International Journal of Environmental Sciences
ISSN: 2229-7359
Vol. 11 No. 24s, 2025
https://theaspd.com/index.php

An Eco Metric Examination Of The Socio-Economic Variables Affecting Fish Pond Production In Talwara Block, Banswara District, Rajasthan

Suman Roat[1*], Lalit Chaudhary[2], Seema Bhardwaj[3]
[1]Research Scholar, Dept. of Zoology, GGTU Banswara (Rajasthan)- 327001, sumanroat5@gmail.com
[2]Associate Professor Dept. of Zoology, Leo College, Banswara (Rajasthan)- 327001, lalit540@gmail.com
[3] Professor, Dept. of Zoology, HDJ Girls College, Banswara (Rajasthan)-327001, seema377@gmail.com

Abstract
The goal of the current study was to evaluate the economic condition of fish farmers in the Banswara district's Talwara block between November 2022 and November 2024. A systematic random sampling technique was engaged to select 60 fish farmers.The goal of the study was to evaluate the means of subsistence for fishermen in the Banswara district who operate in various fish production systems. It concentrated on factors including age, family size, community, education level, farming experience, and credit source. The data were collected through personal interview with the help of interview schedule by contacting 60 beneficiaries. The result revealed that majority (50.00%) of the beneficiaries having farming experience of 1 to 5 years, followed by 26.66 per cent of the beneficiaries were educated maximum (71.66%) out of which 26.66% up to secondary school level, while 50.00 per cent of the beneficiaries were having medium land holding. While 46.66 percent of the beneficiaries having medium family size.The analysis found that the age range of 41-50 accounts for the maximum percentage of individuals (33.33%). Fish farming has improved the socioeconomic circumstances of almost 92% of the farmers who reported such improvements. The main obstacles were found to be a lack of funding for fish farming, high costs for fish feed, inadequate marketing facilities, and a lack of information about fish farming.As a result, these socioeconomic issues also need to receive careful consideration if fish production is to run well. Aiming to investigate the socio-economic aspects of various fish production techniques in the context of freshwater aquaculture in Patela pond, Banswara district, the current study was conducted in light of these arguments.The study suggested that policy measures take into account the following: improved access to high-quality fingerlings and fish feed for farmers; encouragement of fish farmers to form cooperatives to facilitate fish marketing; and a stronger focus on extension services to teach farmers better techniques for managing and farming fish.In order to achieve food self-sufficiency and provide Banswara rural population with a variety of employment options, freshwater fish farming has emerged as a viable and profitable approach.
Key words *Fish farmer, Fish production,Livelihood, socio-economic, Annual income, Talwara.*

1. INTRODUCTION

Rajasthan occupies 342,239 km2, or 10.4% of the country, making it the largest state in terms of area in India. The state has 4.23 lakh ha of freshwater and 1.80 lakh ha of salty water resources. In addition, there are 0.30 lakh ha of rivers and canals, 0.80 lakh ha of flooded areas, and 1.80 lakh ha of salt-affected areas [1]. The Banswara district is located on the state's southern edge. It is situated between latitudes 23°11' and 23°56' and longitudes 73°58' and 74°49'. It is bordered on the north by the tehsils of Dhariyawad and Pratapgarh in the Pratapgarh district; on the east by the Madhya Pradesh district of Ratlam; on the west by the tehsils of Sagwara and Aspur in the Dungarpur district; and on the south by the Madhya Pradesh district of Jhabua. It also crosses the southwest border of Gujarat State's PanchMahal district[2].

Fish farmers in Banswara district faced difficulties, but the study showed that fish pond production was economical and feasible in the state. To increase the output of fish production, those difficulties may be effectively handled. A viable and profitable strategy for achieving food self-sufficiency and providing rural residents in Banswara district with a variety of employment options is freshwater fish farming.

As an inexpensive source of animal protein, the fishing industry makes a substantial contribution to our food supply, rural communities' health, resource potential, and job opportunities. The fishing industry, which is vital to the socioeconomic development of the country, is acknowledged as a potent source of employment and cash [3]. In the union budget for 2023–24, the Indian government allotted 2248.77 crores to the fisheries sector, a 38.45% increase over the previous year's budget [4]. The vast, underutilized

resources provide great promise for increased productivity, the development of livelihoods, and the ascent to economic prosperity. Researching the socioeconomic conditions of fish farmers is essential because it influences both the practice performance results and the farming strategies that the farmers employ. Since its inception, aquaculture has received a lot of recognition for providing coastal fish farmers with a means of sustenance [5]. Fish pond production could be a realistic solution to this requirement, enhancing people's quality of life and protein sources. Fish is necessary for both income and nourishment. Patela Pond's fish availability is attained by raising the profitability and productivity of fish farmers.

In the battle against poverty, malnutrition, and food insecurity, the Rajasthan government has emphasized the importance of aquaculture. Furthermore, diversification of the agriculture sector is facilitated by aquaculture. The fishing industry makes a substantial contribution to our food supply, rural communities' well-being, resource potential, and job possibilities, and it is an inexpensive source of animal protein. It is well known that the nation's employment and social growth are greatly impacted by fishing. The potential of inland aquaculture and fisheries has not yet been completely realized, notwithstanding a rise in absolute terms. Because it produces high-quality fish utilizing the water bodies that are already there and has simple management processes, this is the most widely used form of fish farming [6].

The farm pond can significantly improve the standard of living for the agricultural community by altering crop productivity and cropping intensity. It also aids in improving the financial circumstances of farmers. Under this consideration, the current study was carried out in 2023–2024 with the aim of examining the socio-economic effects of farm ponds on improving farmers' quality of life in terms of sex, age group, marital status, household size, education, source of credit, annual income, economic status, employment type (primary and secondary), land holding, housing condition, etc.

While aquaculture and fisheries are relatively small in scale compared to other businesses, particularly agriculture, they play a significant role in creating jobs, reducing poverty, and ensuring the security of food and protein in rural areas of the state. The district that produces the most fish in the state is Banswara district and possesses the largest reservoir area. The primary objective of the National Aquaculture Strategy and the Development Plan (DoF 2015) has been the development of smallholder aquaculture production. In addition, government was exposed to a range of capacity-building and training programs that the Department was holding on best management practices for enhanced and better output as well as fish culture techniques. As a result, there has been good productivity in just the first year. Over the previous 20 years, there has been a sharp rise in aquaculture production. Large-scale commercial fish farms have contributed the most to the nation's overall fish production, with small-scale farmers contributing far less. An effective foundation for implementing the developmental program of the economically disadvantaged sector is provided by information about the socioeconomic framework of fish farmers.

Figure. 1. Map of Banswara District and Talwara Block

According to Ellis (2000) [7], the absence of sufficient and reliable data regarding the socioeconomic status of the intended audience impedes the effective execution of developmental programs. Chavai, A. M. and Shindide, S. B. (2017) [8] conducted research on the socio-economic benefits of farm ponds in improving the standard of living for the agricultural community in Maharashtra.

2. METHODS AND METHODOLOGY

2.1 Study area

The Banswara district of the Vagad region in southern Rajasthan is the site of the current investigation and it is used to specifically choose small-scale fish producers, from whom data was gathered. The study was carried out in Talwara block of Banswara district of state Rajasthan utilizing a survey schedule and frequent interviewing techniques. Three villages have been chosen for study purposes out of the 60 villages in the Talwara block.

2.2 Sampling procedure

For the study, primary data was used. Data for investigation were taken from 60 fish farmers of Talwara Block of Banswara District. Within the Talwara Block, the sample size was fixed as 20 for each of the three villages. The selection process involved spreading out the 20 farmers in each village so as to prevent clustering and avoid collecting duplicate data, even though precise randomization was not adhered to due to the unavailability of a complete sampling frame and the preference for pragmatic reasons. The current study has opted for a multistage random sampling procedure.

2.3 Data collection

Data from primary and secondary sources were gathered for the study. A preliminarily constructed questionnaire was pretested with certain pond fish farmers prior to the collection of primary data. In order to accomplish the study's goals during the pre-testing, special consideration was given to any new material included in the draft questionnaire.The final questionnaire underwent improvements, reorganizations, and modifications based on the pre-testing experience. The final questionnaire covered a variety of topics, such as the distribution of ages, the number of families, literacy rates, occupation, source of income, income level, and patterns of land ownership and holding size.Primary data were gathered through a household survey that employed a variety of analytical participatory rural appraisal (PRA) techniques, including key informant cross-check interviews and focus group discussions (FGD). To

verify the field observations, additional information was gathered, including the study area's land use statistics as well as subject-related annual reports and documents. Questionnaires with a semi-structure were used to collect the primary data. Every responder was personally interviewed at their farms and homes in order to collect data.

2.4 Data analysis

Frequency, percentage, mean, and other suitable statistical techniques were used to analyse the collected data. Information on the socioeconomic traits of fish pond producers, production costs and returns, and information on the limitations of fish pond production were all gathered through the questionnaire.The gathered data was collated, examined using Microsoft Excel, and then displayed in text, table, and visual formats to help the reader comprehend the current state of the pond fish farmers' livelihood in the area under study.

3. RESULT AND DISCUSSION

Important socio-economic characteristics that affected net income from fish pond production were amount of education, age, sex, size of male home, experience in producing fish ponds, number and size of ponds, and credit availability. Since only 14% of fish farmers had formal training, there was a deficiency in the availability of training facilities. Conversely, less fish was produced by smallholder farmers due to increased farming experience and increased distance from the market. Low water resources, loan availability, a lack of high-quality feed and fingerlings, fish theft, and fish predators were some of the issues smallholder fish producers had to deal with.

The majority of studies based on descriptive and regression analysis, according to empirical literature from developing nations, found that socioeconomic factors affecting fish production include the farmer's age, gender, farming experience, education, human labor, extension contact, access to credit, pond size, cost of land, fingerlings, and fish feed, among others. (Awoyemi and Ajiboye 2011 [9]; Okwu and Acheneje 2011[10]; Abbas and Ukoje 2009[11]; Osondu and Ijioma 2014[12]; Maina et al 2014[13]). The majority of persons engaged in fish farming increased their socioeconomic status through reservoir fish farming activities, and many pond fish farmers in rural regions have made fish farming their secondary career (Ara, 2005) [14].

This section contains a thorough analysis that was done on the parameters including sex, age group, community of fisherman, marital status, household size, education, source of credit, annual income, economic status, employment type (Primary and Secondary), Land holding, and housing conditionetc. listed below.

We selected socioeconomic variables that were related to the social-economic status of the residents (for specifics, see Tables 1, 2, 3, and 4). These variables included wealth (disposable income, percentage of relatively rich people and percentage of relatively poor people), education level (represented by variables: percentage of relatively high educated people and percentage of relatively low educated people), and other factors that may have an impact on social norms or luxury.

Based on the information presented in Tables 1, 2, 3, and 4, it was determined that the majority of beneficiaries (72.30%) had medium farming experience, while 14.25% had both low and high farming experience. Additionally, 26.66% of beneficiaries had completed secondary school education, and 23.33 percent had completed both primary and higher education. Additionally, 50.00% of beneficiaries held semi-medium land, and 30% were small farmers. Finally, 75.00% of beneficiaries had medium family sizes, and 25.00% had large family sizes. Experience in farming, education, land ownership, irrigated area, family size, social interaction, extension contact, and risk tolerance are all positively and strongly correlated with changes in the economy.

3.1 Human capital

The frequency and proportion of sex, age, marital status, community, family size, and education among fish farmers are shown in table 1. These elements have an indirect impact on fishermen's earnings.

- **Sex, age and community of fisherman**- 13.33% of the respondents were female, and the majority (86.66%) were male, according to Table 1. This suggested that the fish farming industry in the area was dominated by male farmers. Fish farming requires constant supervision and monitoring, which may be the cause of this. Olaoye et al. (2014) [15] provided additional support for this.

Table 1. Socio-economic parameters (Human capital) of fish farmer

S. No.	Socio-Economic Parameters	Frequency	Percentage (%)	Mean
1.	**Sex**			
	Male	52	86.66	
	Female	08	13.33	
2.	**Age**			
	21-30	17	28.33	42.08
	31-40	12	20.00	
	41-50	22	36.66	
	51-60	06	10.00	
	Above 60	03	05.00	
3.	**Community**			
	General	00	00.00	
	OBC	02	03.33	
	SC	25	41.66	
	ST	46	55.00	
4.	**Marital status**			
	Single	19	31.66	
	Married	37	61.66	
	Separated	01	01.66	
	Widowed	03	05.00	
5.	**Household size**			
	Up to 5 members	23	38.33	6.33
	6-10	28	46.66	
	Above 11	09	15.00	
6.	**Education**			
	Illiterate	17	28.33	
	Literate	43	71.66	
	a. primary level	11	18.33	
	b. upper primary level	12	20.00	
	c. secondary level	16	26.66	
	d. higher secondary level	03	05.00	
	e. bachelor level	01	01.66	

It suggested that the production of fish might increase the net farm income for male managers. This finding contradicted that of Boateng et al. (2013) [16], who found that while there was a substantial relationship between sex and fish farming output, the relationship was negative.

When it comes to normal company or manufacturing processes, age is a significant aspect that influences decision-making. Age was a significant factor in the fishing industry. To study the age structure, three age groups were taken into consideration: young (20–35 years old), middle-aged (36–50 years old), and elderly (51–65 years old). According to Table 1, the age groups of (41–50) and (21–30) had the highest percentage of responders (33.33% and 30.00%), respectively, based on data obtained from fish farmers. This suggested that the majority of responders were within the age range of those who were actively seeking employment and were able to make decisions and increase productivity (Maina et al., 2014). According to Ali et al. (2009) [17], the majority of fish farmers in the Mymensingh district (50%) were between the ages of 31 and 40. The age distribution of fishermen in the Sundarbans, as reported by Bhaumik and Saha (1994) [18], was roughly in line with the current findings. Fishermen's ages ranged from 20 to 70.

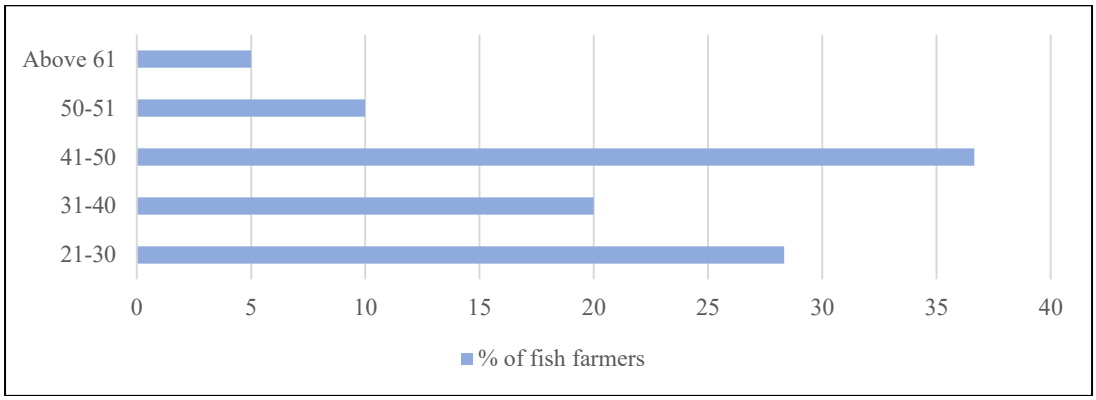

Figure. 2. Age groups of fish farmer in the study area

Within a community, religion has a significant impact on people's social and cultural surroundings. It serves as a noticeable restriction and alters people's social patterns. Based on their community, respondents in the study area were categorized into four groups: General, OBC, SC, and ST. In the case of fish culture, the highest percentage of fishermen are from the schedule tribe category, 55.00 percent and then followed by S.C (41.66%). The General group has zero percentage of respondents, whereas the Other Backward Caste category has the lowest percentage of respondents (03.33%).

- **Family size-** The size of the family has a big impact on the family's income and expenses. The family's estimated average size was 6.33, which was large and almost identical to the results of Rahman et al. (2012b) [19]. In the Bangladeshi Rajshahi district, according to Ali MH et.al., (2008) [20], 52% of fish farmers had 4-5 family members, while 20% had more than 6 family members. This figure is roughly in line with the data that is currently available.
- **Marital Status-** The mean household size of the respondents was five, with 37% being married, 19% being single, 1% being separated, and 3% being widowed. The inference was that in order to enhance and raise fish production, the farmers' spouses and kids might provide additional support. Furthermore, it was suggested that the fish farmers were more accountable and had larger roles in their families, which would make them motivated to increase agricultural output and raise their income. Olawumi et al. (2010)[21] provided support for this by observing that a married household of an acceptable size may supply the family with inexpensive labor.
- **Education level-**One element influencing the use of ponds for fish farming is the level of knowledge. Fish farmers in the current study were divided into 6 groups according to their educational attainment. Of the 60 fish farmers, 28.33% were illiterate, 18.33% had completed elementary school, 20.00% had completed upper elementary school, 26.66% had completed secondary school, 05% had completed higher secondary school, and 01.66% had successfully completed a bachelor's degree (Table 1).

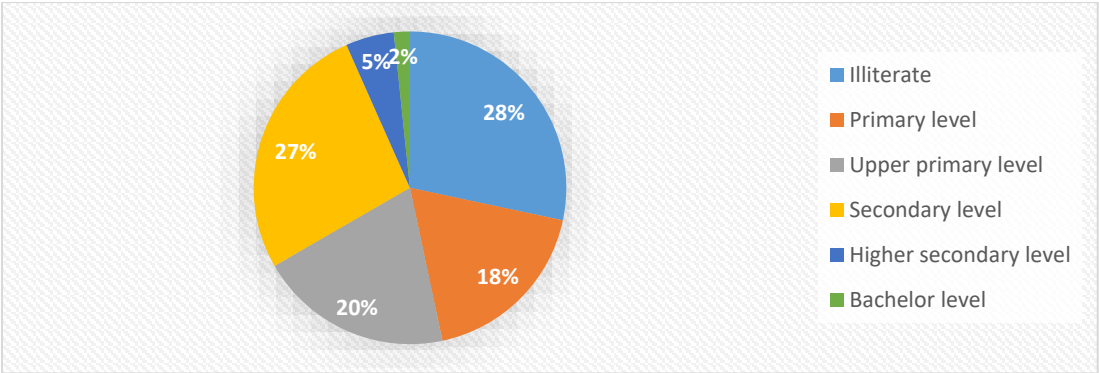

Figure. 3. Education level of fisherman

3.2 Financial capital

Fish farmer's annual income, employment type, and frequency and percentage of credit sources are shown in table 2. Fishing industry revenue is directly impacted by these factors. This was consistent with the conclusions of Omobepade et al. (2015) [22], who found that since fishermen could pay their costs, their

business was lucrative and their profitability measures were positive. In Bangladesh, freshwater fish farming is a significant source of income for rural residents (Mazid, 2002) [23]. For many people, many of whom are below the poverty line, it presents a variety of economic opportunities in the forms of day laborers, farmers, operators, workers, traders, mediators, and transporters (Ahmed et al., 2005) [24].

- **Sources of credit-** The current study discovered that 48.33 percent of farmers funded their fish farms with their own funds, 13.33% of farmers obtained bank loans for farming endeavours, 10% of farmers obtained bank loans through government programs, and 28.33% of fish farmers obtained loans from other sources (table 1). According to Quddus et al. (2000)[25], the majority of farmers (53%) fund their own expenses, whereas just 34% of farmers received bank loans for fish farming. Little farmers in the research region were seen to be in a difficult financial position since they lacked institutional credit support and had insufficient funds for fish farming.

Table 2. Socio-economic parameters (Financial capital) of fish farmer

S. No.	Socio-economic parameters	Frequency	Percentage (%)	Mean
1.	**Sources of credit**			
	Own money	29	48.33	
	Loan from Bank	08	13.33	
	Loan from Bank under govt. schemes	06	10.00	
	Other sources	17	28.33	
2.	**Annual income**			
	Up to Rs 50,000	18	30.00	
	Rs 51,000-75,000	23	38.33	
	Rs 76,000-1,00000	09	15.00	
	Above 1,00000	10	16.66	
3.	**Economic status of the fisherman**			
	Below BPL	33	55.00	
	Below BPL	27	45.00	
4.	**Improved Socio-Economic Condition Through Fish Farming**			
	Yes	48	80.00	
	No	12	20.00	

While 53% of farmers pay for their own expenses, just 34% of fish farmers obtained bank loans, according to Quddus MA (2000). The Lupin Human Welfare and Research Foundation (LHWR Foundation), based in Bharatpur, Rajasthan, is credited with spearheading the most notable Corporate Social Responsibility (CSR) initiative related to fish farming in a developing region. The foundation was established in the 1980s [26].

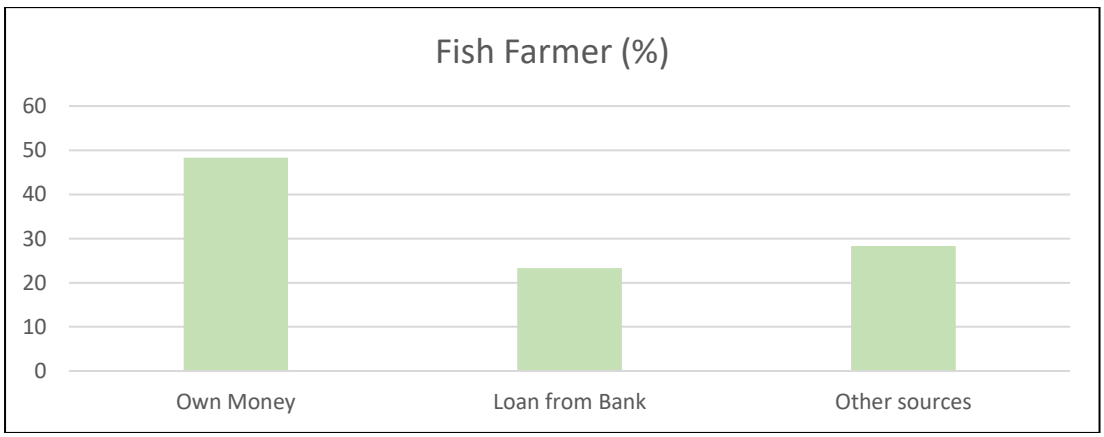

Figure. 4. Different sources of credit of fish farmer

- **Employment Types: Primary and Secondary-**The study area's fish farmers were mostly engaged in agriculture farming (37%), with small-scale trading and shop keeping following closely behind with 27%. Fish farming was the primary occupation of just 5% of pond fish farmers (Table 2). A primary occupation alone was said to be insufficient to support a sufficient standard of living. 41% of respondents said that their secondary occupation was fish farming, which they did year-round to protect their livelihood. Meanwhile, 22%, 29%, and 8% of respondents said that their secondary occupation was business, agricultural, or service raising. In the Habigonj district, Sarker(2004)[27] discovered that 17%, 52%, 3%, and 28% of farmers had a secondary occupation in business, agriculture, fish culture, or another field.

Table 3. Primary and Secondary Occupation of Fish Farmers Talwara Block

S. No.	Employment type	Primary (%)	Secondary (%)
i	Agriculture	37	29
ii	Fish culture	05	41
iii	Business	27	22
iv	Services	21	08
v	Day labour	10	00

- **Annual income-**Based on the amount of their yearly income, the chosen fish farmers were divided into four groups (Table 1.)Income is the most important factor in assessing the socioeconomic conditions of fishermen [28]. A farmer's capital comes from their annual income. The socioeconomic aspects of farmers' lives are said to be significantly influenced by their yearly revenue. This variable was therefore taken into account for the current investigation. According to a survey by Pandey, D. K. (2012) [29], 77.50% of respondents had monthly incomes of more than Rs 3,000, while 12.50 percent had incomes between Rs 2,000 and Rs 3,000. Merely 7.50% of fish farmers earned between Rs 1,000 and Rs 2000 every month.
- The respondents suffered expenses related to the depreciation of their equipment and fish ponds. The expenses and benefits associated with aquaculture Fish production yielded revenue mostly from the sale of fingerlings and mature or adult-sized fish. Fish with varying weights and dimensions were offered for sale. Using a functional scale, weight was a key instrument for calculating the cost of sales in the research area.

3.3 Physical capital

The effects of fish farming on fishermen's socioeconomic circumstances (physical capital) are reflected in table 4 and include home condition, land holding, agricultural experience, health, and access to electricity.

- **Housing condition-** People's social position is revealed by the type of house they live in. An attempt was made to learn about the people's living conditions during the survey. Because Talwara Block was not as developed as the Banswara district's major town, 75% of fish farmers' homes were made of katcha, or straw components, followed by 17% half-cemented buildings and 8% cemented buildings.

Table 4. Socio-economic parameters (Physical capital) of fish farmer

S. No.	Socio-economic parameters	Frequency	Percentage (%)	Mean
1.	**Farming experience (in years)**			
	1-5	30	50.00	5.91
	6-10	22	36.66	
	11-15	05	08.33	
	Above 15	03	05.00	
2.	**Land holding**			
	Marginal farmer	02	03.33	
	Small farmer	18	30.00	
	Semi -medium	30	50.00	
	Medium farmer	12	20.00	
	Bigger farmer	00	00.00	

3.	**Awareness about the govt. schemes**			
	Yes	47	78.33	
	No	13	21.66	
4.	**Awareness about fish disease**			
	Yes	45	75.00	
	No	15	25.00	

- **Land holding-** The amount of land that each respondent freshwater fish farmer owns is displayed in Table 1.In the present study, the proportion of marginal farmers is 03.33, whereas the proportion of larger farmers is 0. Half of the total farmers are semi-medium farmers (50%) and the remaining farmers are small farmers (30%) and medium farmers (20%). This suggested that the majority of fish pond production enterprises in the region were small-scale operations, which corroborated the findings of Nunoo et al. (2012)[30] that the majority of fish farmers in Ghana operated on a modest scale.

Table 5. categorisation of farmers

S. No.	Category	Size -class
1.	Marginal	Below 1.00 hectare
2.	Small	1.00-2.00 hectare
3.	Semi- medium	2.00-4.00 hectare
4.	Medium	4.00-10.00 hectare
5.	Larger	10.0 hectare and above

- **Farming experience-**According to a recent survey on farming experience, 50% of fishermen have been in the business for up to five years, followed by 36.66% with six to ten years of expertise, and 5% with more than fifteen years of experience. This outcome also agreed with a study by Oluwemimo and Damilola (2013) [31] that found a statistically significant and beneficial correlation between years of expertise and net revenue from agriculture in fish production.

3.4 *Social capital*

- **Training and expertise in fish farming-** Out of the rest, the bulk of farmers (80%) learned about fish farming through independent research, with 6% coming from friends, 10% from family, and 4% from non-governmental organizations (Figure 6). For newcomers, self-study or independent research is the best course of action. Self-learning facilitates the acquisition of new skills, which are crucial for businesses that involve fish farming. For fishermen, friends and family are very important.

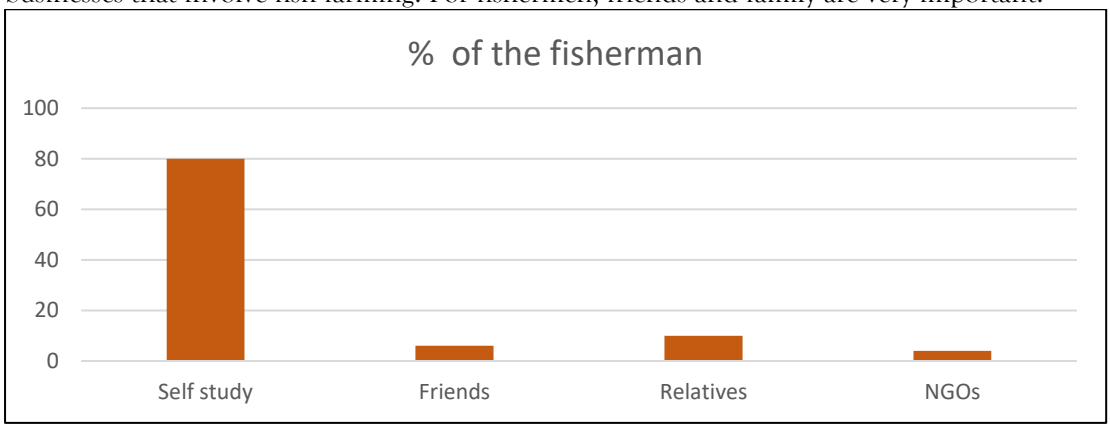

Figure. 5. Source of Fish Farming Training and Experience in the Research Area

3.5 Livelihood outcomes

Positive livelihood effects were seen in fish farming and allied industries, with the majority of persons reporting increases in income. Sustainable livelihoods need marketing, extension services, institutional and organizational support, and increased knowledge about fish farming. 92% of fish farmers who responded to the study indicated that raising fish had improved their socioeconomic circumstances (Figure 7). Because of their lack of funds, inadequate marketing facilities, excessive fish feed prices, and

insufficient understanding of fish farming, just 8% of the farmers had not improved their socioeconomic circumstances. Fish farming might help 98% of fish growers improve their standard of living, according to Ara, (2005)research. According to Chambers and Conway (1992) [32], the ability to manage stress and shocks, bounce back, and maintain and improve one's assets and capacities over time is essential for a livelihood to be sustainable. Particularly significant as social content are the arrangements for access and evaluations of the advantages to livelihood (Hasan et al., 2012 [33]; Amin et al., 2012 [34]; Azucena et al., 2001 [35]).

CONCLUSION

After taking into account the various findings of the current investigation, Talwara Block was determined to be a promising location for fish farming and capturing. The findings suggest that significant socioeconomic variables should be institutionalized and that both the public and private sectors should invest in fish pond production to offset the high cost of fish production inputs. The findings demonstrated that the beneficiary profile and economic change in employment generation were favourably and non-significantly linked exclusively with economic incentive. The social shift in material ownership and implement possession, respectively, and family member education did not significantly link with social involvement or economic incentive. There is no way to overstate the significance of eating fish and how it helps people grow and thrive. Consequently, in order to boost productivity and create jobs, youth participation in fish farming and input subsidization are vital. Many peoples didn't work full-time at fish farming or rely only on it for his income, but since they started aquaculture, their socioeconomic standing has improved. Fish farming increased their household income substantially, produced revenue, and brought in profits. As a result of this endeavour, they have also given three additional people the opportunity to generate income.Key socioeconomic characteristics that affected net income from fish pond production included education level, sex, age, size of male home, experience in producing fish ponds, number and size of ponds, and credit availability. Therefore, careful consideration of these socioeconomic elements is also necessary to ensure smooth production operations related to fish production.

The farm pond program must be carried out, expanded to other dryland areas, and encouraged to encourage farmers to raise fish, which could result in the farmers earning more money. Second, when protective irrigation facilities are available, farmers should be trained to prioritize high-value, demand-driven crops like fruit, vegetables, and floricultural products in their production plans rather than low-value crops. It was also noted that the majority of farmers were dealing with issues including sedimentation in farm ponds, disruptions from wild animals, and elevated rates of evapotranspiration in the summer. Therefore, it follows that the government should include the cost of the subsidy (given during the construction of farm ponds) needed to remove sedimentation for small and medium-sized farmers. It should also provide fencing to prevent disturbances by wild animals. Furthermore, university scientists should play a larger role in raising farmer awareness of various farm pond schemes, scientific methods for reducing water loss through evapotranspiration, and the site selection process for farm pond construction. To prevent the loss of productive land while building a farm pond, the state department of agriculture should also advise the farmer to establish a communal farm pond. Important socioeconomic factors should be institutionalized, and both the public and private sectors should fund the construction of fish ponds in order to offset the high cost of fish production inputs.

The findings have implications for increasing fish output in the research area by pond enlargement and intensification of the use of chicken manure in existing ponds.Aside from this, there are other things to think about, like financing the building of ponds to expand their area; encouraging fish farmers to form cooperatives to promote fish marketing; supporting better supplies of fingerlings and fish feed; and bolstering the availability of extension services to instruct farmers in better methods of raising fish.

REFERENCES

1. Department of Fisheries, Rajasthan, (https://fisheries.rajasthan.gov.in)
2. https://www.rajras.in/rajasthan/districts/banswara/
3. Press Information Bureau. Indian Fisheries: NeeliKranti to ArthKranti. Government of India; 2022.
4. Ministry of Finance, Expenditure Budget 2023-24, Ministry of fisheries, Department of Animal Husbandry and Dairying. (2023), 155-156.

5. Valsalan,K.C.,Kripa, V., Padua, S., Narayanakumar, R., andVyaskhan, P., (2020),"Socio-economic analysis of finfish culture in cages in coastal waters of Kerala, southwest coast of India", +Journal of the Marine Biological Association of India,62(1).
6. Beveridge, M.C.M., (1996),"Cage Aquaculture", Blackwell Publishers, Oxford. 368.
7. Ellis, F., (2000),"Rural Livelihoods and Diversity in Developing Countries", Oxford University Press.
8. Chavai, A.M., and Shinde, S.B., (2017),"Socio-economic impact of farm pond in enhancing the livelihood of farming community of Maharashtra", Agric. Update,12(3), pp. 437-442.DOI: 10.15740/ HAS/AU/12.3/437-442.
9. Awoyemi, T.T., and Ajiboye, A.J.,(2011),"Analysis of profitability of fish farming among women in Osun State, Nigeria",Journal of Economics and Sustainable Development, 2, pp.1-8.
10. Okwu,O.J., and Achenje, S.,(2011),"Socio-Economic Analysis of Fish Farming in Makurdi Local Government Area, Benue State, Nigeria",European Journal of Social Sciences, 23(4), pp. 508-519.
11. Abbas, I.I., and Ukoje, J.A.,(2009),"Rural water utilization: Factors affecting aquaculture in Owo local government area of Ondo State, Nigeria", Journal of Geography and Regional Planning, 2(8), pp. 190-197.http://www.academicjournals.org/JGRP ISSN 2070-1845
12. Osondu, C.K., and Ijioma, J.C., (2014),"Analysis of profitability and production determinants of fish farming in Umuahia Capital Territory of Abia State, Nigeria", World Journal of Agricultural Sciences, 2(7), pp.165-176.
13. Maina, J.G.,Mbuthia, P.G., Ngugi, J., Omolo, B., Orina, P., Wangia, S.M., Karuri, E.G., Maitho,T.,and Owiti, G.O.,(2014),"Influence of social-economic factors, gender and the Fish Farming Enterprise and Productivity Project on fish farming practices in Kenya",Livestock Research for Rural Development, 26(2).
14. Ara, Y., (2005),"Assessment of Small Scale Fresh Water Fish Farming for Sustainable Livelihoods of the Rural Poor Farmers"[M.S. Thesis, Department of Fisheries Management, Bangladesh Agricultural University, Mymensingh].
15. Olaoye, O.J., Adegbite, D.A., Oluwalana, E.O., Vaughan, I.O., Odebiyi, C.O., and Adediji, A.P., (2014),"Comparative evaluation of economic benefits of earthen fish ponds and concrete tanks in aquaculture enterprises in Oyo State, Nigeria",Croatian J. Fish., 72, pp. 107-117.
16. Boateng, V.F., Alhassan, E.H., Yaw, S., Nensom, E., Emmanuel,D., and Abarike, E.D.,(2013),"Profitability Analysis of all-male Tilapia Farming in Sekyere South and Bosomtwe Districts of Ashanti Region",Agric. Biol. J. North America, 4(5), pp. 568-575.
17. Ali, H., Azad, M.A.K., Anisuzzaman, M., Chowdhury, M.M.R., Hoque, M., and Sharful, M.I., (2009),"Livelihood Status of the Fish Farmers in Some Selected Areas of TarakandaUpazila of Mymensingh District",J. Agrofor. Environ., 3(2), pp. 85-89.
18. Bhaumik, U., and Saha, S.K., (1994),"Perspective on Socio-economic Status of the Fishermen Engaged in Fishing in the Estuaries of Sundarbans",Environ-Ecol.,12(1), pp. 181-185.
19. Rahman, M., Rahman, M.M., Hasan, M.M., and Islam, M.R., (2012b),"Livelihood Status and the Potential of Alternative Income Generating Activities of Fisherman Community of NijhumDwip Under HatiyaUpazila ofNoakhali District, Bangladesh",Bangladesh Res. Publicat. J., 6(4), pp. 370-379.
20. Ali, M.H., Hossain, M.D., Hasan, A.N.G.M., and Bashar, M.A., (2010), "Assessment of the livelihood status of the fish farmers in some selected areas of Bagmaraupazilla under Rajshahi district",Journal of Bangladesh Agricultural University, 6(2), pp. 367–374.
21. Olawumi, A.T., Dipeolu, A.O., and Bamiro, O.M., (2010),"Economic analysis of homestead fish production in Ogun State, Nigeria",J. Hum. Ecol., 31(1),pp. 13-17.
22. Omobepade, B.P., Adebayo, O.T., Amos, T.T., and Adedokun, B.C.,(2015),"Profitability analysis of aquaculture in Ekiti State, Nigeria",Nigerian J. Agric. Food Environ., 11(1), pp. 114-119.
23. Mazid, M.A., (2002), "Development of fisheries in Bangladesh, Plan and Strategies for Income Generation and Poverty Alleviation", 176 Dhaka: NasimaMazid, 74 A/2, Kallyanpur Main Road.
24. Ahmed, N., Rahman, M.M., and Rahman, M.M.,(2005),"A Study on Fish Marketing System in Gazipur, Bangladesh",Pakistan J. Biol. Sci.,8(2), pp. 287-292.
25. Quddus, M.A., Rahman, M.S., and Moniruzzaman, M., (2000),"Socio-economic conditions of the pond owners of Demra, Dhaka",Bangladesh J. Fish. Res., 4(2), pp. 203-207.
26. Bunker, K., Prakash, S., Ramasubramanian, V., Krishnan, M., and kumar, N.R., (2022),"Economic efficiency analysis of fish farming in Bharatpur District, Rajasthan: A corporate social responsibility (CSR) initiative", Indian J. Fish., 69(4), pp. 109-114.
27. Sarker, C., (2004),"Socio-economic Aspects of Pond Fish Cultured Women in Some Selected Areas of Habigonj District", [M.S. Thesis, Department of Fisheries Management, Bangladesh Agricultural University, Mymensingh].
28. Kostori, M.F.A., (2012),"Socio-economic condition of fishermen of the ChalanBeel under TarashThaha of Sirajganj in Bangladesh",Bangladesh Research Publications Journal, 6(4), pp. 393-402.
29. Pandey, D.K., andUpadhyay, A.D., (2012),"Socio-Economic profile of fish farmers of an adopted model aquaculture village: Kulubari, West Tripura",Indian Research Journal of Extension Education,II (Special Issue).
30. Nunoo, F.K.E., Asamoah, E.K., and Osei-Asare, Y.B., (2012),"Economics of aquaculture production: a case study of pond and pen culture in southern Ghana",Aquac. Res., pp. 1–14.
31. Oluwemimo, O., and Damilola, A.,(2013),"Socio-economic and policy issues determining sustainable fish farming in Nigeria",Int. J. Livestock Prod., 4(1),pp. 1-8.
32. Chambers, R., and Conway, G., (1992),"Sustainable Rural Livelihoods: Practical Concepts for the 21st Century", Institute of Development Studies (IDS)(Discussion Paper. 296) University of Sussex, Brighton, UK.

33. Hassan, M.N., Rahman, M.M., Hossain, M.M., Nowsad, A.A.K.M., and Hossain, M.B., (2012),"Post-Harvest Handling and Marketing of Shrimp and Prawn in South-Western Region of Bangladesh",World Journal of Fish and Marine Sciences, 4(6), pp. 651-656.
34. Al-Amin, A.Q., Alam, G.M., and Hassan, C.H.,(2012),"Analysis of INSHORE Economic Benefit and Growth Through the Proper Uses of the Utility and Scope of Fisheries and Livestock: A Guideline to the MOFL in Bangladesh",Asian J. Animal & Vet. Adv., 7(6), pp.477-488.
35. Azucena, C.W.W., Oliver, M.S.S.,Jonen, B.P., Viray, M.H., and O'Malley, S., (2001),"UtilizingDifferent Aquatic Resources for Livelihoods in Asia", A Resource Book, p. 361, IIRI, Philippines.