CATCHING PROSPERITY: ASSESSING HOW PRADHAN MANTRI MATSYA SAMPADA YOJANA PROGRAM IMPACTS FISHERFOLK LIVES IN GOA.

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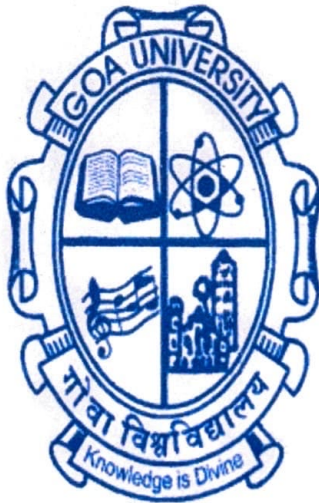## RAQUEL GONSALVES DE SA

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DECLARATION BY STUDENT

I hereby declare that data presented in this dissertation report entitled "Catching Prosperity: Assessing How Pradhan Mantri Matysa Sampada Yojana Program Impacts Fisherfolk Lives in Goa". This is based on the results of investigations carried out by me in the Economics Department at the Goa Business School, Goa University under the supervision of Ms. Sumita Datta, and the same has not been submitted elsewhere for the award of a degree by me. Further, I understand that Goa University will not be responsible for the correctness of observations/ experimental or other findings given the dissertation.

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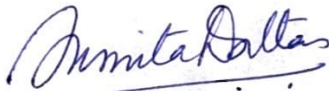Signature and Name of Student

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COMPLETION CERTIFICATE

This is to certify that the dissertation report "Catching Prosperity: Assessing How Pradhan Mantri Matsya Sampada Yojana Program Impacts Fisherfolk Lives in Goa" is a bonafide work carried out by Ms. Raquel Gonsalves De sa under my supervision in partial fulfillment of the requirements for the award of the degree of (name of degree) in the Discipline Economics Department at the Goa Business School, Goa University.

Sumita Datta 6/5/24

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PREFACE

As I embarked on this journey of exploration and discovery, I was drawn to the vibrant coastal communities of Goa, particularly the fisherfolk communities of Goa. inspired by their resilience in the face of socio-economic challenges and intrigued by the potential of government schemes to catalyze positive change.

 I set out to explore the impact of the Pradhan Mantri Matsya Sampada Yojana Scheme on their livelihood. The PMMSY aims to help them, I wanted to understand how this program impacts their lives. Through questionnaire and data analysis, I sought to uncover the tangible effects of the Pradhan Mantri Matsya Sampada on various aspects of fisherfolk livelihoods, such as income levels, socio-economic impact, and awareness of the government support program.

My gratitude to everyone who helped me along the way, especially the fisherfolk communities of Goa who shared their valuable information and the research guide guiding me throughout the research process.

It is my sincere hope that this dissertation will not only contribute to our understanding of the Pradhan Mantri Matsya Sampada Yojana Scheme impact but also serve as a tribute to the resilience, ingenuity, and spirit of the fisherfolk communities in Goa.

ACKNOWLEDGMENT

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ABSTRACT

The Pradhan Mantri Matsya Sampada Yojana (PMMSY) scheme is an important initiative designed to strengthen Indian communities of fisherfolk. The complex workings of the Pradhan Matri Matsya Sampada Yojana Scheme and its impact on the life of fisherfolk communities in Goa are examined in depth in this study.

The study primarily focused on three objectives that are to assess the impact of income change before and after the implementation of the scheme., to assess the level of awareness among fisherfolk communities, and to understand the socioeconomic profile of the fisherfolk communities. The data was collected from a sample size of 100 through structured questionnaires from the fisherfolk communities across Goa. utilizing a blend of quantitative methodologies, including descriptive statistics, ANOVA tests, and logistic regression analysis, this study unveils the intricate dynamics of PMMSY influence. The findings included that the level of income changes after the implementation of the Pradhan Mantri Matsya Sampada Yojana Scheme, and most of the fisherfolk individuals were aware of the scheme provided by the government and the impact of the Pradhan Mantri Matsya Sampada Yojana Scheme can be seen through socio-economic conditions of the fisherfolk communities.

CHAPTER I

1.1 INTRODUCTION

From ancient times, fishing has been a major source of food for humanity and a provider of employment and economic benefits to those who are engaged in this activity (FAO, 1996) fishing is a human activity that provides food, revenue, and jobs, it's a complex structure that performs in an ecological environment where economics, sociology, ecology, and biology are always interacting.

The fisheries sector in India plays a significant role in the Indian economy and provides livelihood to millions of people of fisherfolk. India is third in the world for fish output, accounting for 8% of worldwide production, and second in aquaculture production. The Fisheries sector is often referred to as a Sunrise Sector because of its potential for growth and development. The sector has the potential to contribute to poverty reduction and rural development, particularly in coastal areas and communities dependent on fishing activities. The government of India has introduced many schemes to support the fisherfolk communities such as Blue Revolution, National Fisheries Development Board (NFDB) schemes, National Scheme on Welfare of Fishermen, Rashtriya Krishi Vikas Yojana (RKVY), Pradhan Mantri Matsya Sampada Yojana (PMMSY) these schemes aims to boost the fisheries sector's contribution to food security, employment generation and economic growth of India. These schemes target different aspects of the fishery industry, including infrastructure, modernization of fishing techniques, promoting aquaculture, capacity building, and welfare measures for fisherfolk communities. By implementing these schemes the government seeks to address challenges such as overfishing, environmental degradation, and socio-economic.

1.2 BACKGROUND

Pradhan Mantri Matsya Sampada Yojana (PMMSY)

The Pradhan Mantri Matsya Sampada Yojana (PMMSY) was introduced as part of the "Atma Nirbhar Bharat" package in the year 2020 with an investment of Rs 20,050 crores, the highest ever investment in this sector. This scheme is being implemented in all states and union territories for a period of 5 years from FY 2020-2021 to FY 2024-2025.

The Pradhan Mantri Matsya Sampada Yojana (PMMSY) aims to address major gaps in fish production and productivity, quality, technology, infrastructure and management, value chain modernization, and strengthening the establishment of a strong fisheries management framework and fisheries welfare.

The PMMSY is an umbrella scheme with two separate components that is (a) a Central Sector Scheme (CS), and (b) a Centrally Sponsored Scheme (CSS). The Centrally Sponsored Scheme (CSS) is further divided into non-beneficiary-oriented and beneficiary-oriented activities under the following three categories:

1) Infrastructure and Post-harvest Management. 2) Enhancement of Production and Productivity. 3) Fisheries Management and Regulatory Framework.

Since the launch of the Pradhan Mantri Matsya Sampada Yojana in the year 2020-21, the overall fish production in the country has shown an increasing trend registering a fish production of 162.48 lakhs tonnes in 2021-22 from 141.64 lakhs in 2019-20.

1.3 INTRODUCTION TO GOA'S FISHERIES SECTOR

Fishing has been a central occupation for Goans. The fishing industry in Goa occupies a unique place. Goa with a total terrestrial area of 3,702 sq. km. has a coastal line of 105 Km. Fish is one of the most important foods and holds greater importance to the state of Goa being an integral part of Goan life and culture. It is considered a stable diet for more than 90% of the population of Goa.

The fisheries sector in Goa encompasses various activities, such as traditional fishing, aquaculture, processing, and export. The total fishermen population is about 10545 (Marine Fisheries Census of CMFRI, 2010) of which North Goa contributes about 36% and South Goa 64%. The major marine fish landing centers of Goa include Malim and Chapora from North Goa and Vasco, Talpona, Cutbona, and Betul from South Goa. The medium marine fish landing centers in Goa include Siridao, Morjim, Arambol, and Siolim from North Goa and Colva, Cortalim, Baina, Velsao, Agonda, Benaulim, and Palolem from South Goa. The major marine fisheries resources of Goa include Indian oil sardines, Indian mackerel, shrimps, tuna, flatfish, crab, butterfish, pomfrets, and squids.

In the present day, the fisheries sector in Goa stands as a pillar of the state's economy, providing employment opportunities to thousands of people, supporting local markets, and catering to the demands of the thriving tourism industry. Traditional fishing communities, alongside modern fishing enterprises and aquaculture ventures, contribute to Goa's fisheries sector. However, the sector as well as the fisherfolk communities faces challenges such as overfishing, environmental degradation, and lack of awareness of schemes by the fisherfolk communities.

1.4 OBJECTIVES

1. To understand the socio-economic profile of the fisherfolk communities.

2. To assess the impact of income change by comparing income levels before and after the implementation of the scheme.

3. To assess the level of awareness of the Pradhan Mantri Matsya Sampada Yojana Scheme among fisherfolk.

1.5 RESEARCH QUESTIONS

1. What are the socio-economic characteristics of fisherfolk communities in Goa?

2. What is the effect of the Pradhan Mantri Matsya Sampada Yojana (PMMSY) scheme on income levels among fisherfolk communities before and after implementation of the scheme?

3. What is the level of awareness of the Pradhan Mantri Matsya Sampada Yojana (PMMSY) among fisherfolk communities?

1.6 SIGNIFICANCE OF THE STUDY

The following is the significance of the study:

The study helps to analyze and highlight the importance of the Pradhan Mantri Matsya Sampada Yojana Scheme on fisherfolk communities in Goa.

This evaluation can demonstrate the scheme's efficacy in boosting income levels, access to resources, and overall well-being among fisherfolk communities. the findings can be used to drive future policy decisions, and resource allocation aimed at maximising positive outcomes for fisherfolk and improving socio-economic development in fishing communities.

The research will also help in implementing more government policies to help the fisherfolk communities.

1.7 SCOPE OF THE STUDY

The study aims to comprehensively examine the socio-economic impact of the Pradhan Mantri Matsya Sampada Yojana (PMMSY) fisheries schemes on the livelihoods of fisherfolk, alongside an assessment of the awareness levels of PMMSY among fisherfolk communities. It will be conducted in the state of Goa in India where PMMSY has been implemented.

Furthermore, the study will explore the extent to which PMMSY contributes to livelihood diversification among fisherfolk, examining alternative income sources beyond fishing activities and its impact on community development aspects such as infrastructure, education, healthcare, and social cohesion. Additionally, it will assess the level of awareness among fisherfolk regarding PMMSY objectives, components, eligibility criteria, and benefits, as well as their utilization patterns of PMMSY schemes.

1.8 HYPOTHESIS

Hypothesis for the second objective

Null Hypothesis (HO): There is no significant difference in income levels among the fisherfolk before and after the implementation of the Pradhan Mantri Matsya Sampada Yojana (PMMSY) scheme.

Alternate Hypothesis (H1): There is a significant difference in income levels among the fisherfolk before and after the implementation of the Pradhan Mantri Matsya Sampada Yojana (PMMSY) scheme.

Hypothesis for the third objective

Null Hypothesis (HO): There is no significant association between demographic factors and the level of awareness of the Pradhan Mantri Matsya Sampada Yojana (PMMSY) among fisherfolk.

Alternate Hypothesis (H1): There is a significant association between demographic factors and the level of awareness of the Pradhan Mantri Matsya Sampada Yojana Schemes (PMMSY) among fisherfolk.

1.9 LIMITATION

Technology limitations in some fishing communities, access to phones or the internet may be limited affecting communication and data collection efforts.

Due to time constraints, it is impossible to collect the relevant data from fisherfolk communities.

CHAPTER II

LITERATURE REVIEW

(Faria & Kamat, 2016) The contribution of the fishing industry to the development of the state economy has been increasing over the years. The study focuses on the growth performance of major item-wise fish exports in Goa and also a comparative analysis of the annual growth rate and compounded growth rate of fish production in Goa and India from 2001-2014. The study conducted was based on secondary data collected from different fisheries departments i.e. Directorate of Fisheries, Handbook of Statistics, Department of India, Fisheries Journal, and Food and Agricultural Organisation. India was the second-largest producer of fish in the world in 2013-2014. The results were as follows the compound annual growth rate of marine and inland fish production in India has fluctuated from 2001-2014. The highest marine fish catch from 1995 to 2015 were Sardines followed by mackerel.

(Dessai, 2022) The fishing industry in Goa occupies a unique place. The state holds a huge scope of fisheries development particularly through brackish water and marine fish production. The objectives include comparing and analyzing inland and marine fisheries in Goa and the second objective includes analyzing the contribution made by different varieties of marine fish to the total monetary value of fisheries. Production of marine fisheries in Goa is showing fluctuating trends.

(Johansen et al., 2019) Norway rose to fame in the world of marine aquaculture in the 1970s. Norway has a long history of harvesting, processing, and exporting seafood because of its abundant marine resources. Its extensive coastline provides marine resources, which have historically been a major source of export earnings the study highlights the significant importance of the Norwegian seafood industry to the country's economy, especially in light of global population growth, urbanization, and the increasing demand for food. It underscores the industry's growth potential, particularly in aquaculture, and its role in transitioning toward a post-oil era.

(Markus, 2010) Seafood is a top priority for international trade and its importance has increased since fisheries were introduced in the World Trade Organisation (WTO) after the WTO Doha Ministerial Conference in December 2002) following the New Economic Policy in July 1991 the election and subsequent focus on terms of trade and trade gains, seafood emerged as a significant source of foreign exchange earnings for the nation.

(Nazir et al., n.d.) Credit is required not just for the purchase of fishing equipment, ponds, facilities, and services for handling, processing, and marketing fish, but also even for the efficient daily capture, culture, handling, processing, and distribution of fish. Fisheries and aquaculture are major economic sectors in India and have grown at one of the quickest rates in the last three decades as a food production system. There are several challenges faced in fisheries development, including assessing natural fishery resources, developing sustainable technologies for fish culture, optimizing yields, improving harvest and post-harvest operations, and enhancing the socio-economic status of fishermen. It suggested that

these challenges can be addressed through credit facilities with extension agencies playing a crucial role.

(Rao et al., 2022)   In India, the fishing industry makes a significant contribution to the country. For many of the nation's economically deprived fishermen, it is a major source of profitable foreign cash and jobs. Inland capture fisheries and aquaculture are vital to the nation's millions of fishermen. The number and quality of the Indian fishery. India ranks fourth globally in terms of fish output and is the world's second-largest producer of inland fish. In Goa, the fishing sector is crucial the vast biological resource is essential to the existence of many people and is also very important to the state's economy. The study mentioned there is a wide variety of fish in Goan waterways such as megalops, anchovies, and milkfish had the fastest growth rates. The most important things for Goa's inland fishery are careful planning and ethical fishing.

(Amaralal et al., 2023) The impact of COVID-19 has been seen throughout the world; it has affected many lives and the economy around the world. The study was conducted in Sri Lanka on the impact of the COVID-19 pandemic on the fisheries sector. Many fisheries sectors around the globe have faced a complete or partial shutdown from fishing or trading in close quarters in fish markets. The findings concluded the reduction in fish prices, reduced opportunities in marketing, reduction in fishing sales, change in food and nutritional insecurity, and also livelihood diversification. The pandemic has affected the fisheries sector by reducing the production quantity and income of stakeholders.

(Baba et al., n.d.) In Jammu and Kashmir, the fishery industry is seen as a young endeavor with the potential to boost the state's economy. The state's fisheries structure has been significantly impacted by modernization, population growth in terms of economic standing, and social structure change. The research attempts to assess the expansion of the fisheries sector, taking into account its potential and importance in the state. The secondary time series data from 1980-81 to 2015-16 were collected. The findings demonstrate that the state's fish production has grown dramatically over time, with Kashmir experiencing an adverse reduction in fish productivity.

(Novak Colwell & Axelrod, 2017) Rural fisherfolk communities received a very small portion of the profits due to the influence of middlemen, lack of openness in the business process, problems with trust, and power differentials among stakeholders, they only earned a small fraction of the profits. the data was collected from fisherfolk families in the village. the study aims to identify the most prominent issues faced by the fishermen. The study revealed that the educational level attained by fishermen was low.

Parulekar (1989) the author worked on how to increase marine fish production and also suggested different strategies to fisherfolk co, communities, and the fishing industry for the future development of fisheries production in Goa.

Morkar (2014) study based on the fishery industry in Goa studied 'Prospects of the Fishery Sector in Goa'. according to his study in the year 2012, the

marine fish production in Goa was 86628 tonnes and inland fish production was 3887 tonnes from which 40000 tonnes were exported.

Jakati (2011) study was conducted in the state of Goa wherein he highlighted different types of fisheries and also varieties of fish caught in Goa.

(Goswami & Zade, n.d.) A study based on 'Statistical Analysis of Fish Production in India'. India being a diverse country it is also has diverse ecological and climatic conditions that contribute to the fishing industry. The study showed that India is a major producer of fish through aquaculture and also ranks second after China in the world.

(Kaimakoudi et al., 2014) The fisheries sector is considered one of the most globalized food industries. This study aimed to investigate the performance of fisheries exports and competitiveness among the Balkan and European countries.

Aswathy(2012) the study was based on "subsidies in Indian Fisheries methodology issue and implications for the future". The research methodology used is the secondary data. In India, the government is subsidizing the fishery industry to develop.

(Singh, n.d.) book on " Catch trends in major marine fisheries resources of Goa". the research methodology used to find the data is secondary data. The results of the study

included that the marine resources of Goa are showing fluctuating trends. Most of these resources are getting depleted.

(Pandey & Upadhayay, 2012) The study aims at providing detected information about the socio-economic conditions of fishermen which included education, employment, and income levels. In the article " Socio-economic profile of fish farmers of an adopted model aquaculture village: Kulbari West Tripura". The research methodology used was the primary data collection. the study showed that the majority of the people were of the middle age group, and their education was up to the middle level.

CHAPTER III

METHODOLOGY

3.1 INTRODUCTION

This chapter deals with the methodology adopted to study the impact of Pradhan Mantri Matsya Sampada Yojana Schemes on the lives of Fisherfolk communities in Goa.

Goa located on the western coast of India, boast a vibrant fisheries sector that has been integral to its cultural heritage and economic growth. Since the beginning Fishing has been a primary occupation for many communities in Goa. Over the years, the fisheries sector has evolved, adopting modern technologies and practices while preserving traditional fishing methods.

The fisherfolk communities faced various challenges, including overfishing, market dynamics, and lack of government support. Understanding Goa's fisheries sector is essential for assessing the impact of government schemes, such as the Pradhan Mantri Matsya Sampada Yojana on the lives of fisherfolk

The methodology employed in this study aimed to investigate the socio-economic dynamics of the fisheries sector in Goa, particularly focusing on the impact of the Pradhan Mantri Matsya Sampada Yojana scheme on fisherfolk communities.

3.2 DATA COLLECTION

Data collection was conducted through primary sources. The primary data was gathered through structured questionnaires from fisherfolk communities across Goa with a sample size of 100. The data was also collected from households. The questionnaire aimed to capture information on household income, the awareness level of the scheme, and socio-economic indicators.The analysis of the collected data involved both descriptive and inferential statistical methods. Descriptive statistics were used to summarize the characteristics of the fisherfolk communities including demographic profiles and socio-economic indicators.

Inferential statistics, specifically Analysis of Variance ANOVA tests, were used to compare income levels before and after the implementation of the Pradhan Mantri Matsya Sampada Scheme, thus assessing the scheme's impact on household incomes.

In addition to traditional statistical techniques, logistic regression is employed in the study to examine the awareness levels of the Pradhan Mantri Matsya Sampada Yojana scheme on fisherfolk communities.

To perform the ANOVA test and logistic regression, the statistical software RStudio was utilized. RStudio offers a comprehensive platform for data analysis, providing functionalities for data manipulation, visualization, and statistical modeling.

The methodology outlined in this section provides a robust framework for investigating the impact of the Pradhan Mantri Matsya Sampada Yojana Scheme on fisherfolk communities in Goa. through a combination of statistical tools, data gathering methods, and analysis methodologies, this research aims to produce comprehensive information about the effectiveness of the scheme in supporting socio-economic development and prosperity among its beneficiaries.

CHAPTER IV

DATA ANALYSIS

In this section, I provided an overview of the data analysis process undertaken to assess the impact of the Pradhan Mantri Matsya Sampada Yojana Scheme on fisherfolk communities in Goa.

The data analysis aims to address the research objectives of analyzing income change, assessing awareness levels of the scheme, and understanding the socio-economic profile of the fisherfolk communities

To fulfill the first objective of the study which aims to understand the socio-economic profile of fisherfolk descriptive statistics have been used.

For the second objective to assess the impact of income change by comparing income levels before and after the implementation of the scheme, an analysis of variance ANOVA test method has been used The ANOVA test allows to analyze variation in income before and after the implementation of the scheme.

To address the third objective of the study which focuses on assessing the level of awareness of the Pradhan Mantri Matsya Sampada Yojana scheme among fisherfolk communities in Goa a logistic regression analysis has been used using Rstudio.

CHAPTER V

TO UNDERSTAND THE SOCIO-ECONOMIC PROFILE OF THE FISHERFOLK COMMUNITIES.

5.1 INTRODUCTION

This chapter deals with the socio-economic profile of the fisherfolk communities in Goa. The socio-economic structure is one of the most important aspects to know about their living standard, years of experience, change in income level, education attained, etc. The socio-economic structure includes age, educational qualification, monthly income, experience, and so on.

Fisherfolk communities rely on fishing and other activities related to fishing for their livelihoods. Understanding their socio-economic conditions helps identify factors that affect their income stability, food security, and overall well-being. as this is important knowledge for designing interventions and policies aimed at improving livelihoods and reducing poverty among fisherfolk.

PMMSY aims to increase fish production, and productivity in the fisheries sector, thereby boosting the income levels of fisherfolk. Through various aspects such as training programs for people, infrastructure development, and promotion of aquaculture. PMMSY recognizes the importance of social empowerment in fisheries development.

5.2 DESCRIPTIVE ANALYSIS

FIGURE 5.2.a AGE OF THE RESPONDENT
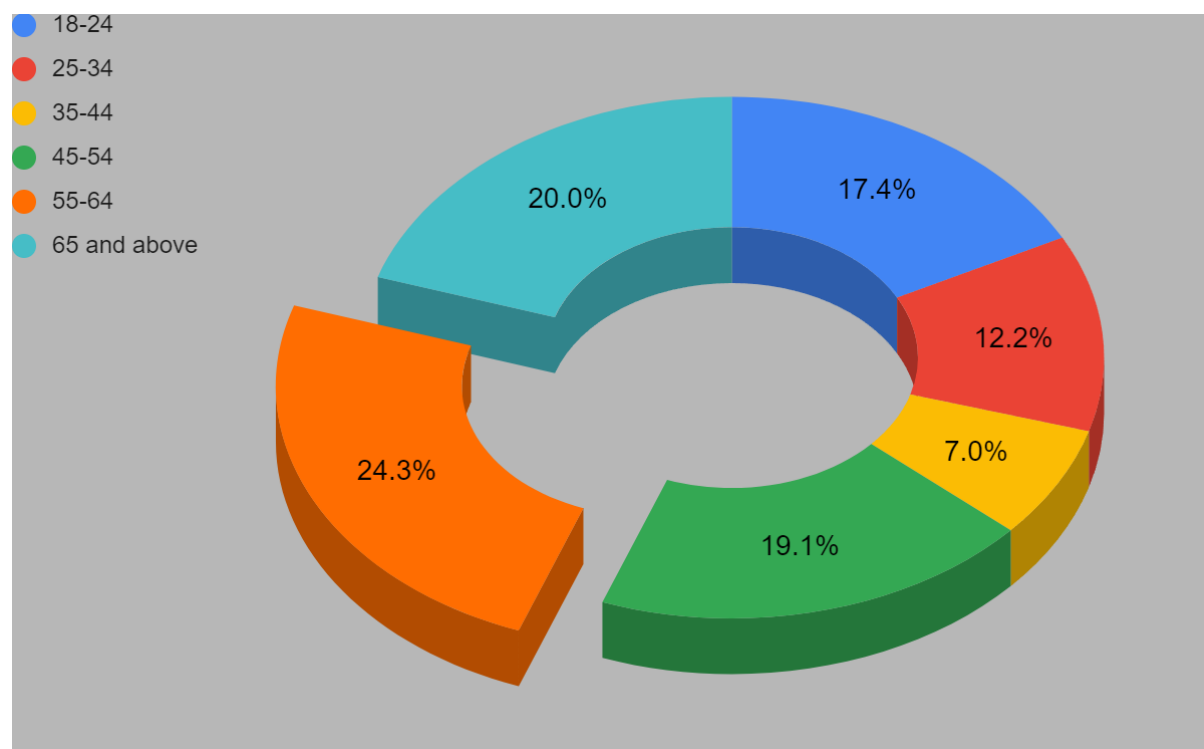
(Sources – Field Survey)

Graph 5.2.a represents the age-wise distribution of the fisherfolk communities in Goa who are engaged in fishing-related activities.it is seen that out of 100 respondents majority of the fisherfolk belong to the age group between 55-64 years which is 24.3%. this group might have been practicing fishing-related activities in past years. People above the age of 65 and above are also engaged in fishing activities such as fish selling in the market representing 20.0%. people in the age group of 45-54 represent 19.1%. representing 17.4% of the total respondents, this age group between 18-24 includes young individuals who may be joining the fishing profession or carrying out the family tradition who want to enter to fisheries sector and contribute to their family's livelihood.

The age group between 25-34, accounts for 12.2% of the respondents, individual in this age group are likely to constitute a significant portion of the active workforce within fisherfolk communities. It is noted that the least number of fisherfolk communities are in the age group between 35 and 44, the reason for this is the employment of youths in other sectors like tourism, government jobs, etc. rather than fishing activities.

FIGURE 5.2.b EDUCATION LEVEL ATTAINED BY FISHERFOLK COMMUNITIES
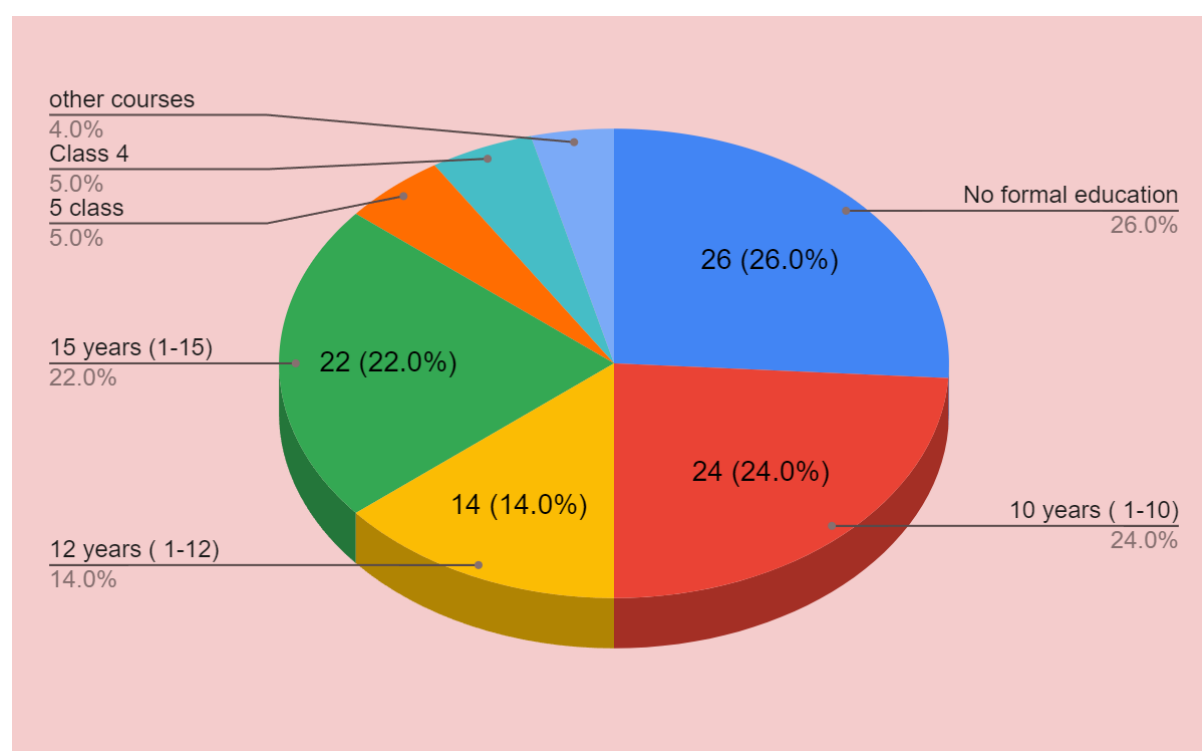
(Sources Field-Survey)

Figure 5.2.b In the above pie chart the level of education attained by the fisherfolk communities is shown. Within the fisherfolk communities a significant portion of individuals representing 26%, have not had access to formal schooling due to various socio-economic factors. 10 years

of schooling is attained by 24% of the population, indicating the level of literacy and academic knowledge. 22.0% of the respondents have graduated from college. And 14% of the respondents have attained 12 years of schooling. 5.0% of the individuals attained only class 5 of education.

FIGURE 5.2.C TOTAL RESPONDENTS
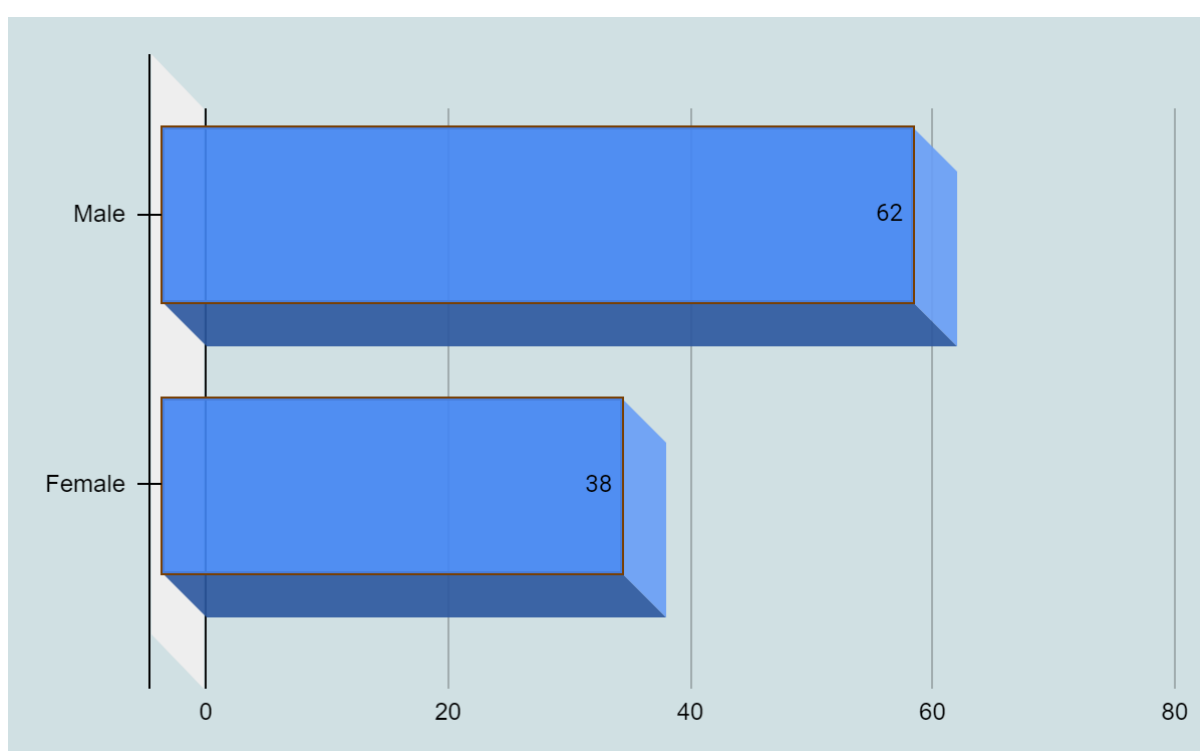
(Source- Field survey)

Figure 5.2.c represents the percentage of people engaged in fishing activities, particularly in terms of gender. Out of 100 respondents, 38% were female and were engaged in different activities related to fishing such as fish selling at a market, helping family members, etc, whereas the majority of males were

engaged in fishing activities such as boat operator, fish selling, fish processor, fish catching, etc which constitutes of 62%. Males are more active in fishing activities as compared to females in Goa but most of the females are fish sellers in the market as compared to males.

FIGURE 5.2.d OCCUPATION OF FISHERFOLK COMMUNITIES.
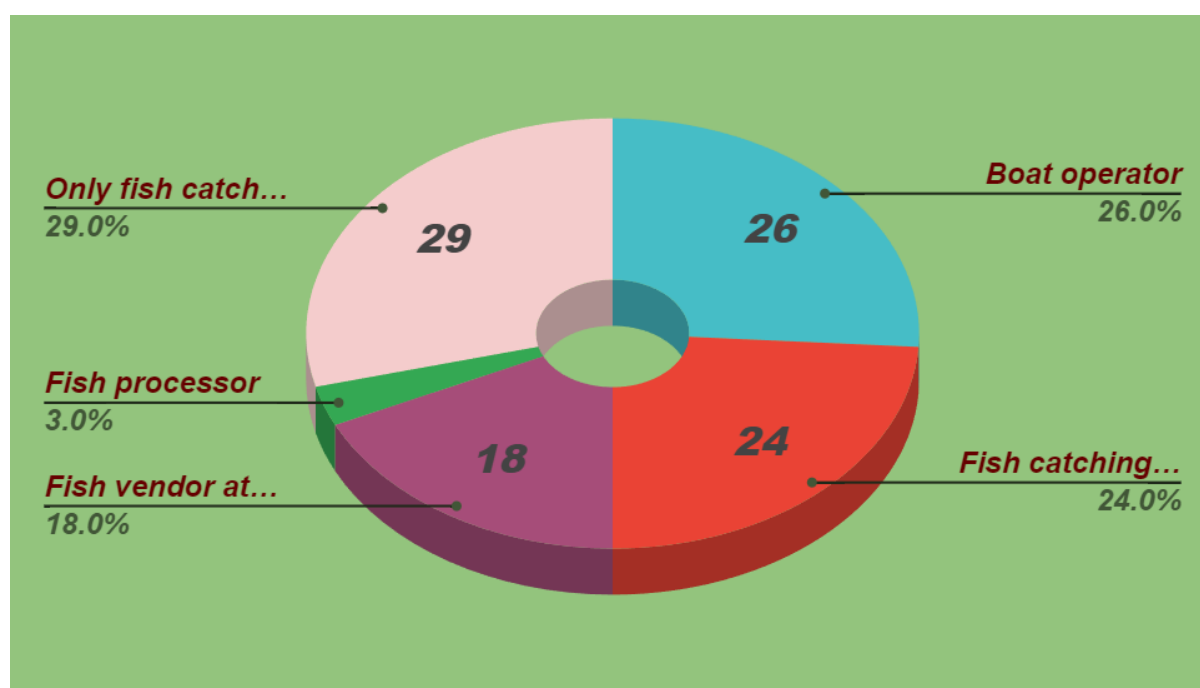
(Source – Field survey)

Graph 5.2.d illustrates the diverse occupations within the fisherfolk community, providing insights into the various roles and responsibilities undertaken by the members. The largest group within the community, representing 29% focuses solely on fish-catching activities. A significant portion of the community

representing 26% is involved in operating boats. Another substantial segment, comprising 24% engages in both catching fish and selling them directly to consumers involving tasks such as fishing, sorting, cleaning, and marketing the catch. A notable percentage of the community comprising 18% is engaged in fish vendors at market place. Whereas few individuals are engaged in fish processing.

FIGURE 5.2.e YEARS OF EXPERIENCE IN FISHING ACTIVITIES
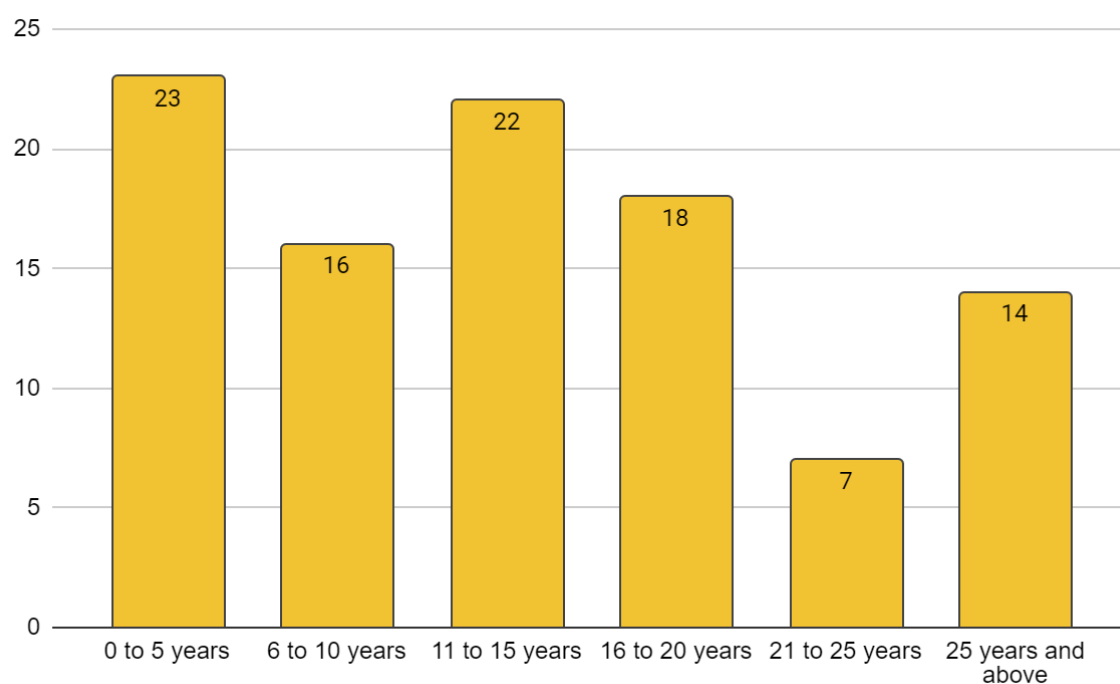
(Source- Field survey)

The above column graph represents the distribution of years of experience in fishing. Each column represents a category of years of experience and its height corresponds to the percentage of respondents falling within that category.

The category "0-5 years" has the highest percentage, indicating that the largest proportion of respondents have 0-5 years of experience. The categories "11-15 years" and "16-20 years" also have a significant percentage of 22% and 18% respectively. 16% of the respondents have 6 to 10 years of experience, whereas only 7% are engaged in fishing activities for 21 to 25 years.

FIGURE 5.2.f HOUSEHOLD SIZE
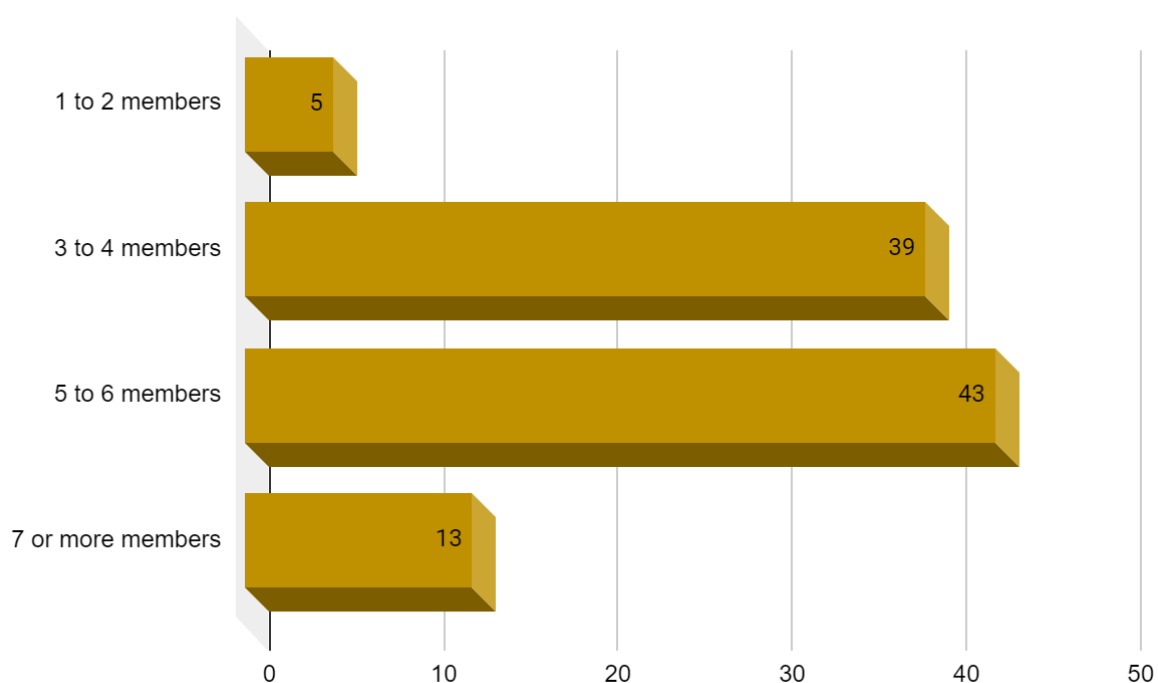
(Source- Field survey)

Figure 5.2.f represents the size of the household in which the individual lives, as the household size can estimate the financial stability or how can a person live in the family, by studying the household size one can easily understand the socio-economic condition of the individual. The majority of the fisherfolk communities live with 5 to 6 members which is 43% and 39% of individuals live with 3 to 4 members in the house. Whereas 13% of individuals live with 7 or more members and very few families of about 5% live with 1 or 2 members.

FIGURE 5.2.g RESIDENTIAL PATTERNS OF FISHING POPULATION IN GOA.
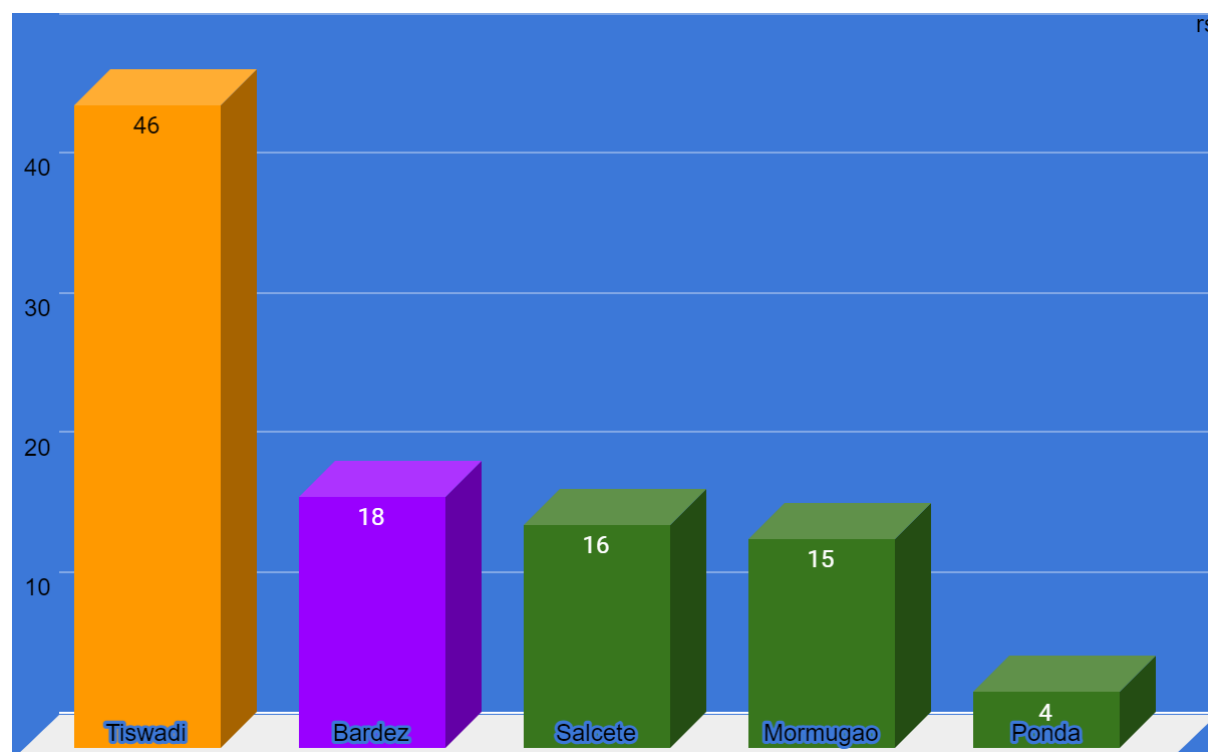
(Source-Field survey)

The graph represents the residential patterns of the fishing population in Goa. The data collected from 100 respondents found that major of the fisherfolk residents in Tiswasi taluka are 46% whereas 18% in Bardez 16% live in Salcete and very few in Ponda about 4%.

FIGURE 5.2.h SOURCES OF INFORMATION ABOUT THE SCHEME.
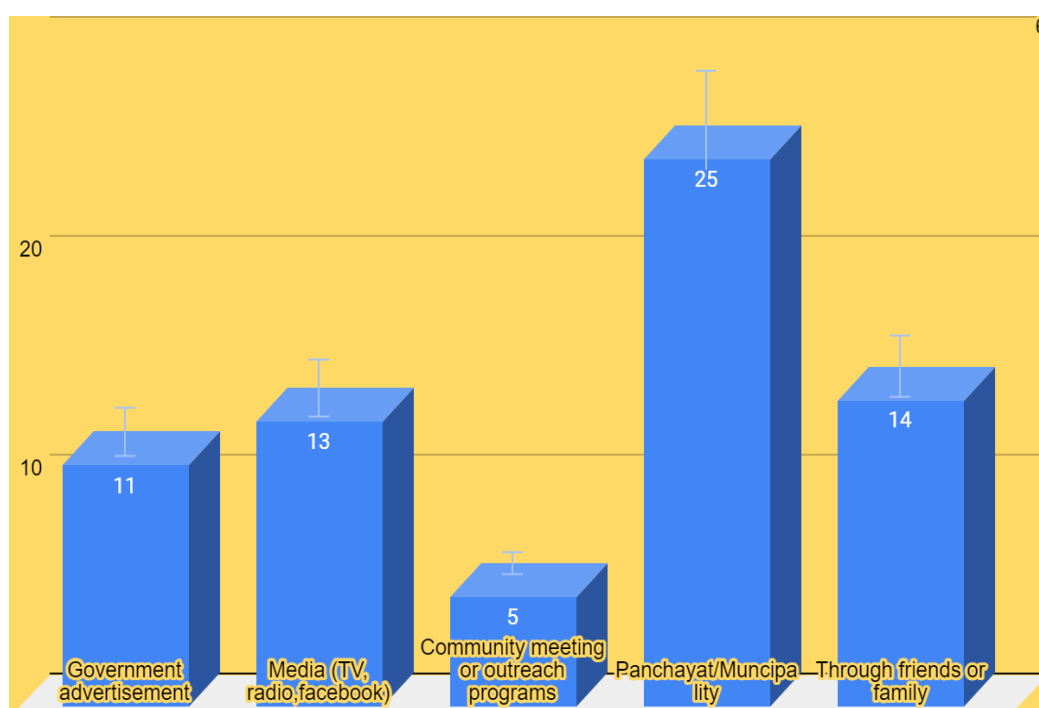
(Source-Field survey)

The figure represents the answers from the respondents to the question from the question "How were you aware of the Pradhan Mantri Matsya Sampada Yojana Scheme?" from the above graph majority of the people were aware of schemes through Panchayats and Municipality the reason can be that Panchayats/Municipality are increasing the awareness of the schemes to the people so that they can make the best use of it. 14% of the individuals were aware through friends and family, also media plays a very important role in advertising the schemes and

making people aware of the services provided by the government. 11% of the individuals were aware through government advertisements and only 5% of the people were aware through community meetings or outreach programs. Therefore awareness is important to avail of any schemes or services provided by the government.

FIGURE 5.2. i AVAILED SCHEME
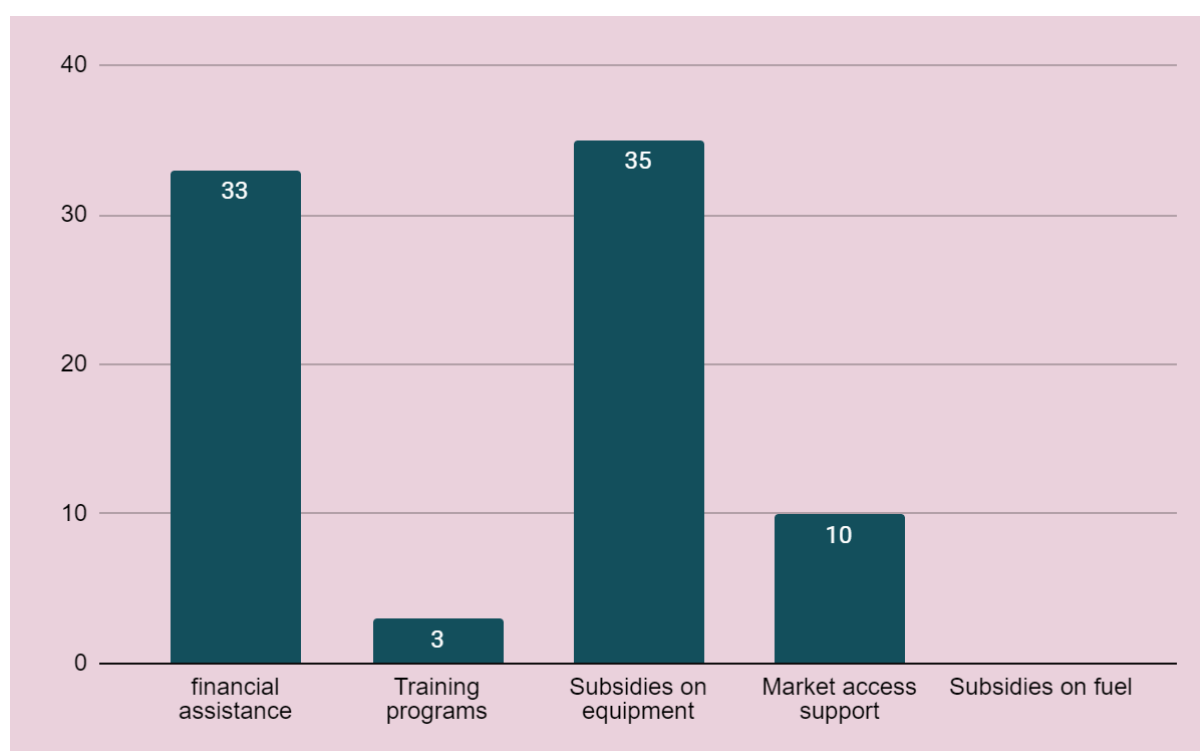
(Source-Field survey)

the figure illustrates in which fisherfolk communities are more benefitted from schemes. 35% of the fisherfolk individuals benefit from subsidies on equipment which the government provides with equipment in subsidies rate. 33% of the individuals have benefitted from financial assistance whereas 10% of the people

have benefitted from market access support and only 3 percent have benefited from training programs.

FIGURE   5.2.j INCOME CHANGE DURING OFF-SEASONS
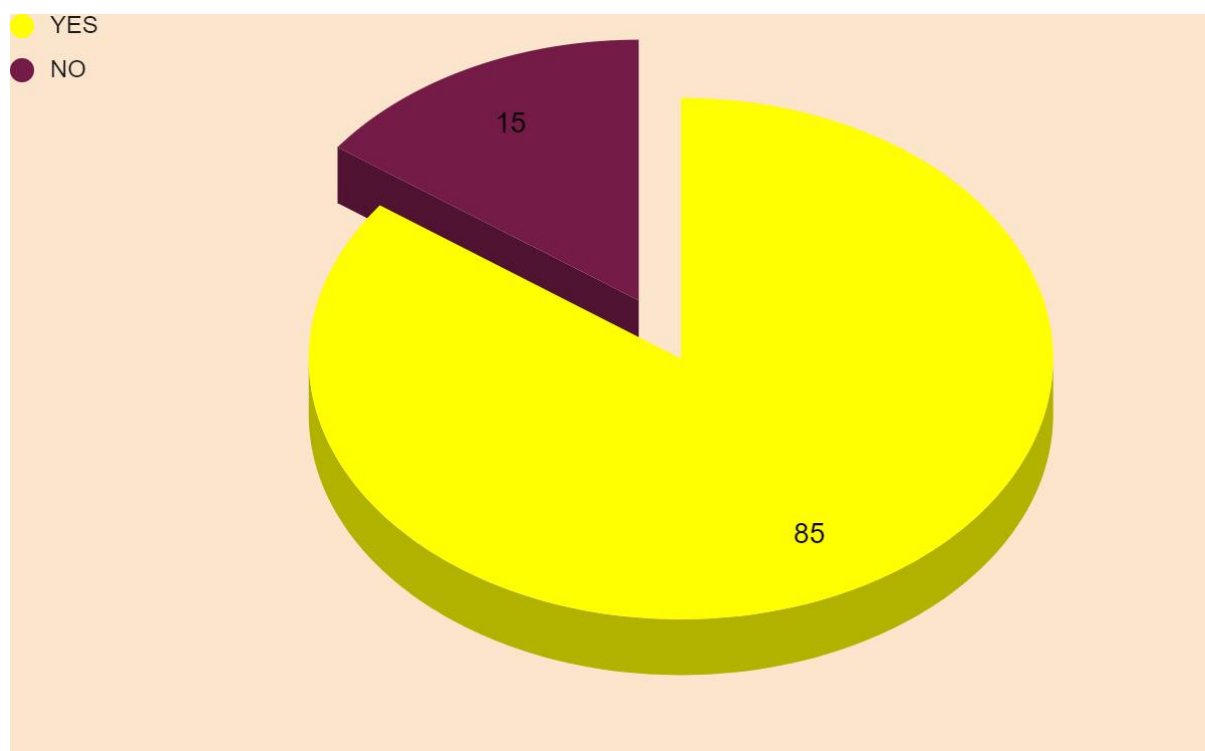
(Source-Field survey)

The above graph shows how the people who are engaged in fishing activities and how their income is affected during off seasons such as Shrawan, lent season, and the fishing ban.

The majority of the individuals engaged in fishing activities their income affected the reason could be because of less demand for fish during

Shrawan as well as the lent season and fishing ban they have no permission to venture into the sea.

Whereas 15% of an individual's income is not affected by the fishing ban or the lent season.

TABLE 5.2.1 IMPACT RATING OF INCOME CHANGE DURING OFF-SEASON

How much does it affect	percentage
1 lowest	7%
2	6%
3	30%
4	38%
5 Highest	15%

(Source -Field survey)

Table 5.2.1 shows the impact of the off-season on a scale of 1 to 5, 1 represents the lowest, and 5 represents the highest level of effect. The majority of the individuals have a scale from 3 to 5, which means the off-season especially shrawan and lent season affects the income of the fisherfolk communities.

FIGURE 5.2.k IMPACT OF FISHING INCOME ON HOUSEHOLD FINANCES.
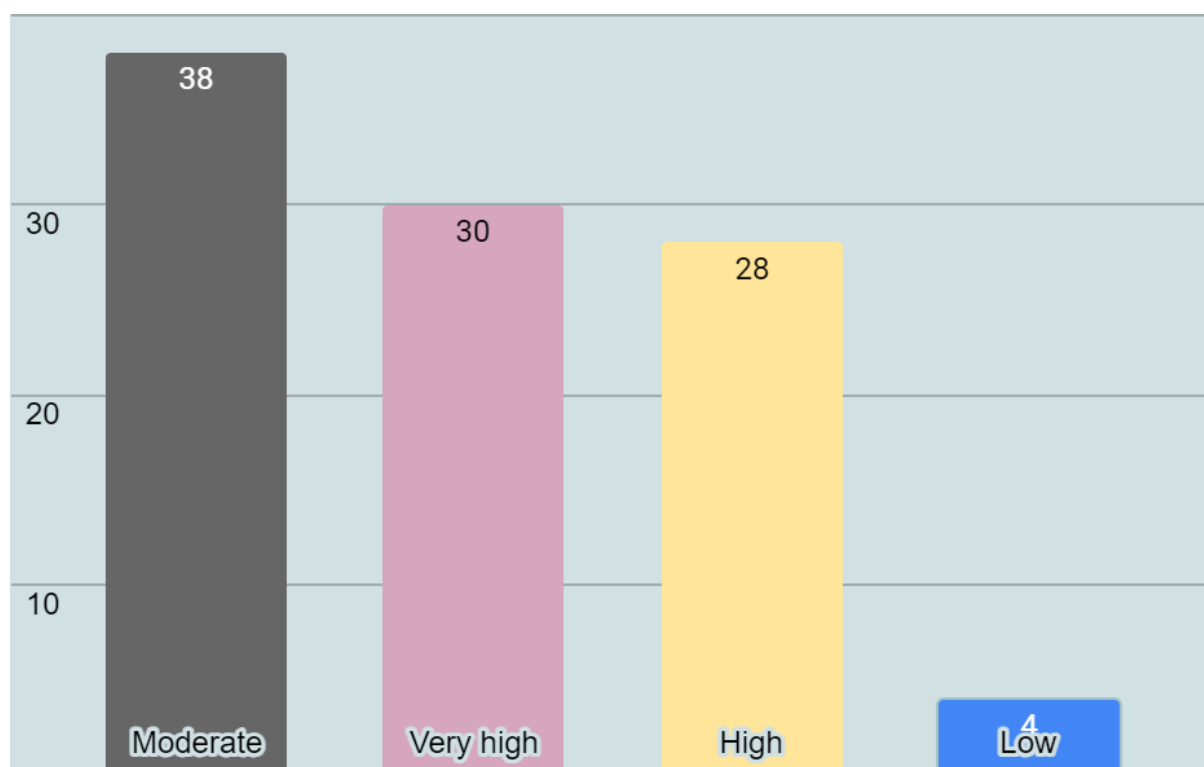
(Source-Field survey)

The figure illustrates the impact of fishing income and whether it is benefitting the household finances. Out of the 100 respondents, 38% of individuals feel that it contributes moderately. 30% of individuals feel that income from fishing contributes very highly and 28% of individuals feel that it contributes a high level to a financial household.

TABLE 5.2.l IMPACT FISHING INCOME ON EDUCATION AND HEALTH
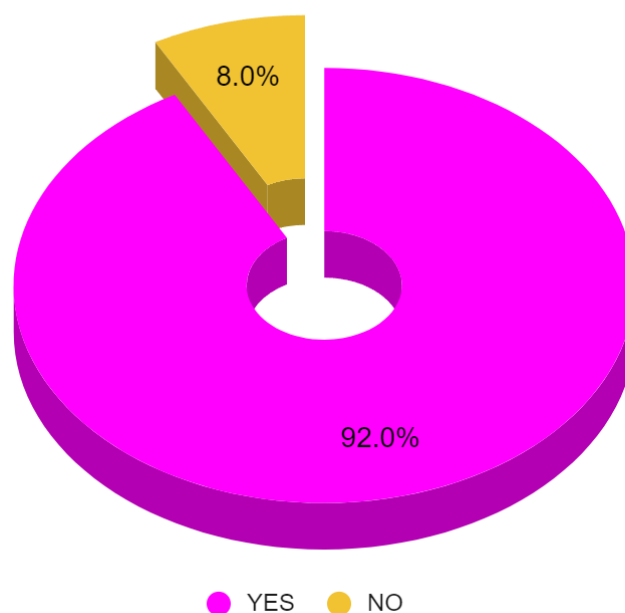
(Source-Field survey)

The above graph contains information about income levels and whether it leads to better access to education and healthcare. Of the 100 respondents 92% of the respondents believe that the improvements in income levels lead to better access to education and healthcare.

Whereas only 8% of the respondents felt that the income level does not contribute to education and healthcare.

FIGURE 5.2.m UTILIZATION OF INCOME FROM FISHING ACTIVITIES
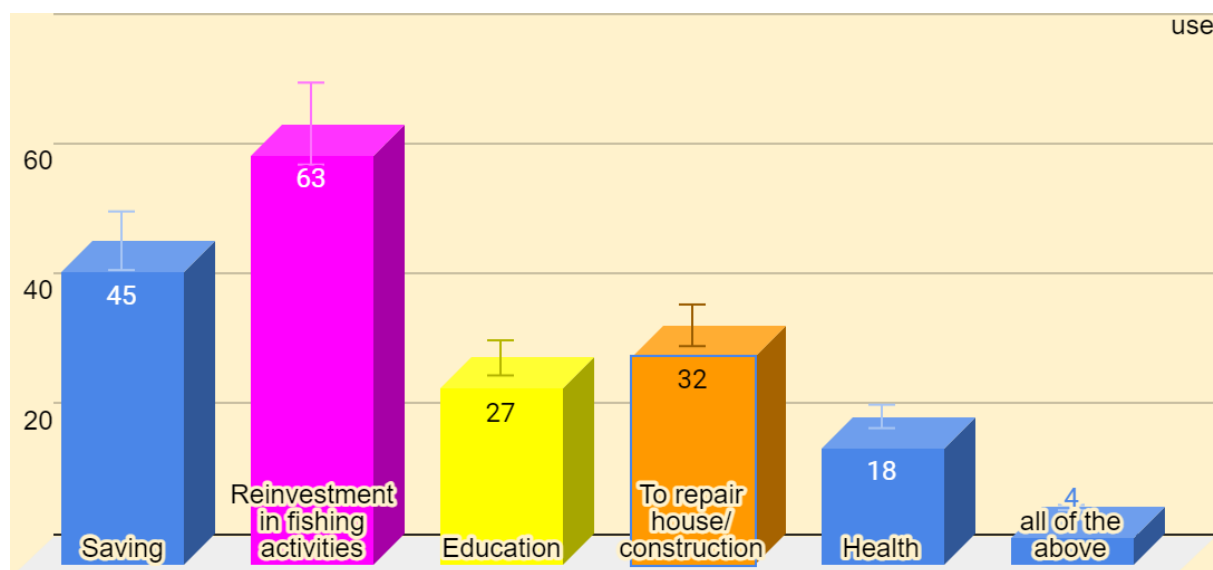
(Source-Field survey)

The figure shows the utilization of money from fishing activities. Most of the fisherfolk individuals reinvest money in fishing activities; about 63% and 45% of individuals save the money whereas 32% of them spend the money to repair houses or to construct 27% spend on children's education and 18% on health.

FIGURE 5.2.n IMPACT OF PMMSY IMPLEMENTATION ON EMPLOYMENT OPPORTUNITIES IN THE FISHERIES SECTOR.
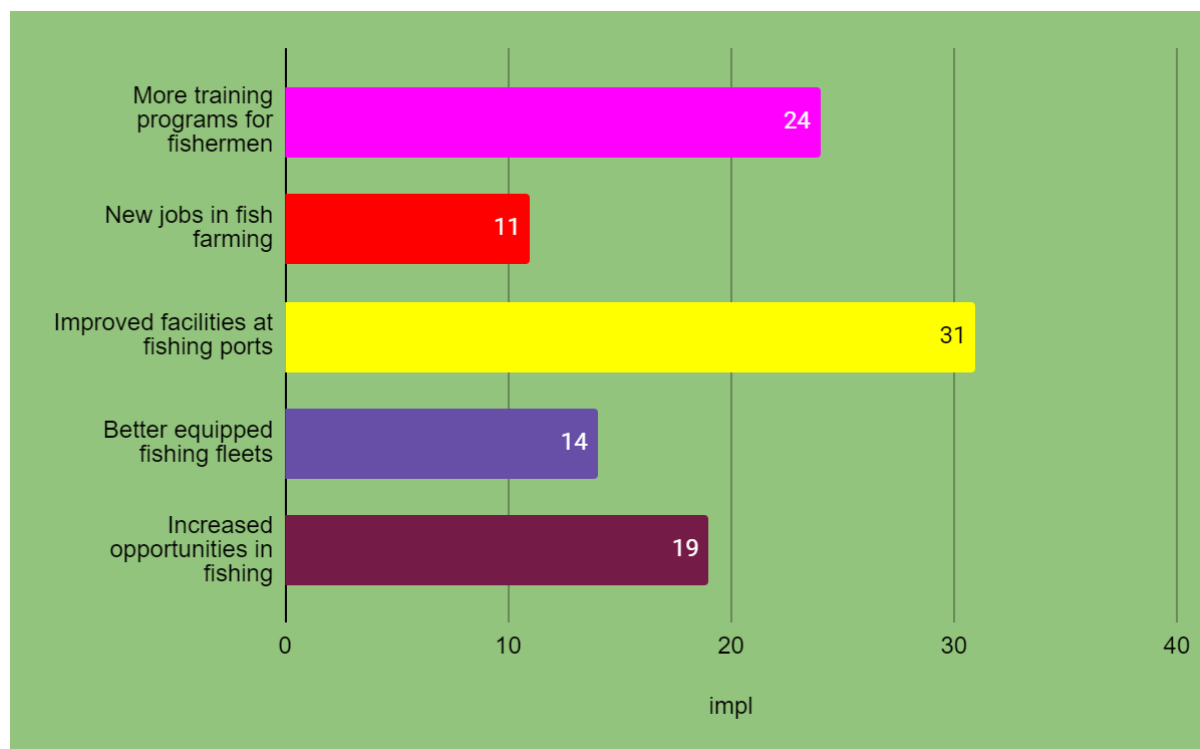
(Source-Field survey)

The graph shows the implementation of PMMSY and how it influenced employment opportunities within the fisheries sector. 31% of the individuals felt that facilities in fishing ports have increased. Whereas 24% of individuals felt that more training in programs has increased due to the implementation of PMMSY. 11 % of the respondents felt that new jobs are created in fish farming and 14%.

FIGURE 5.2.0 EMERGING EMPLOYMENT OPPORTUNITIES

RESULTING FROM PMMSY.
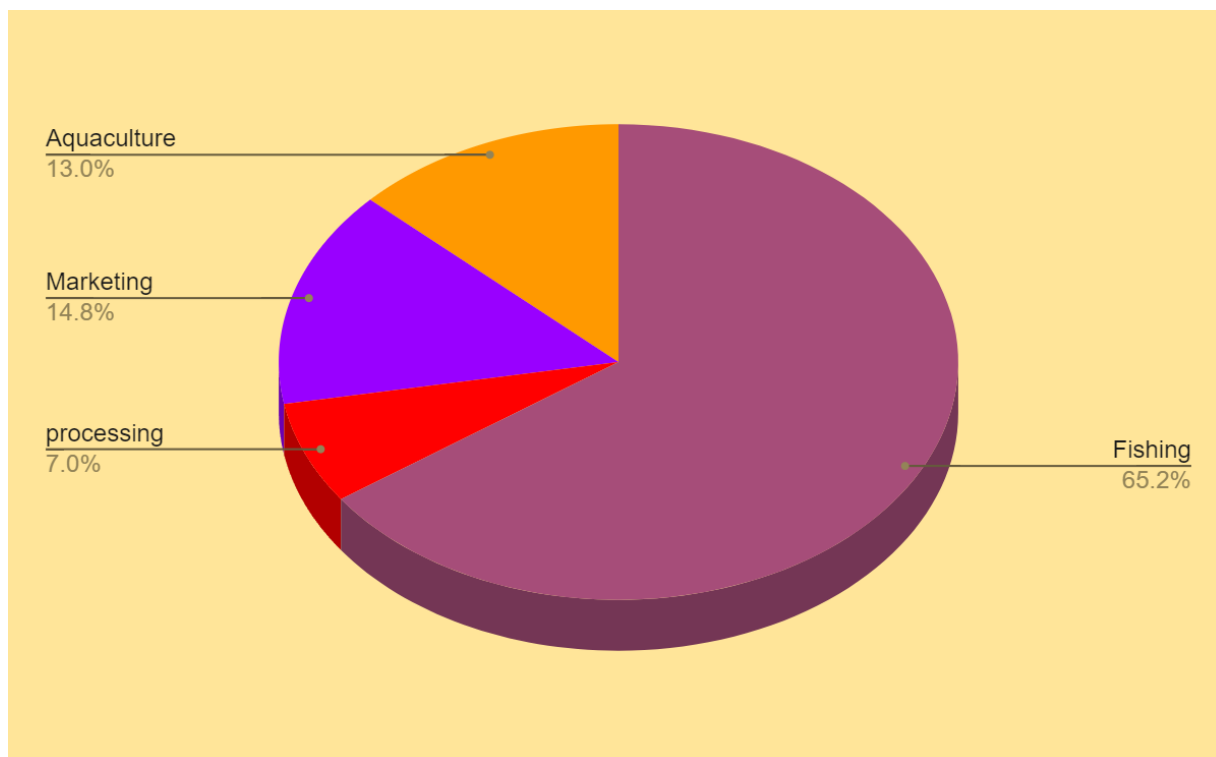
(Source-Field survey)

Due to the implementation of the Pradhan Mantri Matsya Sampada Yojana, a number of employment opportunities have expanded such as aquaculture, marketing, processing, and fishing. 65.2% of employment opportunities in fishing have been created, whereas in aquaculture 13% of jobs are been created. Marketing has expanded to 14.8% and processing to 7%.

CHAPTER VI

6.1 INTRODUCTION

This chapter deals with the second and third objectives of the study which include an analysis of variance that has been used to understand whether there is a change in the income level of the fisherfolk communities before and after the implementation of the Pradhan Mantri Matysa Sampada scheme and the logit regression is been used to assess the level of awareness of the Pradhan Mantri Matysa Sampada scheme among fisherfolk communities in Goa.

6.2 MODEL 1: ANALYSIS OF VARIANCE (ANOVA)

The second objective is to Assess the impact of income change by comparing income levels before and after the implementation of the Pradhan Mantri Matsya Sampada Yojana schemes formulated hypotheses are as follows

Null Hypothesis (HO): There is no significant difference in income levels among the fisherfolk before and after the implementation of the Pradhan Mantri Matsya Sampada Yojna (PMMSY) scheme.

Alternate Hypothesis (H1): There is a significant difference in income levels among the fisherfolk before and after the implementation of the Pradhan Mantri Matsya Sampada Yojana (PMMSY) scheme. To test these hypotheses, an ANOVA test was conducted with the following model

```
model1 <- aov(aincome ~ bincome, data = INCOME)
```

TABLE 6.2.a BEFORE AND AFTER INCOME

ANOVA

Before income	After income
2	2
2	4
1	2
4	4
2	3
0	0
0	6
3	5
0	3
6	6
0	0
4	3
3	3
2	3
2	4
4	5
4	4
2	2
0	0
3	4
0	0
2	4
5	4
5	4
3	5
6	3
0	0
2	0
0	0
2	3
4	5
2	0
1	0
2	2
2	4
1	2

6	6
5	4
2	2
1	2
5	6
6	5
0	6
5	6
6	6
0	0
5	6
5	5
5	5
5	5
6	5
1	2
2	2
3	4
6	5
0	6
0	5
6	5
6	5
6	5
6	6
5	6
5	5
6	6
6	6
6	5
3	6
0	6
6	6
6	5
6	5
5	5
5	6
4	5
0	6
6	6
0	6
6	6
6	6
5	5

6	6
0	6
1	0
2	0
5	6
0	5
6	6
6	5
5	5
4	5
4	5
5	5
5	4
3	4
5	4
6	5
3	5
5	6
6	6

1 represents below 5000

2   represents 5000 -10,000

3   represents 10,000-15,000

4   represents 15,000 – 20,0000

5   represents 20,000 – 30,000

6   represents 40,000 – 50,000

Table 6.2.b ANOVA TABLE

Assessing the Impact of the PMMSY Scheme on Fisherfolk Income Levels

```
-------------------------------------------------------------
          Df   Sum Sq   Mean Sq   F value   Pr(>F)
-------------------------------------------------------------
bincome    1   128.6    128.61    50.53    1.92e-10 ***
Residuals  98  249.4    2.55
-------------------------------------------------------------
```

Note: Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

To test the second objective Analysis of Variance (ANOVA) was used. Anova, which stands for Analysis of Variance is a statistical test used to analyze the difference between the means of more than two groups. A one-way ANOVA uses one independent variable, while a two-way ANOVA uses two independent variables.

The model output indicates that the p-value associated with the "bincome" (before income) is extremely small (1.92e-10) which is far less than the conventional significance level of 0.05. this suggests strong evidence against the null hypothesis.

The f-statistics value computed by the ANOVA test is 50.53. this statistic measures the ratio of the variance explained by the model to the variance left unexplained. Based on the ANOVA results, since the p-value is less than 0.05 we reject the null hypothesis This implies that the Pradhan Mantri Matsya Sampada Yojana scheme has had a statistically significant impact on

income levels among fisherfolk. Therefore, our findings provide empirical support for the effectiveness of the PMMSY scheme in improving the income levels of fisherfolk. Therefore we reject the null hypothesis.

6.3 MODEL 2: ANALYSIS USING LOGIT REGRESSION

The third objective is to assess the level of awareness of the Pradhan Mantri Matsya Sampada Yojana Scheme among fisherfolk. To understand this, an online survey was conducted among fisherfolk communities in Goa. wherein 100 respondents were surveyed and they were asked whether they are aware of the schemes of the Pradhan Mantri Matsya Sampada Scheme.

The following were the hypothesis

Hypothesis for the third objective

Null Hypothesis (HO): there is no difference in the level of awareness of the Pradhan Mantri Matsya Sampada Yojana (PMMSY) among fisherfolk.

Alternate Hypothesis (H1): There is a difference in the level of awareness of the Pradhan Mantri Matsya Sampada Yojana (PMMSY) among fisherfolk.

The following model was created:

(Model2: Aware = B0 + B1 Education level + B2 Gender +   B3 expersq + B4 income + B5 Exper + B6 Households size + B7Occupation.)

Dependent variable Yi = Awareness

Independent variable:

X1i = Education level

X2i = Gender

X3i = expersq

X4i = Income

X5i = Experience

X6i = Household size

X7i = Occupation

TABLE 6.3.a RESULTS OF THE LOGIT MODEL.

Variables	Coefficients	Standard- error	p-value
Education	0.48981	1.832	0.0669 .
Gender	0.08666	0.123	0.9023
Expersq	0.30791	1.963	0.0497*
Income	-0.25583	-1.509	0.1313
Exper	-1.6042	-2.101	0.0356 *
Household Size	-0.09829	-0.238	0.8117
Occupation	-0.7575	-1.603	0.1089

From the above table 7.2.a, the following are the results :

Education has a positive coefficient, suggesting that higher education levels are associated with higher odds of the outcome

Gender has a positive coefficient, but is not statistically significant that is p-value is more than 0.05 indicating that gender may not be a significant predictor of the outcome.

Experience squared has a positive coefficient and is statistically significant suggesting a nonlinear relationship between experience and the outcome.

Income has a negative coefficient, implying that higher income is associated with lower odds of the outcome, but the relationship is not statistically significant.

Experience has a negative coefficient and is statistically significant ($p < 0.05$), indicating that higher levels of experience are associated with lower odds of the outcome.

Household size has a negative coefficient, suggesting that larger household sizes are associated with lower odds of the outcome, but the relationship is not statistically significant.

Occupation has a negative coefficient, indicating that certain occupations are associated with lower odds of the outcome, but the relationship is not statistically significant.

From the above results of the multiple logit model, the variable experienced squared and the experience is a statistically significant predictor of awareness. But logit coefficients by themselves mean nothing until and unless they are converted into exponential values. To interpret the coefficients in terms of odds ratios, these coefficient values have to be modified into exponential values. This is because GLMs model the log odds, so exponentiating gives the odds ratios and to get the multiplicative effect on the response variable. if the odds ratio is greater than 1, it means the likelihood of the outcome occurring as the predictor variable increases and vice-versa.

TABLE 6.3.b EXPONENTIATE COEFFICIENT

variables	Exponentiate values
Education	1.632006109
Gender	1.090525838
Experience squared	1.360578531
Income	0.774273584
Experience	0.201050331
Household size	0.906386014
Occupation	0.468837056

After converting the co-efficient values into exponential values, it can be stated that for every one-unit increase in education, the odds of the outcome variable increase by 1.63 times, holding all other variables constant. which means higher levels of education are associated with higher odds of being aware.

The exponentiated coefficient for gender suggests that being in a certain gender category increases the odds of the outcome variable by approximately 1.091 times compared to the reference gender category

The exponential value for experienced squared is 1.361, each unit increase in squared term of experience leads to approximately 1.361 times higher odds of the outcome variable, holding all other variables constant. For every one-unit increase in income, the odds of the outcome variable decrease by approximately 0.774 times. In other words, higher income is associated with lower odds of experiencing the outcome.

With each one-unit increase in experience, the odds of the outcome variable decrease by approximately 0.201 times. This implies that as experience increases, the likelihood of the outcome decreases significantly.

The exponentiated value of household size is 0.906, each additional member in the household is associated with approximately 0.906 times lower odds of the outcome variable occurring.

Individuals in the occupation category have approximately 0.469 times lower odds of experiencing the outcome compared to the reference occupation category.

 however overall education and experience play significant roles in determining awareness levels, with higher levels of education and certain levels of experience being associated with greater odds of awareness. However, income, gender, household size, and occupation do not show significant effects on awareness in this model.

CHAPTER VII

FINDINGS, SUGGESTIONS, and CONCLUSIONS

7.1 FINDINGS

The data was collected from the 100 respondents belonging to the fisherfolk communities of Goa. the findings include as following:

Due to the implementation of the Pradhan Mantri Matsya Sampada Yojana Scheme, a majority of the people benefitted from the schemes such as financial assistance, training programs, and infrastructure development.

 The majority of the individuals who are engaged in fishing-related activities are in the age group of between 55-64.

The majority of the people engaged in fishing communities belong to Tiswadi taluka in Goa which constitutes 46% followed by Bardez 18%.

62% of the Males are engaged in fishing activities as compared to 38% of females. The majority of individuals are fish-catching at 29% followed by boat operators at 2about 23% of individuals have 0 to 5 years of fishing experience followed by 11 to 15 years of experience at 22%.

in the study conducted it was found that 56% of the respondents attended the training programs or awareness campaigns conducted by the government related to the PMMSY scheme.

The income of the respondents has increased since the implementation of the PMMSY. Due to income change individuals have better access to education and healthcare facilities.

The majority of 63% of the respondents reinvest their money in fishing activities to buy new boats, nets, fuel, etc.

The level of education and experience play key roles in determining awareness level.

Individuals were aware of the scheme through Panchayat/ municipality and friends and family.

In the study, it was found that the majority of fisherfolk have availed of strengthening of safety and security of fishermen.

It was also found that during the off-season the income of the fisherfolk communities was affected due to low demand for fish.

Due to the implementation of PMMSY employment opportunities within the fisheries sector have increased in terms of more training programs, and improved facilities at fishing ports.

7.2 SUGGESTIONS

Most of the respondents have encountered difficulties while applying for benefits or assistance under the Pradhan Mantri Matsya Sampada Yojana scheme such as difficulty in understanding eligibility criteria, complicated application forms, and lack of support from working staff.

There have been also challenges faced by fisherfolk communities, especially while accessing fishing equipment or resources provided under PMMSY. Delays in providing equipment or resources, rejecting the application form, and no proper guidelines.

The respondents suggested some of the improvements which the government can take note of and take action against it, improvements include such as simplifying the application form so that people can easily apply and get benefits from it.

The working staff in government offices of the fisheries sector should provide assistance and guidance to applicants.

They should increase the awareness of schemes through social media platforms such as Facebook, Instagram, and App so that people are aware of the schemes.

7.3 CONCLUSION

The study focused on how the Pradhan Mantri Matsya Sampada Yojana scheme impacts the lives of fisherfolk communities in Goa. most of the respondents' level of income changed after the implementation of the PMMSY scheme, and most of the fisherfolk communities were aware of the schemes provided by the government through different sources such as government advertisements, Panchayats/Municipality, and through friends and family. The study provided insights into the lives of fisherfolk communities. The majority of the individuals engaged in fishing activities were between the age group 55-64. The fishing-related income contributes to overall household finances and also some reinvest the money in fishing activities and spend money on education and healthcare. Therefore the Pradhan Mantri Matsya Sampada Yojana scheme has the potential to significantly impact the lives of fisherfolk communities in Goa. through its objectives of enhancing fish production and increasing employment opportunities in the fisheries sector., the PMMSY schemes aim to bring about positive socio-economic changes and improvements in the lives of fisherfolk.

ANNEXURE

1)Age of the respondent_____

2) Gender

[   ]   Male   [   ]   Female

3)Education

    No formal education

    10 years

    12 years

    15 years

    Or other courses attained

4) Resident

- o   Tiswadi
- o   Bardez
- o   Salcete
- o   Mormugao
- o   Pernem
- o   Quepem

- Ponda

- Canacona

- Bicholim

- Satari

- Dharbandora

5) Occupation

- Only fish-catching

- Fish catching and selling

- Boat operator

- Fish vendor at market (only selling)

- Fish processor

- Other

6) Household size

- 1 to 2 members

- to 4 members

- 5 to 6 members

- 7 or more members

7) How many years of Fishing experience do you have?

o 0 to 5 years

o 6 to 10 years

o 11 to 15 years

o 16 to 20 years

o 21 to 25 years

o 25 years and above.

8)What kind of equipment and technology are been used in fishing?

Traditional equipment ☐   Modern technology ☐   ☐ Both

9) Are you aware of the scheme provided by the government? (PMMSY)

Yes ☐   No ☐

10)How did you become aware of PMMSY?

o Government announcements

o Government advertisement

o Media (TV, newspaper, radio)

o Community meetings or outreach programs

o Panchayat/ Municipality

o Through friends or family

11) Have you personally availed any benefits from the fisheries sector schemes?

Yes ☐   No ☐

12) What benefits have you experienced from the fisheries sector schemes?

- o Financial assistance

- o Training programme

- o Subsidies on equipment

- o Market access support

- o Others

13) What specific schemes have you availed of?

- o Development of ornamental and recreational fisheries

- o Technology infusion and adaption

- o Infrastructure and post-harvest management

- o Markets and marketing infrastructure

- o Development of deep-sea fishing

- o Aquatic health management

- o Strengthening of safety and security of fishermen.

14) Have you participated in any workshops, training sessions, or awareness campaigns related to PMMSY?

YES ☐   NO ☐

15) Do you believe that PMMSY has the potential to significantly improve the socio-economic conditions of fisherfolk and communities in your area?

YES ☐   NO ☐

16) What was your monthly average income from fishing-related activities before you availed for PMMSY?

- o Below 5000

- o 5000 – 10,000

- o 10,000 – 15,000

- o 15,000 – 20,000

- o 20,000 – 30,000

- o 30,000 – 40,000

- o 40,000 – 50,000

- o 50,000 and above

17) Before using the PMMSY, rate the overall satisfaction with the income from fishing activities on a scale of 1 to 5.

- ▪ 1

- 2

- 3

- 4

- 5

18) Has there been any change in income after the implementation of PMMSY?

YES ☐   NO ☐

19) If your income from fishing-related activities has increased since the implementation of PMMSY, what factors do you attribute this increase to?

o Increased catch or production

o Higher market prices for fish

o Access to better fishing equipment or technology

o Government subsidies or support

20) On a scale from 1 to 5, rate the overall change in income since the implementation of government fishery schemes.

- 1

- 2

- 3

- 4

- 5

21) What is the average monthly income from fishing-related activities after the implementation of income?

- o Below 5000

- o 5000 – 10,000

- o 10,000 – 15,000

- o 15,000 – 20,000

- o 20,000 – 30,000

- o 30,000 – 40,000

- o 40,000 – 50,000

- o 50,000 and above

22) Is there an income change during the off-season in fishing activities es[especially during Shrawan, lent season, or fishing ban?

YES ▭   NO ▭

23) If yes, how much does it affect from a scale of 1 to 5?

- 1

- 2

- 3

- 4

- 5

24)To what extent does your income from fishing contribute to your household's overall financial stability?

o Very high

o High

o Moderate

o Low

25)Have improvements in income levels led to better access to education and healthcare for you and your family?

YES ⬚   NO ⬚

26)How do you use the money from fishing activities

o Saving

o Reinvestment in fishing activities

o To repair house/ construction

o Education

o Health

o Others

27) How has the implementation of PMMSY influenced employment opportunities within the fisheries sector in your community?

o More training programs for fishermen

o New jobs in fish farming

o Improved facilities at fishing ports

o Better-equipped fishing fleets

o Increased opportunities in fish processing and sales

28) Have you observed any changes in the number of people employed in fishing-related activities since the implementation of PMMSY?

o Yes, increased

o Yes, decreased

o No change

29) What types of employment opportunities have emerged or expanded as a result of PMMSY?

o Fishing

o Processing

o   Marketing

o   Aquaculture

o   others

30) Are there any challenges or barriers hindering the creation of new employment opportunities under PMMSY?

o   Lack of training and skills development programs

o   Limited access to financial resources or credit facilities

o   Insufficient infrastructure for marketing

o   Policy and regulatory constraints

31) How has the PMMSY impacted the quality of employment within the fisheries sector?

Improved wages

o   Better working conditions

o   Enhanced job security

o   No change

o   Worsened working conditions

32) What specific difficulties have you encountered in applying for the benefits or assistance under PMMSY?

o   Difficulty understanding eligibility criteria

o Complicated application form

o Lack of support or guidance

33) Have there been any challenges in accessing fishing equipment or resources provided under PMMSY?

YES ⬜   NO ⬜

34) If yes, what were the challenges

o Delay in providing equipment

o Rejecting the application

o Others

35)What specific improvement would you suggest to make the application process for PMMSY benefits easier and more accessible?

o Simplify application forms

o Provide more assistance and guidance to the application

o Increase awareness about eligibility

o Application procedures

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