worldbank.org/en/country/philippines/publication/philippines-economic-update-october-2019-edition>
- Tolentino, P. D. H., Paggao, R. H., Daculong, M. J. G., Salandanan, F. H. (2022). Assessment of fish-farming livelihood in the coastal areas of Los Baños, Laguna during the COVID19 pandemic. *International Journal of Multidisciplinary Research and Development*. 9(9), 6-10. <https://www.allsubjectjournal.com/assets/archives/2022/vol9issue9/9-7-36-216.pdf>

Tadeo, J. B., & Mendoza, X. L. D. (2024). An economic inquiry to the status quo of selected fisherfolks in the Municipality of Rosario, Cavite: A pandemic situation. *Journal of Management, Economics, and Industrial Organization*, 8(2), 106-128.
<http://doi.org/10.31039/jomeino.2024.8.2.6>

Untari, Malino, A. C. P., Ginting, N. M., Fachrizal, R., Darma, R., Betaubun, P., & Arief, A. A. (2021). Socioeconomic conditions of small-scale traditional fishermen: A case study in Payum Village, Merauke District, Papua, Indonesia. *Jurnal Ilmiah Pertanian*, 18(1), 20-28.
<https://doi.org/10.31849/jip.v18i1.7096>

USAID. (2020). *United States and Philippines partner to support fisherfolk during COVID-19*.
<https://2017-2020.usaid.gov/philippines/press-releases/may-12-2020-united-states-and-philippines-partner-support-fisherfolk>

dela Vega, J. M., Predo, C., Florece, L., & Sobremisana, M. (2019). Fisherfolks' willingness-to-pay for the conservation of Atulayan Bay Marine Protected Area in Sagñay, Camarines Sur, Philippines. *Journal of Environmental Science and Management*, 22(2).
https://doi.org/10.47125/jesam/2019_2/06