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### Why fish farmer producer organizations (FFPO) are scarce in shrimp farming sector and what needs to be done to promote it?

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#### Abstract

Farmer Producer Organizations (FPO) are increasingly seen as a game changer and promoted as a means for empowering the farmers and sectoral transformation in agriculture and allied sectors. However, contrary to the expectations its adoption in the shrimp farming sector albeit it is better fit to have more number of FFPOs in the fisheries sector. Nevertheless, a survey conducted among the stakeholders of shrimp farming indicated that their awareness level of the FPO scheme and its provisions was low (22%). Few case studies on FFPOs functioning in the fisheries sector reveal that the FPO concept has the potential to enhance the fish farmers' bargaining power and efficiency in the food value chain. A SWOC analysis on FFPO vis-à-vis shrimp farming revealed the opportunities and challenges in adopting the FFPO model in the shrimp farming sector. Therefore, a mass campaign to sensitize shrimp farmers on the merits of the FPO scheme across the states, direct involvement of institutions working with shrimp farmers, relaxations in the FFPO member size, share capital requirements and credit guarantee ceilings are suggested as a strategy to promote FFPOs in shrimp farming sector.

**Keywords:** FFPO, shrimp farming, awareness, SWOC analysis, strategy

#### Introduction

The Government of India was contented with the initial optimism shown by the farmers towards formation of Farmer Producer Organizations (FPO) and convinced that it could be a means to achieve doubling the income of farmers in addition to their self-reliance. FPO a collective entity of small and marginal farmers enables them to access quality inputs, technology and premium markets which are otherwise difficult for them to access individually, increase their income and status. Therefore, in the Union budget of 2019-20, the Government of India has declared its plan to promote 10,000 FPOs in the next 5 years in agriculture and allied sectors with provisions for financial assistance. In the fisheries sector too it was proposed to establish 500 Fish Farmers Producer Organizations to empower the fish farmers/fishers and in that 300 Fish Farmer Producer Organizations (FFPOs) to be set up under the Pradhan Mantri Matsya Sampada Yojana (PMMSY) a flagship scheme. It was reported that more than 6000 FPOs were established in the country including FFPOs in 2023 (<https://agriwelfare.gov.in/>). Collective action is a tested strategy to deal with the challenges faced by small-scale producers and FPOs have been identified to play a key role in enhancing farmers' access to markets <sup>[1]</sup> and are expected to reduce intermediaries <sup>[2]</sup>. The Government hopes that FPOs foster technology penetration, improve productivity, enable improved access to inputs and services and increase farmer incomes <sup>[3, 4]</sup>. FPOs could be linked with potential sources of services, information, technical support and market outlets <sup>[5]</sup>.

Aquaculture contributes about 60% of India's fish

production of 17.4 million metric tonnes, wherein freshwater aquaculture which produces about 90% of aquaculture production may not contribute more due to climate change-led water scarcity, its multiple usages and multi-user related conflicts. Therefore, coastal/brackishwater aquaculture which has utilized hardly 15% of its resource potential of 1.2 million ha, which is again unusable other than fish production would be one of the major thrusts in the coming days to enhance the fisheries production in India. Brackishwater aquaculture is synonymous with shrimp farming being practiced in about 1.6 lakh ha with an average productivity of 5-6 tonnes/ ha along the coastal line of the country mostly by small scale farmers in all the coastal states and in the inland saline soil areas of north-west part of the country. Shrimp farms are operated mostly as clusters of farms along a water source representing a commercial aquaculture model being operated in business mode by entrepreneurial farmers <sup>[6]</sup>.

Fisheries promotional agencies like the Department of Fisheries of States and the National Centre for Sustainable Coastal Aquaculture (NaCSA), extension wing of the Marine Products Export Development Authority (MPEDA) are promoting group approach in shrimp farming by forming cluster based farmer associations/groups for collective compliance of better management practices to ensure disease-free successful shrimp farming <sup>[7]</sup>. Therefore, it was expected that more number of FFPOs could be established in shrimp farming sector by converting the existing farmer collectives. However, the formation of FFPOs in the shrimp farming sector has not happened as expected. Studies on FFPOs in fisheries sector reported that

limited awareness and understanding of FFPOs among fish farmers, insufficient financial and technical resources to establish and sustain FFPOs, capacity gaps in governance, management, and leadership skills within FFPOs, lack of supportive policies, regulations, and institutional frameworks for FFPOs were hampering the formation and efficient functioning of FPOs in aquaculture sector [8, 9]. In this connection, the present study was undertaken to ascertain the awareness among the stakeholders of the shrimp farming sector about the FFPO scheme and its provisions, understand the functioning of FFPOs in the sector and assess the strengths, weaknesses, opportunities and challenges (SWOC) of FFPO scheme vis-a-vis shrimp farming to propose a strategy for promoting the FFPOs in shrimp farming sector.

### Methodology

A three-tier approach was adopted to collect primary data for the study. In the *first stage*, a questionnaire containing 36 Multiple Choice Questions (MCQs) covering the provisions of FFPO was prepared in Google Forms and sent to 780 stakeholders-shrimp farmers, extension professionals, researchers, teachers- in the shrimp aquaculture sector to know their awareness of the FFPO scheme provisions. On-line survey using Google Form was adopted to study the prospective impact of Corona virus disease (COVID-19) related lockdown on shrimp aquaculture sector in India [10]. The correct answers were given a score of one and pooled to arrive at the awareness score of a respondent. The hypothesis of the study was that the stakeholders are aware of the FFPO scheme and there is no significant difference in the awareness levels among stakeholders of the shrimp aquaculture sector. Subsequently, in the *second stage*, four FFPOs functioning in the fisheries sector were studied using a five-point criteria viz., registered as FFPO, receipt of equity share capital, development of business plan, operation of the business plan, income generated using the plan and matching grant received from the implementation agency and those were studied to know their status and functioning as FFPOs adopting case study method. In the *third stage*, two focus group discussions were conducted with a group of shrimp farmers (12-15 nos.) one each in Bapatla, Andhra Pradesh and Nagapattinam, Tamil Nadu to conduct SWOC analysis of FFPO vis-à-vis shrimp farming and prepare a strategy for promoting the FFPOs in shrimp farming sector. The data collected from the respondents were cleaned and descriptive statistics like mean, standard deviation and percentage analysis were used to consolidate and interpret the data. A non-parametric Kruskal-Wallis analysis was performed to understand the relative differences in the awareness levels of the stakeholder respondent groups. The Kruskal-Wallis test is a non-parametric statistical test used to determine if there are significant differences between the distributions of three or more independent groups [11].

### Results and Discussion

**Awareness among the shrimp farming stakeholders on the FFPO scheme:** About 176 stakeholders responded and provided data by on-line on their awareness about the FFPO provisions. The respondents were from three categories: fishery extension personnel, shrimp farmers and

research/academicians respectively constituted 34, 44 and 22% (Fig-1) of the sample size. Nearly half of the respondents (44%) were shrimp farmers which indicated that shrimp farmers were well informed, active information seekers who consulted online sources for technical advisories. The descriptive analysis indicated that majority of the respondents' (78%) were unaware of the FFPO scheme and its provisions. Further, the mean awareness levels of FEOs, shrimp farmers and research/academicians were also respectively 26, 11 and 37% (Fig-2). The statistical analysis indicated that there is a significant difference in the awareness levels of the three groups of respondents in the order research/academicians>FEOs>Farmers, which, may be due to their nature of work and official affiliations.

The detailed information on the awareness levels of respondents is given in Table- 1. The results show that the respondents including extension workers were unaware of the FFPO scheme and its objectives, which entity can become a FFPO, its constitution, benefits, and activities of FFPO, implementing agencies, agencies responsible for mobilizing and formation of FFPOs, formation of business plan and aggregation of inputs, services and output, financial assistance available etc. Awareness is the first step towards the adoption of an innovation. Therefore, it is important that the implementation agencies need to organize adequate number of awareness campaign about the FFPO scheme among the extension workers in the fisheries departments and shrimp farmers employing personal, group and mass contact methods. In addition, exposure visits and interaction meetings can be arranged to successful FPOs in allied sectors that could provide them practical exposure on FPO and its strengths. During the FGDs it was informed that the Department of Fisheries of states and National Centre for Sustainable Aquaculture (NaCSA-MPEDA) who have direct contact with shrimp farmers were not involved directly in the formation and functioning of FFPOs and the responsibility was given to NGOs who are the Cluster-Based Business Organizations (CBBO) who mostly work with fishermen, hence, mobilized them as FFPOs in few places.

The data indicated that the respondents aware of six FFPOs registered in the fisheries sector but unaware of any FFPO functioning in the shrimp farming sector. Therefore, to ascertain the status and functioning of FFPOs in fisheries-related activities two FFPOs functioning in the fisheries sector were studied for their performance (Table-2).

**Case study of FFPO operating in fish value addition and branding:** Vetripaavai fisherwomen FFPO functioning in Mayiladuthurai district of Tamil Nadu was a women Self-Help-Group (SHG) for few years and subsequently converted as FFPO in the year 2023 by M.S.Swaminathan Research Foundation through its Fish for All centre functioning in Poombuhur, Mayiladuthurai district, Tamil Nadu. They were 100 members in the FFPO, which raised a share capital of Rs.2 Lakhs @ Rs.2000 per member and applied for a matching grant of an equal amount from the implementation agency, the National Bank for Agriculture and Rural Development (NABARD). This FFPO was basically a dry fish production entity, after becoming an FPO, it prepared a business plan and branded its products in

the name of 'Samudhra', expanded its product base and included value addition in the form of fish/prawn thokku, Anchovy powder, Anchovy sambal etc. The FFPO utilized its share capital for fish procurement, procurement of ingredients, packaging material, advertising and opened a retail outlet for marketing its products. The FFPO has improved its financial performance and distributed a monthly income of Rs.3550 per member every month. The FFPOs should continuously focus on market research and build their product brands to expand its client and products base. Promotion of its brand through local television channels and social media might help in market penetration. Introduction of high-end technology in product development and digitization of its operations can help them to harness their business potential and to gain consumers' confidence [12].

**Case study of FFPO in inland fisheries:** The second case of Kaveri FFPO was also a SHG formed in 2021 and upgraded and registered as FFPO in 2023. There were 154 members and collected a share capital of Rs.1.54 Lakh with a contribution of Rs.1,000 per member. Majority of the members were fish farmers farming freshwater fishes mostly Indian Major Carps. This FFPO has developed a business plan to pool their fish production and market fishes in the live conditions in nearby towns by opening their own marketing outlets and mobile vans. They have planned to procure oxygen cylinders, and vehicles with tanks for transportation and establish a fish feed dealership to procure and distribute fish feeds to its members. However, lack of capital was the major constraint. Governmental support in the form of grants during the early stages of the FPOs makes them stand out and it needs to be strengthened [13]. FPOs should improve their paid-up capital to the level that enables them to participate in government schemes. Consistent guidance and support to the FFPOs beyond the incubation phase is necessary for working capital, capacity building, market access, and regulations are crucial to improve their financial viability [14, 15, 16]. Further, the provision of market support, storage, and processing facilities reduces transaction costs in output marketing [17]. Information sharing and coordination are the most important for the success of an innovation [18].

It was reported that the release of equity grants from the implementation agencies took a lot of time which demotivated the members losing their interest in FFPO functions. FPOs as grass-root entrepreneurship organizations, are in the transition phase from securing farmer's welfare to venturing into commercial activities and facing struggles in creating new businesses [19]. Therefore it is essential to strengthen FPOs by offering then quality technology and mentoring support while relaxing business creation norms.

#### **SWOC Analysis of FFPOs vis-à-vis Shrimp farming:**

The major strengths, weaknesses, opportunities and challenges in the formation and functioning of FFPOs in the shrimp farming sector as emanated from the FGDs are given as matrix in Table-3. Shrimp farming is being practiced as cluster of farms along a water source (creek/river/estuarine) in most of the places. Considering the disease threats and to ensure disease-free successful harvest for all the farmers, an

informal association/arrangement was already exist in some places to enforce collective compliance of better management practices and farm bio-security measures which can be converted as FFPO. Shrimp farming is already operated on business mode and the farmers are relatively entrepreneurial therefore it is a right fit for establishing more number of FFPOs. Further, membership in the FFPO should be mandatory for the shrimp farmers operating in a cluster, otherwise, the FFPO may not function as a cohesive entity. However, shrimp farming is an investment-heavy, risky production system where large farmers may have a hegemonic attitude that could be disadvantageous as a FFPO. Further, the respondents were of the view that financial incentives in the form of matching grants and credit guarantee schemes to avail higher level credit from institutional sources are the opportunities offered for FFPO which can be used for establishing cold storage and customised feed mill etc. by FFPOs and achieve the economies of scale. However, ceiling for financial assistance need to be removed in case of shrimp farming considering the investments involved. Similarly, once a FFPO started functioning it should be linked with development departments and converge with the schemes meant for farming can be channelized through FFPOs. The non-involvement of key departments like NaCSA-MPEDA, Coastal Aquaculture Authority (CAA) and Department of Fisheries (DoF) of states in the formation and functioning of FFPOs is a challenge in shrimp farming sector. This may be because of the fact that the most of the CBBOs are NGOs, and many of them have negative perspective towards shrimp farming therefore it is a challenge for them to reach shrimp farmers and mobilize them as FFPO. Therefore, informal farmer association/society that are already functioning among the shrimp farmers itself can be recognised as CBBO and the assistance of Rs. 25 Lakhs given to the CBBO may very well be given to the FFPO itself to implement their business plan. Similarly, mobilizing 100 members to form a FFPO is difficult in shrimp farming and aggregating farmers across the clusters is challenging, therefore, the ceiling of numbers needs to be practical.

**Strategy for promoting the establishment of FFPOs in shrimp farming sector:** Based on the information available from the survey, case studies and SWOC analysis the study proposes a strategy to promote FFPOs in the sector with the following points.

1. Sensitize the progressive shrimp farmers by arranging exposure visits to successful FPOs in agriculture and allied sectors like Banana FPO in Thottiyam, Tiruchirapalli, Tamil Nadu and MAHA Grapes Farmer Producer Company, Maharashtra and facilitate interactions among them that would be an eye-opener for them on the potential merits of FPO.
2. Considering the low patronage for the scheme in shrimp sector, direct involvement of fisheries institutions like the DoF/MPEDA is essential in sensitizing the farmers about the strengths of the scheme and convergence of other schemes through FFPO and mobilizing them as FFPO.
3. Flexibility on size of FFPO is important as bringing together of existing 100 farmers/members ceiling is relatively difficult to make it in shrimp farming in a

- given locality.
4. The norms/guidelines for small and marginal farmers used in agriculture may not be suitable for aquaculture farmers, therefore, it should be an optional rather than a mandatory provision for availing benefits for the FFPO.
  5. The approved scale of finance for per ha shrimp farming is Rs.18 Lakh (NABARD, 2023). The existing financial incentives of FPO scheme like matching grant is too low for shrimp farming to plan a business activity, which needs to be enhanced matching to the members contribution.
  6. Shrimp farmers are entrepreneurial and farming is already in business mode, therefore, instead of engaging a CBBO for formation of FFPO, the existing informal association/arrangement can be considered as CBBO and support charges of Rs.25 Lakh earmarked for the CBBO can be given to the FFPO themselves to be managed by elected office bearers.

**Table 1:** FFPO scheme – extent of awareness among the shrimp farming stakeholders

Sl. No	Provisions of FFPO	FEOs (n=60)	Farmers (n=78)	Others (n=38)	Total (n=176)
1.	Entities eligible to become a FFPO -Farmer FIGs, associations, SHG or any stakeholder group engaged in fisheries related activity.	35.00	11.54	55.26	28.98
2.	Major services and activities planned for a FFPO across the fisheries value chain.	53.33	19.23	39.47	35.23
3.	Minimum membership size for a FFPO to get registered.	31.67	20.51	42.11	28.98
4.	Functions of Cluster Based Business Organization (CBBO)	26.67	21.79	52.63	30.11
5.	Small group of (15-20) Fisheries Interest groups (FIG) may be mobilised initially and integrate them to form a FFPO.	28.33	8.97	44.74	23.30
6.	Registered fisheries primary cooperatives not yet started business operations can be converted in to a FFPO.	30.00	10.26	36.84	22.73
7.	Implementing Agencies (IA) of FFPO scheme in Fisheries	43.33	16.67	57.89	34.66
8.	Rs.25 Lakh grant per FFPO towards the formation and incubation Cost to CBBO for the period of three years.	21.67	7.69	39.47	19.32
9.	Rs.18 Lakh per FFPO towards the management Cost to the FFPO for the period of three years.	18.33	10.26	21.05	15.34
10.	An equity matching grant up to Rs 2000/- per member of FFPO subject to a maximum limit of Rs.15 lakhs (for 750 members).	16.67	8.97	21.05	14.20
11.	FFPO to receive the matching grant from the Government 50% of its members should be small and marginal farmers.	13.33	6.41	26.32	13.07
12.	Govt. provides matching Equity Grant to help FFPO to get credit from financial institutions for their projects and working capital requirements for business development.	13.33	7.69	31.58	14.77
13.	CEO/Manager of the FFPO-qualifications-functions with a salary @ Rs.25,000 per month.	15.00	5.13	23.68	12.50
14.	Accountant FFPO-qualifications-functions with a salary @ Rs.10,000 per month.	13.33	6.41	23.68	12.50
15.	Maximum shareholding by any one member in the FFPO shall not be more than 10% of total equity of the FFPO.	10.00	6.41	21.05	10.80
16.	Credit guarantee cover to FFPOs: up to 75 to 85% of the total project cost.	10.00	3.85	23.68	10.23
17.	NFDB is the Nodal Agency for Capacity building, training and skill development for FFPOs.	30.00	11.54	50.00	26.14
18.	Krishidoot, an ICT backed platform which will electronically network all the FFPOs of services through mobile app.	16.67	1.28	23.68	11.36
	Mean awareness	25.58±14.21	11.22±6.26	37.36±14.65	21.76±10.01
(There is significant difference in the awareness levels of different groups p<0.001)					

**Table 2:** Matrix of FFPOs studied indicating their level of operation

S. No	Name of FPC	FPO Registered	Equity share capital from members	Baseline study and Business plan	Business activities initiated	Income generated through FPO	Matching equity grant sanctioned
1	Vetripaavai Fisher Women FPO (Fishers)	✓	✓	✓	✓	✓	x
2	Myladithurai kaveri FFPO	✓	✓	✓	✓	x	x
3	Bharatidasan FFPO	✓	✓	x	x	x	x
4	Undimandalam FFPO, Andhra Pradesh.	✓	✓	x	x	x	x

**Table 3:** SWOC analysis of FFPOs vis-à-vis Shrimp Farming (n=30)

	Strengths	Weaknesses
	1. Amenable for high-tech solutions/technologies 2. Most of the records and data pertaining to farms are readily available. 3. Members are entrepreneurial and informed. 4. Already shrimp farming is in business mode. 5. A collective institutional arrangement is functioning in many clusters as a formal or informal association.	1. The small and marginal farmer classification as that of agriculture may not fit in shrimp farming sector. 2. Too many leaders/hegemonic attitude of big farmers. 3. Lack of cooperation/unwillingness/trust among the farmers. 4. High risks in production and marketing. 5. High investments so expecting quick returns.
External	Opportunities	Challenges
	1. Economic efficiency through collective procurement	1. Lack of institutional support to shrimp farming.

<p>of inputs and marketing of produce as a group/company.</p> <p>2. Access to other schemes as FPO - scope for establishing feed mill, storage cum processing facility /common infrastructure etc.</p> <p>3. Scope for domestic marketing with a brand – (60% for export and 40% partial harvested shrimps for domestic market).</p> <p>4. Convergence of other programmes- all the line departments can channelize their programmes through FPOs</p>	<p>2. Financial incentives of the scheme are too low for shrimp farming.</p> <p>3. Lack of direct involvement of agencies like MPEDA/DoF in FPO scheme. CBBOs/NGOs unfavourable attitude towards shrimp farming.</p> <p>4. Size of FFPO-Bringing 100 farmers to form a FPO is unrealistic for shrimp farming.</p> <p>5. All farmers are not small farmers as per the FPO guidelines.</p>
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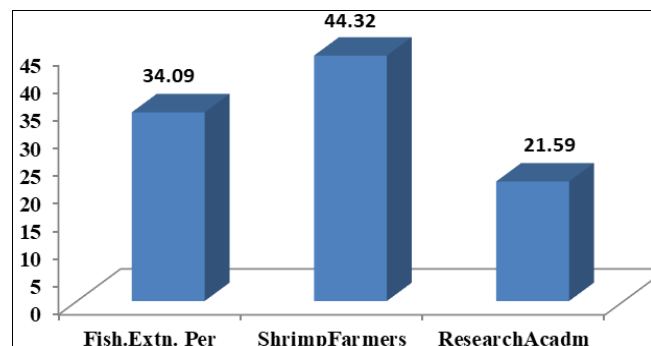


Fig 1: Stakeholder respondents participated in the on-line survey

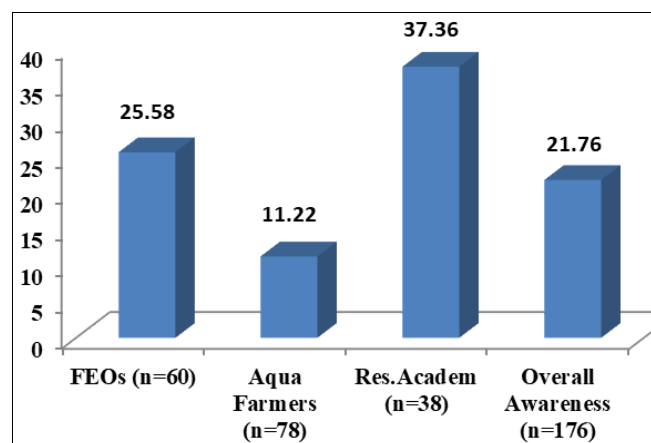


Fig 2: Awareness levels of shrimp farming stakeholders on FFPO

## Conclusion

FPO is a novel initiative which has the potential to transform the fish food value chain and empower the farmers in efficient production, price realization and bargaining. As the shrimp farming sector already running on business mode it is a better-fit sector to form more FFPOs. Diseases and farm gate price volatility are the major risks in shrimp farming and both of them can be addressed through the approach of FFPO. However, lack of awareness on the scheme and its provisions is a major constraint. Therefore, sensitization of shrimp farming stakeholders on FFPO concept and scheme provisions through an extensive campaign is very much essential. Further, tackling the identified external challenges like financial ceilings and internal weaknesses such as composition of members are important to make this FPO scheme adoptable for the shrimp sector. To begin with direct involvement of key departments already working with the shrimp farmers for FFPO promotion in the sector is the first step to move forward.

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## Declaration of Conflict of Interest

The authors hereby declare that they have no known competing interests whatsoever or personal relationships that could have appeared to influence the work reported in this paper.

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