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Analysis of the Significant Difference in Fishing Gear Used According to Income Levels of Fisherfolks

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Abstract

Fishing serves as one of the vital livelihood for communities in Diadi, Nueva Vizcaya, providing both income and food security. This study examined the significant difference in fishing gear used according to income levels of fisherfolks. Specifically, it described the demographic profile of respondents, identified the types of fishing gear they employ, quantified their income, and determined whether significant differences exist in fishing gear used according to the income level. A descriptive research design was employed, and 82 actively engaged fisherfolks were purposively sampled. Data were collected through structured questionnaires and analyzed using frequency, percentage, mean, and the Kruskal–Wallis test to determine significant differences. Results showed that most respondents were older than 41 years and had long-term fishing experience exceeding 16 years, though participation in training and seminars was limited. Gill nets (“sigay”) and fyke nets (“banwar”) were the most commonly used gears, while higher-income fisherfolks tended to use multiple and more diversified gear types, such as seine nets (“karudkod”) and cast nets (“tabukol”). Income analysis revealed that 72% of respondents earned between ₱10,000 and ₱50,000. The study found a significant difference in fishing gear used when grouped according to income levels, indicating that gear diversity and selection influence income potential. These findings highlight the need for interventions that improve access to diverse fishing gear and provide training to enhance productivity and livelihood outcomes among fisherfolks in Diadi, Nueva Vizcaya.

Keywords: Fishing gear; Income level; Fisherfolks; Diadi; Nueva Vizcaya; Small-scale fisheries; Gear diversification; Livelihood; Kruskal–Wallis test.

1. Introduction

Fishing is one of the most important livelihood activities in inland areas of the Philippines, providing income and food security to thousands of rural households. In the municipality of Diadi, Nueva Vizcaya, fishing plays a vital role in the local economy, particularly in barangays situated along rivers, creeks, and freshwater bodies. Fisherfolks in the area depend on fishing not only for daily subsistence but also as a supplementary source of livelihood to farming. Despite its importance, most fisherfolks in Diadi face challenges such as limited access to modern fishing tools.

The use of fishing gear is a major factor that influences the productivity and income of fisherfolks. In Diadi, a variety of traditional and modern fishing gears are used, including fyke net, bukatot, bubu, tubong, fishing screen, cast net (tabukol), seine net (karudkod), gill net (sigay), hook and line (ban-niit), paturaw (patu’daw), and spear gun (pana). Each of these gears differs in terms of design, operation, efficiency, and cost.

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Understanding how fishing gears relate to income levels is essential for identifying the most efficient fishing practices. The selection of fishing gear is often determined by the fisherfolk's skill, experience, available capital, and fishing environment. Consequently, differences in gear utilization can create disparities in income among fishing households.

This study, aims to examine the relationship between the types of fishing gear used and the income levels of fisherfolks in the area. Specifically, it seeks to: (1) describe the demographic profile of the fisherfolks; (2) identify the fishing gears they use; (3) quantify their income levels; and (4) determine the significant difference in fishing gear used when grouped according to income level. The results of this study are expected to provide valuable insights for fisheries development programs, particularly in enhancing the productivity and welfare of fisherfolks in Diadi.

2. Materials and Methods

This study employed a descriptive research design to analyze the significant difference in fishing gear used according to income levels of fisherfolks in Diadi, Nueva Vizcaya. It aimed to describe the demographic profile of the respondents, identify the fishing gears they use, quantify their income levels, and determine whether there are significant differences in fishing gears used when grouped according to income level. The respondents of the study were fisherfolks in Diadi, Nueva Vizcaya, selected through purposive sampling to ensure that only those who are actively engaged in fishing activities were included. The study was conducted in barangays where fishing serves as a primary or secondary source of livelihood. A structured questionnaire served as the main instrument for data collection. It consisted of three parts: the demographic profile of the respondents, the type of fishing gear used and the income level derived from fishing activities. Data were gathered through personal interviews and survey administration. Respondents were informed about the purpose of the study and gave their consent prior to participation. Confidentiality and ethical considerations were strictly observed throughout the data collection process. The collected data were analyzed using frequency, percentage, and mean to describe the respondents' profiles and income levels. To determine the significant difference in income levels when grouped according to the fishing gear used, the Kruskal-Wallis test was employed.

3. Results and Discussion

The distribution of respondents according to age revealed that 39.02% were aged 41 years old and above, 34.15% were 31 to 40 years old, and 26.83% were 20 to 30 years old. This indicates that the majority of the fisherfolks in Diadi, Nueva Vizcaya belong to the older age group. This finding aligns with national data from the Bureau of Fisheries and Aquatic Resources (BFAR, 2022), which reported that most registered municipal fisherfolks in the Philippines are above 40 years old. Similarly, a study by Saavedra et al. (2021) noted that the fishing population in the Davao Gulf is aging, with fewer young individuals entering the sector due to economic instability and low income in fisheries. Regarding the number of years engaged as fisherfolks, results showed that 36.59% have been fishing for 16 to 20 years, 29.27% for more than 20 years, 21.95% for 11 to 15 years, and 12.20% for 5 to 10 years. This demonstrates that the majority of the respondents have long-term experience in fishing. A similar observation was made in the study of Jalotjot and Cervantes (2016), which found that most fisherfolks in Zamboanga had been fishing for more than a decade, reflecting fishing as a long-term livelihood rather than a temporary occupation. In terms of training and seminars attended, 56.47% of the respondents reported having no training, 27.06% attended programs conducted by the Department of Agriculture-Bureau of Fisheries and Aquatic Resources (DA-BFAR), 11.76% by the Local Government Unit (LGU), and 4.71% by other BFAR initiatives. This implies limited participation of fisherfolks in capacity-building programs that could improve their fishing skills and income opportunities. Consistent with this, Gamil and Rasul (2023) emphasized that technical assistance and livelihood programs significantly enhance the socio-economic condition of fisherfolk communities in the Bangsamoro region

The distribution of respondents according to fishing gear revealed that 51.22% used gill nets (locally "sigay"), 48.78% used fyke nets (locally "banwar"), 39.02% used seine nets (locally "karudkod"), 36.59% used cast nets (locally "tabukol"), 25.61% used hook and line, 19.51% used bukatot, 19.51% used bubu, 12.20% used spear guns (locally "pana"), and 4.88% used paturaw (locally "patu'daw"). This indicates that gill nets and fyke nets are the most commonly employed fishing gears among the fisherfolks in Diadi, Nueva Vizcaya. A study by Saavedra et al. (2021) also noted that gill nets were the preferred gear in small-scale coastal fisheries in Davao Gulf, while hook-and-line and spear guns were less commonly used due to lower efficiency and skill requirements. The relatively high use of seine nets and cast nets suggests that some fisherfolks employ multiple gear types, likely as a strategy to increase catch opportunities and diversify income sources. On the other hand, the lower usage of hook-and-line, spear guns, and paturaw may reflect their specialized operation, smaller catch volume, and limited profitability, which is consistent with findings from Bersaldo and Lacuna (2022) in Malita, Davao Occidental. Overall, the pattern of gear utilization in Diadi suggests that

fisherfolks favor nets that require moderate capital, are easier to operate, and provide higher catch potential, which may influence income levels and livelihood sustainability.

The distribution of respondents according to income revealed that 72.00% earned between ₱10,000–50,000, 12.00% earned between ₱50,001–100,000, 12.00% earned between ₱100,001–150,000, and 7.69% earned between ₱150,001–200,000. This indicates that the vast majority of the fisherfolks in Diadi, Nueva Vizcaya fall within the lower income bracket. This finding aligns with the study by Atillo (2024), which reported that small-scale fishers in Barangay Bonawon, Siaton, Negros Oriental had wide income variation and many remained in low income levels due to declining fish resources, lack of education, and fluctuating market demand.

Further analysis revealed a significant difference in fishing gear usage when respondents were grouped according to income level. The difference was evident in the diversity of nets employed: respondents in the higher income brackets (₱100,001–200,000) tended to use multiple gear types, including gill nets (“sigay”), seine nets (“karudkod”), and cast nets (“tabukol”), whereas respondents in the lower income bracket (₱10,000–50,000) primarily relied on gill nets and fyke nets (“banwar”). This indicates that income level significantly influences the choice and combination of fishing gear among fisherfolks in Diadi, Nueva Vizcaya. The finding aligns with Siar (2003), who reported that households using more capital-intensive or diversified fishing gears achieved higher socioeconomic status due to increased efficiency and catch potential. Overall, the results suggest that access to and use of diverse fishing gear is a significant factor in determining income levels, and interventions that enhance gear diversification may help improve fisherfolk livelihoods.

4. Conclusion

The study revealed that the majority of fisherfolks in Diadi, Nueva Vizcaya are older and experienced, with most having engaged in fishing for over 16 years. Despite their long-term involvement in fishing, a large proportion of respondents have limited participation in training and capacity-building programs. Gill nets (“sigay”) and fyke nets (“banwar”) were the most commonly used fishing gears, reflecting a preference for nets that are moderately priced, easy to operate, and capable of providing higher catch potential. Income levels among fisherfolks were generally low, with most earning between ₱10,000 and ₱50,000.

Further analysis indicated a significant difference in fishing gear usage when respondents were grouped according to income level. Fisherfolks in higher income brackets were more likely to use multiple and diversified gear types, such as seine nets (“karudkod”) and cast nets (“tabukol”), while lower-income respondents predominantly relied on gill nets and fyke nets. This demonstrates that gear selection and diversity significantly influence income levels. The findings suggest that improving access to and training on diversified fishing gear could enhance productivity and livelihood outcomes for fisherfolks in Diadi.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest should be disclosed.

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