GOVERNANCE ASSESSMENT OF MULTI-LEVEL FISHERIES COOPERATIVES IN ASSAM

Dissertation submitted in partial fulfillment

of the requirements

for the degree of

M.F.Sc. (Fisheries Extension)

by

Ms. KHIMSALI DIFOE, B.F.Sc

(FEX-MB2-02)

ICAR- CENTRAL INSTITUTE OF FISHERIES EDUCATION

(University Established Under Section 3 of UGC Act 1956)

Panch Marg, Off Yari Road, Versova,

Andheri (W), Mumbai – 400 061

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Dedicated

To the Almighty &

My Beloved Parents

भा.कृ.अनु.प.- केन्द्रीय मात्स्यिकी शिक्षा संस्थान
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Govt. of India.

Date: 27.09.2024

CERTIFICATE

This is to certify that the dissertation entitled **"Governance Assessment of Multi-level Fisheries Cooperatives in Assam"** is a bonafide record of independent research work carried out by **Ms. Khimsali Difoe (FEX-MB2-02)** at **ICAR- Central Institute of Fisheries Education, Mumbai** during the period of study from February, 2023 to September, 2024 under our supervision and guidance for the degree of **Master of Fisheries Science** in **Fisheries Extension** and that the dissertation has not previously formed the basis for the award of any degree, diploma, associateship, fellowship or any other similar title.

(Shivaji Dadabhau Argade)
Major Advisor
Senior Scientist (Agril. Extension),
FEES Division, ICAR-CIFE,
Mumbai, Maharashtra.

Advisory Committee Members

(Pradip Chandra Bhuyan)
Professor and Head,
Department of FEES, CoF, Raha,
AAU, Assam.

(Arupjyoti Patgiri)
Fisheries Development Officer,
FISHFED, Guwahati,
Dept. of Fisheries, Assam.

पंच मार्ग, ऑफ यारी रोड, वरसोवा, अंधेरी (प), मुंबई - ४०० ०६१. (भारत)
Panch Marg, Off Yari Road, Versova, Andheri (W), Mumbai - 400 061. (India)
कार्यालय / Office : 022-26361446/7/8,
Fax : 022-26361573
Website : www.cife.edu.in

DECLARATION

I hereby declare that the dissertation entitled **"GOVERNANCE ASSESSMENT OF MULTI-LEVEL FISHERIES COOPERATIVES IN ASSAM"** is an authentic record of the work done by me and that no part thereof has been presented for the award of any degree, diploma, associateship, fellowship or any other similar title.

Khimsali

Date: 27.09.2024 **(Khimsali Difoe)**

Place: ICAR-CIFE, Mumbai

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Place: Mumbai

सारांश

सहकारी समितियाँ स्वेच्छा से बनाई जाती हैं और लोकतांत्रिक रूप से प्रबंधित होती हैं, जो सदस्यों के बीच आपसी लाभ को बढ़ावा देने में महत्वपूर्ण भूमिका निभाती हैं। भारत में, मत्स्य सहकारी प्रणाली मछुआरों को वित्तीय सहायता प्रदान करने के लिए बनाई गई थी। यह अध्ययन असम में बहु-स्तरीय मत्स्य सहकारी समितियों पर किया गया, जिसमें राज्य और जिला संघों को उद्देश्यपूर्ण रूप से चुना गया। इसमें 40 प्राथमिक मत्स्य सहकारी समितियों का चयन भी शामिल था, जिनमें 20 पैनल में शामिल और 20 गैर-पैनल समितियाँ थीं। इस अध्ययन का उद्देश्य सहकारी शासन, व्यापार करने में आसानी और बाधाओं का आकलन करना था, जिसके लिए क्रमशः मत्स्य सहकारी शासन गुणवत्ता सूचकांक, सहकारी समितियों के लिए व्यापार करने में आसानी सूचकांक और बाधा विश्लेषण सूचकांक का उपयोग किया गया। अध्ययन में पाया गया कि राज्य संघ (0.77) ने उच्च शासन गुणवत्ता (>0.70) प्रदर्शित की, जबकि जिला संघ (0.57) ने मध्यम शासन गुणवत्ता (0.55-0.70) प्रदर्शित की, और प्राथमिक मत्स्य सहकारी समितियाँ (0.54) निम्न शासन श्रेणी (<0.55) में आईं। प्राथमिक सहकारी समितियों में, पैनल में शामिल समितियों (0.58) की शासन गुणवत्ता गैर-पैनल समितियों (0.51) से अधिक थी। विशेष रूप से, 40% पैनल में शामिल समितियों ने निम्न शासन गुणवत्ता, 40% ने मध्यम, और 20% ने उच्च शासन गुणवत्ता प्रदर्शित की। इसके विपरीत, 75% गैर-पैनल समितियों को निम्न, 15% को मध्यम और केवल 10% को उच्च शासन गुणवत्ता के रूप में वर्गीकृत किया गया। आयामवार, पैनल में शामिल बनाम गैर-पैनल समितियों का स्कोर इस प्रकार था: लोकतांत्रिक नियंत्रण (0.69 बनाम 0.66), उत्तरदायी सशक्तिकरण (0.57 बनाम 0.47), नेतृत्व (0.52 बनाम 0.46), टीमिंग (0.57 बनाम 0.50), और समन्वय एवं संबंध (0.56 बनाम 0.46)। पैनल में शामिल और गैर-पैनल समितियों के बीच उत्तरदायी सशक्तिकरण (p=0.04), समन्वय एवं संबंध (p=0.02), और समग्र शासन गुणवत्ता (p=0.04) में महत्वपूर्ण अंतर थे। व्यापार करने में आसानी का स्कोर राज्य संघ (0.85) के लिए उच्च था, लेकिन जिला संघ (0.31) और दोनों पैनल में शामिल (0.39) और गैर-पैनल (0.31) प्राथमिक समितियों के लिए निम्न था। आयामवार, पैनल में शामिल बनाम गैर-पैनल समितियों का स्कोर इस प्रकार था: व्यापारिक मानव पूंजी (0.38 बनाम 0.28), व्यापारिक बुनियादी ढांचा (0.49 बनाम 0.38), व्यापारिक नेतृत्व (0.31 बनाम 0.28), और व्यापारिक शासन (0.38 बनाम 0.24)। बहु-स्तरीय मत्स्य सहकारी समितियों में पहचानी गई गंभीर बाधाओं में कमजोर वित्तीय स्थिति, खराब सदस्य भागीदारी, समन्वय की कमी, अपर्याप्त कल्याण योजनाएँ, परिवहन समस्याएँ, और तकनीकी सहायता की कमी शामिल हैं। बहु-स्तरीय शासन गुणवत्ता को बढ़ाने के लिए विभिन्न स्तरों पर संबंधों और समन्वय को मजबूत करने, अन्य संगठनों के साथ नेटवर्क बनाने, बुनियादी ढांचे को उन्नत करने, आय-सृजन गतिविधियों में विविधता लाने, सहकारी संचालन की नियमित निगरानी और मूल्यांकन को लागू करने, सहकारी समितियों को व्यापार मॉडल तैयार करने में सहायता प्रदान करने, और व्यापक प्रशिक्षण और क्षमता निर्माण कार्यक्रमों को लागू करने का सुझाव दिया गया।

कीवर्ड: मत्स्य सहकारी समितियाँ, FCGQI, व्यापार करने में आसानी, पैनल में शामिल, गैर-पैनल.

ABSTRACT

Cooperatives are formed voluntarily and are managed democratically, playing a crucial role in promoting mutual benefits among members. In India, the fisheries cooperative system was created to offer financial support to fishers. This study was conducted in multi-level fisheries cooperatives in Assam, involving purposively selected state and district federations. It also included a selection of 40 primary fisheries cooperatives, comprising 20 empanelled and 20 non-empanelled societies. The study aimed to assess cooperative governance, ease of doing business, and constraints using the Fisheries Cooperative Governance Quality Index, Ease of Doing Business Index for Cooperatives, and the Constraint Analysis Index, respectively. The study found that the state federation (0.77) demonstrated high governance quality (>0.70), while the district federation (0.57) had medium governance quality (0.55-0.70), and primary fisheries cooperatives (0.54) fell into the low governance category (<0.55). Among the primary cooperatives, empanelled societies (0.58) had a higher governance quality than non-empanelled ones (0.51). Specifically, 40% of empanelled societies exhibited low governance quality, 40% medium, and 20% high. In contrast, 75% of non-empanelled societies were classified as low, 15% as medium, and only 10% as high governance quality. Dimension-wise, empanelled versus non-empanelled cooperatives scored as follows: Democratic Control (0.69 vs. 0.66), Accountable Empowerment (0.57 vs. 0.47), Leadership (0.52 vs. 0.46), Teaming (0.57 vs. 0.50) and Convergence & Linkage (0.56 vs. 0.46). There were significant differences in accountable empowerment (p=0.04), convergence and linkage (p=0.02), and overall governance quality (p=0.04) between the empanelled and non-empanelled cooperatives. The ease of doing business score was high for the state federation (0.85), but low for the district federation (0.31), and for both empanelled (0.39) and non-empanelled (0.31) primary cooperatives. Dimension-wise, empanelled versus non-empanelled cooperatives scored as follows: Business Human Capital (0.38 vs. 0.28), Business Infrastructure (0.49 vs. 0.38), Business Leadership (0.31 vs. 0.28), and Business Governance (0.38 vs. 0.24). Severe constraints identified in multi-level fisheries cooperatives included weak financial status, poor member participation, lack of coordination, inadequate welfare schemes, transport issues, and a lack of technical assistance. To enhance multi-level governance quality, it was suggested to strengthen linkages and convergence across various levels, build networks with other organizations, upgrade infrastructure, diversify income-generating activities, implement regular monitoring and evaluation of cooperative operations, assist cooperatives in business model formulations and provide comprehensive training and capacity-building programs.

Keywords: Fisheries Cooperatives, FCGQI, Ease of Doing Business, Empanelled, Non-empanelled.

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INTRODUCTION

1. INTRODUCTION

Fisheries and aquaculture continue to play a crucial role in providing food, nutrition, income, and livelihoods for millions of people. Fish, being an affordable and nutritious source of animal protein, serves as a vital tool in combating hunger and malnutrition across the country. The Indian Fisheries sector has grown steadily over the years, becoming a major component of the nation's socio-economic landscape while sustaining livelihoods of around thirty million individuals, particularly those of the marginalized and vulnerable communities and offering source of food, nutrition and employment opportunities to approximately 28 million fishers, which is equivalent to one-third of the global population. India proudly holds the position of the third-largest producer of fish and aquaculture globally, contributing approximately 8.92 percent of the global production. In the fiscal year 2022-23, India achieved a commendable total fish production of 175.45 lakh tonnes, with 131.13 lakh tonnes from inland sources and 44.32 lakh tonnes from marine sources. India is also a major producer of fish through Aquaculture and ranks second in the world after China. Inland fish production constitutes about 75 percent of the total fish production of the country (DoF, 2023). Fisheries in India empowers over 46.74 lakh fishers through 25,535 primary fisheries cooperative societies, including cooperative societies exclusively for fisherwomen. The fisheries cooperative sector plays a vital role in improving the livelihoods, nutrition, and social security of vulnerable groups, positively impacting approximately 4 million people across India (National Cooperative Database, 2023).

1.1 FISHERIES IN ASSAM

Assam is the most water resourceful state in the Northeast part of the country with fisheries playing an important sector in the state, providing employment opportunities to a large number of individuals besides providing nutritional security. Fish is an integral part of the food and culture of the Assamese society which includes a total fisher population of about 25 lakhs. Assam is endowed with vast fisheries resources which includes 11,304 km of rivers, 71,843 ha of beels/oxbow lakes, 6,102 ha of forest fisheries, 83,633 ha of derelict/low-lying areas, 3,096 ha of reservoir fisheries, 94,693 ha of ponds & tanks. The State is also rich in diverse ichthyo-fauna with 216

freshwater species, out of which 150 species have ornamental importance and 50 species with overseas ornamental value. The major culturable and farmers preferred species are Indian major carps i.e., Rohu, Catla, Mrigal, exotic carps i.e., Grass carp, silver carp and Common carp. Other species like Chital, Magur, Sol, Kawoi, freshwater prawn, Jayanti Rohu, Amur Common Carp etc. are also being introduced by farmers together with these species. Lately, Pangasius, Monosex Tilapia etc., have also been introduced in the state. During 2022-23, total fish production in Assam was 4,43,250 tonnes out of which 1,43,870 tonnes came from natural water bodies (capture fisheries) & 2,99,380 tonnes from ponds & tanks (culture fisheries). The highest fish producing districts in Assam are Nagaon district (52,337 tonnes), Cachar District (37,622 tonnes) and Morigaon District (21,543 tonnes), which supports the 13.06 per capita consumption of fish of the fish-eating population (DoF Assam, 2023).

1.2 COOPERATIVE SOCIETIES

The cooperative sector plays a significant role in the overall economic development of the country with its member driven inclusive approach. According to the International Labour Organization (ILO, 2004), cooperatives play a unique and vital role in uplifting the socio-economic conditions of impoverished communities. There are 8.5 lakh cooperative units in India with 29 crore people directly associated with the cooperatives in agriculture & allied sector (Ministry of Cooperation, 2023). Cooperation means living, thinking and working together. A cooperative is an autonomous association of persons united voluntarily to meet their common economic, social, and cultural needs and aspirations through a jointly owned and democratically controlled enterprise (ICA, 1995). The Co-operative Credit Societies Act, which was passed on March 25, 1904, is recognized as a historic moment that launched the Co-operative Movement in India. The Cooperative Societies Act amended in 1912, allowed for the registration of cooperative societies for the purpose of fostering non-credit activities as well as the federation of primary societies into higher level organizations.

Cooperative development gained momentum after independence when it was given consideration in several five-year plans. The First Five Year Plan (1951-56) explained the goals of the Indian cooperative movement and provided justification for the focus on cooperatives and panchayats as ideal organizational structures for the advancement of politics and the economy. According to the Second Five Year Plan

(1956-61), one of the main objectives of national policy was to establish a cooperative sector as a component of the planned development scheme. The Third Five Year Plan (1961-66) had stressed that cooperation should gradually become the primary basis of organization in many areas of economic life, including agriculture and minor irrigation, small industry and processing, marketing, distribution, supplies, rural electrification, housing and construction, and the provision of basic amenities for local communities. The Fifth Five Year Plan (1974-79) recognized the need to fortify the cooperative framework, funding for the Agricultural Stabilization Fund, the rehabilitation of weak central cooperative banks, and aid to cooperative lending organizations in poor nations. Creating an appropriate framework that will provide cooperatives with cadres of appropriately qualified and trained staff to handle their different activities was given special focus throughout the Sixth Five Year Plan (1989-85). During the Seventh Five Year Plan (1985-90), one of the main policy goals in the area of agricultural finance was to guarantee a significant rise in the flow of credit, especially for the less fortunate segments of the population. The Eighth Five Year Plan (1992-1997) prioritized democratizing and increasing the autonomy of the cooperative movement in order to strengthen it as an institutional framework that can be self-managed, self-regulated, and self-sufficient (NCUI, 2007).

In a recent development, the Government of India has taken significant steps to rejuvenate the cooperative sector by establishing a dedicated Ministry of Cooperation on July 6, 2021. This initiative provides a distinct administrative, legal, and policy framework aimed at enhancing the strength of the cooperative sector nationwide. The objective is to cultivate an economic model based on cooperation and streamline processes to promote ease of doing business within cooperatives. The ministry prioritizes the enhancement of transparency, governance, and digitalization while fostering competitive cooperatives. It is committed to addressing the challenges of rural underprivileged populations by ensuring accessibility to development opportunities and fostering connectivity between villages and cooperatives. The overarching goal is to promote prosperity through cooperation, thereby contributing to the overall prosperity of the nation (Ministry of Cooperation, 2023). Also, to recognise the importance of cooperatives, the International Cooperative Alliance has announced the year 2025 as the International Year of Cooperatives (IYC2025) under the theme "Cooperatives Build a Better World" to highlight the significant and lasting

global impact of cooperatives. This theme emphasizes the cooperative model as a key solution for addressing many global challenges and underscores its vital role in accelerating progress toward achieving the Sustainable Development Goals (SDGs) by 2030.

1.3 FISHERIES COOPERATIVES

Fisheries cooperatives play multifaceted roles in production, handling, processing, marketing, supply chain management, and community services. They also facilitate access to various government schemes for fisher members. Wasave *et al*. (2015) highlighted the importance of financial support in the success of cooperative societies within the fishing sector.

The history of Indian fisheries cooperatives dates to the establishment of the first cooperative society named Karla Machimar Cooperative Society in Ratnagiri district of Maharashtra in 1913. Following this, West Bengal established its first fisheries cooperative society in 1918, while Tamil Nadu followed suit in the same year (Mishra, 1997). Fisheries cooperative organizations are governed by a different set of laws designed to channel support from the government associated with self-help, management and control. In India, the fishery cooperatives system is roughly three tiered, with a primary cooperative at the village or block level and another two that are district and state level federations (Chandrashekar, 2014; Wasave *et al.,* 2020).

Presently, India boasts a network comprising a National Level Federation called National Federation of Fishers Cooperative Limited (FISHCOPFED), 24 State level federations, 9 Regional level federations, 138 District level federations and 25,535 primary societies, with a total membership of 46.74 lakh at the primary level (FISHCOPFED, 2022). In Assam State, there are 604 primary fisheries cooperative societies with a total membership of 65,691 members, 2 district fisheries cooperative unions, and 1 state level federation (RCS Assam, 2023).

1.4 STATEMENT OF THE PROBLEM

While the focus of fisheries cooperative societies is typically on fish production, catching, and marketing, it is noted that many of these cooperatives have expanded their operations to include a range of related and ancillary activities (ILO, 2004).

Fisheries cooperatives offer economic support to fishers, ensuring they receive a fair profit margin through activities such as grading, preservation, storage, transportation, and processing of fish. They also supply essential fishing equipment like nets, ropes, and oil to enhance the efficiency of their members. These cooperatives regulate fish markets to ensure fair prices and establish long-term contracts with organized purchasing entities. Additionally, some cooperatives provide comprehensive marketing infrastructure to facilitate the sale of catch at profitable rates for their members and their families (Mishra, 1997).

Through pilot study it was noted that the State level federation and primary fisheries cooperatives in Assam are well established. But the same cannot be said for the district federations. The activities of primary and district level fisheries cooperatives have been very limited to availing subsidies and grants provided by Central and State Governments, instead of focusing on fish production, marketing, and development of cooperative members. While the state federation has a well-established organizational structure, it is not as robust as it should be. As a result, critical responsibilities such as member database upkeep, audit processes, and involving members in decision-making frequently get overlooked or neglected. At the center of these challenges is the struggle to establish effective communication and collaboration between different levels of cooperatives. From Primary Fisheries Cooperative Societies (PFCSs) to the District Federations and the State Federation, there's a lack of coordination and accountability. This makes it difficult for the cooperatives to work together smoothly, address the needs of their members, all while creating an enabling environment for the cooperatives to carry out business activities. The governance of cooperative societies holds significant importance, serving as a key determinant of their success or failure. It is crucial to address these governance issues and enhance the overall business environment for fisheries cooperatives.

Previous research on fisheries cooperatives has primarily concentrated on aspects such as performance evaluation, management practices, the socio-economic status of members, financial viability, marketing strategies, member participation, perceptions of cooperatives, successes and failures, and challenges encountered. Strategic leadership, managerial proficiency, gender inclusivity, enabling business

environment and diversification of economic activities have been identified as crucial elements for cooperative success. However, there has been insufficient attention given to assessing governance and the ease of doing business within the cooperatives at multi-level. Additionally, there is a lack of standardized tools available to evaluate the governance quality and the ease of doing cooperative business at the different levels of cooperative structure specifically tailored for fisheries cooperatives.

Considering these points, the study entitled **"Governance Assessment of Multi-level Fisheries Cooperatives in Assam"** aims to address the following research questions through the stated research objectives.

1.5 RESEARCH QUESTIONS

- How does the governance quality influence the performance of fisheries cooperatives?
- How does affiliation with the state federation impact the governance and performance of fisheries cooperatives?
- Why do PFCSs primarily focus on government initiatives rather than engaging in economic activities?
- What factors contribute to the ease or difficulty of conducting business within fisheries cooperatives in Assam?
- Is there an incidence of ideal conditions for carrying out business activities in fisheries cooperatives?
- What internal and external challenges hinder the optimal functioning of multi-level fisheries cooperatives?
- How can the identified constraints be addressed to improve the overall performance and sustainability of these cooperatives?

1.6 RESEARCH OBJECTIVES

- ❖ To evaluate the governance quality of multi-level fisheries cooperatives in Assam.
- ❖ To assess the ease of doing business in multi-level fisheries cooperatives.
- ❖ To identify the constraints and suggest strategies for strengthening multi-level fisheries cooperatives.

1.7 SCOPE OF THE STUDY

The present study is an attempt to understand the present profile and give insights about the quality of governance at multi-level fisheries cooperatives in Assam in terms of teaming, accountable empowerment, democracy strategic leadership, convergence and linkage. The study would develop the novel methodology called *Fisheries Cooperative Governance Quality Index* which will be a useful tool for researchers and policy makers studying the governance quality of cooperative societies in other parts of the country with suitable modifications. The study would assess the ease of doing business among the cooperatives through the *Ease of Doing Business Index* modified and suited for cooperatives. The study would also document the constraints faced by cooperatives at multi-level. The study findings and suggested strategies would be helpful for strengthening the fisheries cooperatives at multi-level to achieve desired outcomes.

1.8 LIMITATIONS OF THE STUDY

Although every effort has been made to make this study more inclusive and systematic, it is subjected to certain limitations as indicated below.

1. It is not possible to obtain complete and accurate information by overcoming the personal bias of respondents. In spite of this sufficient care has been taken to design proper tools to get the authentic data for the study.
2. Being postgraduate research, the researcher has limitations of time, money and other resources.
3. The dimension used for studying governance in multi-level fisheries cooperatives in the present investigation was a maiden attempt in the field of fisheries extension. Therefore, these dimensions may need to be refined further.

4. The area of investigation was restricted to one state; therefore, the universal applicability of the result can’t be claimed.

1.9 PRESENTATION OF THE STUDY

The report of the study is presented in six chapters. The first chapter deals with a brief Introduction, including the study's objectives, scope and limitations. The second chapter deals with the Review of Literature which is very relevant to the problem presented in the first chapter. The third chapter deals with the Research Methodology followed in the investigation process. It includes a selection of respondents and sampling procedure, selection of variables, methods and devices used for data collection and statistical tools. The fourth chapter deals with the Results and Discussion presented in accordance with the study's objectives. The fifth chapter deals with the Summary and Conclusion, consisting of implications of the study and suggestions for further research. The sixth chapter deal with the Bibliography is presented by following the guidelines of ICAR-CIFE on thesis presentation. Annexures are provided at the end of the thesis.

REVIEW OF LITERATURE

2. REVIEW OF LITERATURE

The literature review is essential for refining the research focus, methodology, and contextualizing findings. This review provides a comprehensive understanding of the field through previous research and relevant quotes. Although limited literature exists on fisheries cooperative governance and business operations, this chapter examines key factors related to the study's objectives under the following headings**.**

2.1 Fisheries Cooperative studies in the World

2.2 Fisheries Cooperative studies in India

2.3 Fisheries Cooperative studies in Assam

2.4 Governance Studies in Fisheries Cooperative Societies

2.5 Studies on Ease of Doing Business

2.6 Constraints and Strategies for Strengthening Fisheries Cooperatives

2.7 Lessons learnt from Reviews

2.1 FISHERIES COOPERATIVE STUDIES IN THE WORLD

Baticados *et al.* (1998) conducted a study on fishing cooperatives and their role in managing fishery resources in Capiz, central Philippines. The study indicated that 77% of members belonging to island cooperatives expressed a stronger sense of loss regarding resource depletion compared to those from mainland cooperatives. This discrepancy was attributed to the fact that 61% of respondents from the mainland were aware of licensing restrictions, which prohibit fishing vessels larger than 3 tons from operating in municipal waters to prevent overfishing. However, only 11% of island respondents were fully informed about this policy through their cooperatives. Despite having lower levels of education, 75% of island respondents expressed willingness to take on cooperative administration responsibilities for managing fishery resources. However, 13% of respondents cited difficulties in resource management within cooperatives due to leadership issues and government corruption.

Wimalasena and Rupamoorthy (2005) studied the current conditions of fishermen cooperatives in Sri Lanka. They identified low member involvement in decision-

making, partly due to restrictive bylaws. Since most cooperatives were government-initiated, members often felt dissatisfied. Debt issues decreased attendance at meetings, and new subsidies bypassed cooperatives, diminishing their importance.

Unal *et al.* (2009) examined the factors contributing to the success and failure of fishery cooperatives in the Aegean region of Turkey. Their findings showed that 66% of the cooperatives' success was attributed to their engagement in fish marketing, which generated 99% of the cooperative revenue. Additionally, the study revealed that 57% of members found challenges such as lack of subsidies, difficulty accessing credit, and high interest rates as significant obstacles for the cooperatives. Furthermore, 53% of respondents highlighted issues related to fishing grounds, while 50% mentioned challenges associated with interactions with other fishers.

Rajaratnam *et al.* (2010) studied the success factors of cooperatives in Malaysia. The findings indicated that four key factors—visionary leadership, managerial competence, functional characteristics, and stability—were crucial for cooperative success. Among these, visionary leadership was deemed the most significant, with a group mean score of 4.54, followed by managerial competence (4.52), functional characteristics (4.43), and stability (4.00).

Motamed *et al.* (2011) studied the impact of fisheries cooperative societies on the social and economic development of members of Guilan beach seine cooperatives. They found that participation in these cooperatives was significantly associated with literacy levels, engagement in educational extension classes, satisfaction with the cooperative's operation, and understanding of its fundamental principles and economic activities.

Odetola *et al.* (2015) examined the role of cooperative societies in supporting fish farmers in Lagos State. Using a multi-stage sampling technique, the study compared 150 cooperative and 150 non-cooperative farmers. Cooperative members had better access to resources and capital. Tobit regression analysis revealed that gender, education, cooperative membership, and input costs significantly impacted productivity. The study recommended increased government support and credit provision for cooperative farmers to boost their participation and profitability.

Mhembwe and Dube (2017) examined how cooperatives help the rural populations in Zimbabwe's Shurugwi District to maintain their means of subsistence. Results

show that by establishing cooperatives, residents of rural areas were able to improve their standard of living and decrease poverty by increasing food production, creating jobs, empowering women and other marginalized groups, and fostering social cohesion. The majority of cooperatives have several difficulties, such as inadequate funding, incompetent administration, and a lack of marketplaces where their produce can be sold in a competitive manner. The report suggests that the Cooperatives in rural areas can grow and diversify their business activities with financial backing from the banking industry. Additionally, in order to market their produce more easily, cooperatives in the agricultural sector need to establish some producer organizations.

Agu-Aguiyi *et al.* (2018) studied the performance of fisheries cooperatives in Nigeria. The results showed that the respondents' low educational backgrounds had an impact on their initiative to advance fishing experience management and fish production techniques. Substantial impact on the fishermen's returns as those who pursued larger catches. The fishermen are faced with various degrees of challenges which range from pollution, climate change/bad weather, financial challenge; storage and processing facility; as well as high cost of fishing tools.

Madau *et al.* (2018) explored the technical efficiency of Sardinian Fisheries cooperatives, finding that the economic size of the cooperatives significantly influenced their technical efficiency. Larger cooperatives demonstrated more effective use of technical resources. The study also found that efficiency was not solely dependent on technological differences between firms but on the optimal use of inputs.

Dendup and Aditto (2020) investigated the performance and challenges of agricultural cooperatives, focusing on aspects like legal status, planning strategies, management structure, production quality, market linkages, and member recruitment. The overall performance score, based on 64 indicators, was 50.97%, indicating that most agricultural cooperatives in Bhutan were not achieving desired levels of efficiency and success.

Kyazze and Nsereko (2020) studied cooperative practices and their impact on non-financial performance in Uganda. The study revealed that enhanced communication, cooperative ownership, and accountability are key predictors of non-financial performance. The results of the regression analysis indicated that a one-unit increase

in cooperative ownership, cooperative responsibility, and advanced communication corresponded to changes in non-financial performance of cooperatives by 50.7%, 16.9%, and 23.9%, respectively.

Wassie (2020) analyzed the factors contributing to the success of business cooperatives in the North Gondar Zone. The regression analysis found that variables such as group savings, loan repayment rate, membership fees, membership size, financial stability, and business volume explained approximately 87.24% of the variation in cooperative success, as measured by profitability. Interestingly, the duration of membership had a negative impact on cooperative success.

Twumasi *et al.* (2021) examined the factors that influence cooperative membership and how it affects household income in Ghanaian fish farms. Based on the findings, household heads' decisions to join cooperatives are influenced by peer pressure, education level, off-farm employment, and loan availability. Membership in a cooperative can result in income increases for households and farms of 28.54% and 34.75%, respectively.

Lafont *et al.* (2023) studied the role of cooperatives in the SDGs and suggested that cooperatives can play a fundamental role in achieving SDGs. The study found that producer cooperatives are linked to SDGs related to poverty, responsible consumption, production, and life on land. Also found that cooperative multi-stakeholders can promote SDGs related to affordable and clean energy, industry and green resources.

Christian *et al.* (2024) explored how the agricultural cooperatives in in Eastern Cape, South Africa enabled smallholder farmers to take part in agri-food chains.According to the study, the vast majority of participants (93%) stated that agr icultural cooperatives had a good impact on their ability to make a living. The probit model's findings demonstrated that participation in storage, processing, and distribution levels was influenced at varying degrees of importance by quality, quantity, education, and information availability. A blended financing model that accommodates smallholder farmers without collateral is also suggested by the study.

2.2 FISHERIES COOPERATIVE STUDIES IN INDIA

Sapovadia (2004) examined the advantages and disadvantages of fisheries cooperatives. These cooperatives operate independently or in collaboration with others in activities such as fish processing and storage. The researchers envisaged that cooperatives could bolster production, processing, storage, transportation capabilities, and provide financial support when necessary. Consequently, cooperative organizations might effectively compete with international corporations by integrating professional management practices alongside their cooperative strengths.

Nair *et al.* (2010) studied the performance of marine primary fishery cooperatives in Thane district, Maharashtra. Study found that the fisheries cooperatives in Thane district were significantly contributed to the district's fishery growth. 22 of the 28 societies surveyed had generated profits. Profit-making societies had distributed 12–15% of their net profits to their members as dividends. Cooperatives had significantly improved the ability of fishermen to utilize fishing resources for their wellbeing. The results also showed that functioning and performance of most of the societies in Thane district have infused a sense of belongingness among the fisher folk members.

Tyagi *et al.* (2013) studied the functioning of fishers cooperative societies based on the dimensions of communication, leadership, decision-making, trust, participation and performance. The study covered 58 fishermen co-operative societies in 3 states (MP, UP, HP). Based on the average mean score value, the study revealed that overall functioning of the fishing cooperative societies was high in H.P (43.57) and M.P (45.56). However, it was low in U.P (25.61).

Upadhyay *et al.* (2013) evaluated the Performance of Primary Fisheries Cooperative Societies of Tripura. The study mentioned that Tripura's fisher cooperative was not operating in an encouraging manner because, of the 144 total cooperatives, 26% were inactive and 20% were dormant. They only used a total of 402.30 ha (1.28% of the state's total fishing resource) for their operation. Only 32% of cooperatives have their own water areas and 61% of them use leased water bodies to function and 1% of the cooperatives control 50% of the total water area. Most societies had not been encouraged to engage in fishing operations effectively and scientifically. Because government support was very little in the form of management subsidies, share capital and training.

Chandrashekar (2014) studied the development of fishers cooperatives in India between 2001 and 2010. He mentioned that there had been positive and steady growth during the last seven years (2003 onwards). So, he recommended that low-interest loans should be provided to fishers through cooperatives to alleviate the poverty that exists in fishing communities and effective coordination should be needed between the Central and State Governments of India.

Haldar *et al.* (2015) studied the performance of fishers cooperatives in Tripura. They mentioned that a total of 78 cooperatives were active out of 145; of those, 15 were in high productivity groups (>2500 kg/ha), 18 were in medium productivity groups (1500–2500 kg/ha), and 45 were in low productivity groups (1500 kg/ha). Due to the cooperative members' active participation in raising productivity, the fishermen's cooperatives in Tripura produced an adequate number of fish.

Thakur (2015) studied socio-economic status and other parameters of fish production of fishermen cooperatives, SHGs and fishermen groups in Bastar district of Chhattisgarh. He found that, there were significantly more female members in SHGs (71.43%) than male members (28.57%). In contrast to SHGs, the proportion of female members in fishermen's cooperatives and groups was significantly lower. Most respondents held multiple jobs in agriculture, animal husbandry, and fishing. Because cooperative societies operated on a big scale. It was predicted that fisherman cooperatives would have more members than SHGs and other fishermen groups. The fish productivity recorded for fisheries cooperatives, SHGs, and fishermen groups was 32.50 quintals, 42.22 quintals, and 38.16 quintals per hectare of water bodies.

Ambilikumar (2017) examined the performance of primary-level fishermen development and welfare cooperative societies in Kerala. He observed that no individuals were utilizing education loans, and only a small number had obtained loans for house construction. Additionally, approximately 54.17% of the societies were not providing any microfinance facilities to their members. There was a notable lack of awareness among female members regarding the schemes offered by the Fisheries Development and Welfare Cooperative Societies (FDCWS) compared to male members. Furthermore, the cooperative societies were not meeting the expectations of their members satisfactorily.

Pegu *et al.* (2018) conducted a study in the west Tripura and Gomati districts of Tripura, focusing on members' involvement in fish seed production activities. They found that the highest proportion of members (53.79%) did not participate at all, followed by those who participated regularly (20.60%), occasionally (18.28%), and rarely (7.24%). The weaknesses identified in cooperative societies included unsatisfactory economic performance, reluctance towards collective decision-making based on collective wisdom for future growth and development, insufficient reserve funds, and a lackadaisical approach towards timely distribution of dividends/profits to members. Overall, the performance of fishermen's cooperative societies in Tripura fell short of expectations.

Wasave *et al.* (2020) examined the organizational roles undertaken by 39 marine fisheries cooperatives in Maharashtra. The findings indicated that 70% of these cooperatives were actively engaged in providing Social Services, while 66% were involved in Facilitating Services, and 30% participated in delivering Government Schemes. However, the study highlighted that the extent of roles performed by the cooperatives was constrained by administrative, financial, and infrastructural factors.

Kumari and Sharma (2021) studied the performance of fisheries cooperatives engaging in cage culture in Chandil reservoir, Jharkhand. The study found that a Cost- Benefit ratio of 1.46 was attained attributing to a viable and profitable cage culture project, suggesting good performance of the cooperatives.

Mahanayak and Panigrahi (2021) assessed the sustainable management practices of fishermen cooperative societies in India. They emphasized the pivotal role of sustainable administration in these cooperatives for enhancing fish production and fostering socio-economic development among fishermen. However, they also observed regional disparities in the operation of fishermen cooperatives. Their recommendations included leveraging modern technology for fish production, enhancing storage and marketing facilities within cooperatives, fostering transparency in administration and management practices, promoting participatory decision-making processes, improving access to credit, and mitigating threats posed by environmental pollution and climate change to enhance cooperative management.

Sajesh (2023) studied linkage between research institute and cooperatives as an approach for transferring fisheries technologies and suggested that cooperatives can

act as the platform for technology dissemination by forging linkage with research institutes and creating an enabling environment by converging with various governmental and non-governmental organizations. He emphasized that cooperatives could facilitate access to technologies in the fisheries sector by small-scale fishers and other stakeholders, with research institutes' role in the linkage include conducting need- based research while cooperatives' role include providing feedback to research system in addition to facilitating technology dissemination.

Sanyal *et al.* (2023) reviewed the roles and activities of fisheries co-operative societies in India for resource optimization and economy of farmers and concluded that the socioeconomic development of fishermen and an increase in fishing production depend on the efficient management of fisherman's cooperatives and skill development. Cooperatives can satisfy financial needs while simultaneously increasing productivity, processing, storage, and transportation capabilities. Their recommendationsincludedto conduct a national study on many aspects of fisheries cooperatives and noted that proper policy implications are required for sustainable management of fisheries cooperatives in line with recent technological developments in the aquaculture industry, environmental deterioration, and global warming.

Solomon (2023) studied cooperatives' role, contribution, and challenges for poverty reduction among small-scale fisher communities using the social capital approach. The study finds the significance of cooperatives as a supplier of material and non-material resources, namely livelihood opportunities, credit support, protection from middlemen exploitation, awareness creation, and development of savings habits to cope with everyday challenges. At the same time, political authoritarianism, pre-conditioned criteria for cooperative membership, and power structures within the cooperatives mediated fisher's access to and utilization of cooperative services.

Bachu and Eunice (2024) studied fisherwomen's cooperative societies in Visakhapatnam, Andhra Pradesh, emphasizing their role in empowering marginalized women and fostering sustainable fishing practices. The research highlighted several challenges, including reliance on middlemen, lack of technical expertise, financial struggles, and insufficient infrastructure. While these cooperatives currently offer limited direct employment opportunities, they hold significant potential in areas such as marketing and exports. Addressing these issues through policy interventions could enhance the resilience and sustainability of fisherwomen's cooperatives, driving

socio-economic progress.

2.3 FISHERIES COOPERATIVE STUDIES IN ASSAM

Chandra (2009) discovered that interpersonal communication sources, such as consultations with Fisheries Extension Officers, Beel managers, and scientists, were the most important channels for cooperative societies to obtain information on new and improved practices. Demonstrations and consultations with progressive farmers ranked second and third, respectively. The study emphasizes the vital role of interpersonal communication among floodplain wetland fishers in Assam.

Das (2016) highlighted the success story of Nagshankar cooperative in promoting sustainable livelihood based on the principle of co-operation and observed that the cooperative society demonstrated a robust advantage, experiencing minimal member turnover. However, shortcomings were identified in terms of inadequate distribution channels and promotional facilities. Despite having the opportunity to leverage the latest technology for maintenance, a potential threat loomed if the society failed to adopt it effectively.

Borah (2017) studied producers' cooperatives in Assam. Functional cooperative societies of Assam were observed to be continuously decreasing from 2005-06 (10134 nos) to 2012-13 (8422 nos) and members' registration is observed to be almost stagnant throughout the period. During the period from 2005-06 to 2012-13 working capital contribution was observed to be increasing while share capital contribution was found to be stagnant and sometimes it is observed to be decreasing. Concluded that this is due to continuous Govt. funding towards functional cooperative societies increasing the value of working capital while with decrease registration of members in the cooperative societies share capital was found to be decreasing.

Chandra and Das (2019) examined the management regimes and institutional frameworks governing stakeholder access to floodplain wetland resources in Assam and Bihar. They found that decisions regarding the use and management of these waterbodies are shaped by a legal and institutional context where welfare and revenue governance models are intertwined. The study emphasized that understanding the roles and involvement of various stakeholders is essential for integrating them into the governance process. Moreover, the inclusion of all relevant

actors and the establishment of strong linkages within and between them are key to enhancing governance effectiveness.

Kashyap and Argade (2019) conducted a study on gender disparities within fisheries cooperatives in the Nagaon District of Assam, employing the 4 R method of gender analysis. The findings indicated that a mere 12.50% of the executive body members were women, with men exclusively holding top positions. Women faced challenges in terms of priority to voice their opinions in meetings, indicating limited access to resources. The study also highlighted that women invested an additional 3.5 hours in combined productive and reproductive work compared to men, as per the daily activity clock of both male and female fishermen. The research shed light on issues concerning women's representation and resource allocation.

Kaiyum (2023) explored the problems and constraints of non-credit cooperative societies in Assam and listed that lack of awareness about cooperative principals; rules and benefits of cooperatives; absence of active member participation; inadequate financial resources; lack of adequate trained and efficient personnels in the department; lack of publicity of success stories in cooperatives; ignorance and illiteracy of the rural people and reluctant attitude of financial institutions as the main issues.

2.4 GOVERNANCE STUDIES IN FISHERIES COOPERATIVE SOCIETIES

Njaya (2007) examined the governance challenges faced in the implementation of co-management programmes, focusing on experiences from Malawi. They found that unclear roles, unequal power dynamics between government and resource users, weaknesses in district authorities, and financial resource constraints were key obstacles hindering the effectiveness of co-management initiatives. The study emphasized the importance of creating an enabling environment that empowers both government and resource users at the community and district levels for successful fisheries co-management.

Unal *et al.* (2009) discovered that factors such as the longevity of cooperatives, government policies on fisheries cooperatives, and internal conflicts among members negatively impacted membership rates. However, they also noted that regular changes in the management board had a notably positive effect.

Thomson (2013) discussed the difficulties of involving local communities and cooperatives in fisheries governance, noting significant variation in performance across countries. In India, particularly in Kerala, cooperatives faced challenges in formal management due to the diversity of resources, ecological services, and political interference. Although cooperatives contributed through informal involvement and indigenous knowledge, they lacked formal recognition. The study emphasized the need for robust informal networks involving civil society, political parties, and state actors to enhance fisheries governance.

Novak and Axelrod (2015) examined the impact of multi-level governance on fishermen's adaptive strategies in Tamil Nadu, India. Their research found that in the absence of restrictions, fishermen freely adjust their fishing efforts. When regional and local rules conflict, fishermen tend to prioritize community institutions over state regulations. However, district-level governance can introduce effective constraints on behavior. Additionally, local conflicts arising from village-level heterogeneity can create opportunities for external governance to be accepted.

Tripathy *et al.* (2021) investigated the connection between good governance and competitiveness in Kerala's Primary Agricultural Credit Societies (PACS). Their research emphasized that the competitive dynamics driven by effective governance play a crucial role in the development and success of cooperatives. The study further underscored that the implementation of good governance practices in PACS helps improve the cooperatives' reputation and stakeholder value over time.

Dinesh (2023) assessed governance in Inland Primary Fisheries Cooperative Societies in Tamil Nadu. The governance quality index revealed that 80% of Tiruvallur Fishermen Cooperative Societies scored in the medium range, while 75% of Cuddalore FCS showed low governance quality. These findings suggest that Inland Fisheries Cooperatives across different locations have yet to fully realize their potential and the objectives for which they were established.

Jamaluddin *et al.* (2023) identified four main categories of cooperative governance linked to performance: board characteristics, policy compliance, management strategies, and social capital. While good governance was associated with improved monitoring and performance, the specific impact on cooperatives remained unclear. The study highlighted the need for further research to clarify these relationships and

enhance cooperative governance practices and performance assessment.

Rujan (2023) analyzed governance in Marine Primary Fisheries Cooperative Societies in Tamil Nadu. The Fishermen Cooperative Governance Quality Index (FCGQI) ranged predominantly from medium (66.67%) to high (19.05%), whereas fisherwomen's cooperatives were largely categorized as low (23.81%) to medium (71.43%). Notably, the governance quality was higher in fishermen's cooperatives compared to fisherwomen'.

Thavai (2023) evaluated governance within Inland Primary Fisheries Cooperative Societies in Maharashtra. According to the governance quality index, the majority of societies (51.2%) scored in the medium range. However, strong leadership was found to improve governance quality, as evidenced by poor governance in 82.93% of societies, which corresponded to low leadership levels.

2.5 STUDIES ON EASE OF DOING BUSINESS

Nair *et al.* (2007) conducted research in the Vasai taluka of Thane district, Maharashtra, to evaluate the performance and role of fishery cooperatives in their business activities. Using ratio analysis techniques, they assessed the business performance of primary fishery cooperatives. The findings showed that while most societies had unsatisfactory gross profit and operating ratios, indicating inefficiencies in their operations, the net profit and efficiency ratios were generally satisfactory. This mixed performance underscores both strengths and areas for improvement within these cooperatives.

Groeneveld (2016) studied the enabling environment for co-operatives in 33 countries around the world. The study concludes that a favorable general business environment (e.g. a higher General Doing Business Indicator according to the World Bank) is associated with better co-operative performance. Good governance conditions were also found to be positively correlated with co-operative performance.

Handoyo (2017) studied the relationship of good public governance and ease of doing business performance. The study was intended to reveal whether the country that applies the good practice of public governance will also lead to good performance in terms of ease of doing business. The results showed that all public governance attributes were positively and significantly associated with ease of doing a business performance.

Krishnan *et al.* (2021) developed the Ease of Doing Research Framework under ICAR-NAARM, aimed at improving the research environment through key dimensions. The study emphasized the importance of Human Resource Strategy, including the need for competency, timely career progression, and recognition through awards. Additionally, research infrastructure, such as laboratory and field facilities, was essential for productivity. Leadership played a critical role, where inspiring teams and enhancing institutional visibility contributed to success. Governance factors, such as delegated powers and access to funding, were also important in streamlining research processes. The framework noted that fostering a positive research culture with peer support and mentoring further enhanced the research environment. This framework could also be adapted to study the Ease of Doing Business in Cooperatives by emphasizing similar factors such as human resources, infrastructure, leadership, and governance for cooperative success.

Shah *et al.* (2023) reviewed the impact of Ease of doing Business Perception (EBP) on growth motivation of small and medium enterprises to explore perception about ease of doing business in a developing country. Findings of the study suggest that there is a significant association between perceived ease of doing business and growth motivation of SME's. Perception about ease of getting electricity, ease of paying taxes, ease of registering property, and ease of getting credit positively influences business growth motivation of business owners and managers.

2.6 CONSTRAINTS AND STRATEGIES FOR STRENGTHENING FISHERIES COOPERATIVES

Thakur (2015) found the constraints as poaching of fishes, law and order problem related to lease of water bodies, lengthy loan procedure by the financial institutions, heavy weed infestation in the water bodies, unavailability of suitable fish transport facility, dominance of some particular persons in decision making and intrinsic caste system, prevailed in the fishermen cooperative societies, SHGs and Fishermen Groups of Bastar district of Chhattisgarh.

Pongener and Sharma (2018) used SWOC analysis to examine the challenges faced by fishery enterprises. The analysis showed that the primary production challenge was a lack of knowledge about pest control, while price fluctuation was the

main marketing issue. Market intermediaries also highlighted the lack of proper storage facilities as a serious concern. The study recommended measures to improve the sustainability and efficiency of fishery enterprises in the region.

Sharma *et al.* (2018) examined the main obstacles that fishermen cooperatives in Southern Rajasthan faced. They discovered that the main obstacles that fishermen in the study area faced included the lack of floating nurseries, inconsistent feed supplies, inadequate preservation and curing facilities, poor financial standing of the fishermen, ignorance of the rules and regulations that they faced, and a lack of up-to-date price information.

Kalidas and Mehendran (2020) analyzed constraints in coconut production and marketing using the Response Priority Index. Pest and disease outbreaks were identified as the top production issue, with an RPI of 2.69, requiring interventions from agricultural authorities. In marketing, the main challenge was high price fluctuation (RPI: 2.39), reflecting market instability. The authors recommended establishing an institutional body to predict price movements and ensure market stability. These findings have implications beyond the study area and suggest nationwide measures to improve coconut production and marketing, benefiting growers and contributing to India's economy.

Nasar *et al.* (2021) investigated the need matrix of Primary Fishermen's Cooperative Societies in the district of North 24 Parganas, West Bengal. The study's findings showed that, for the majority of PFCSs in the district, infrastructure support was the most critical kind of support. Most of the PFCSs considered welfare measures and financial support to be the second significant expected assistance. Also, there was a need for technical support as well as policy interventions.

2.7 LESSONS LEARNT FROM REVIEWS

Previous research on fisheries cooperatives has primarily concentrated on aspects such as performance evaluation, management practices, the socio-economic status of members, financial viability, marketing strategies, member participation, perceptions of cooperatives, successes and failures, and challenges encountered. Strategic leadership, managerial proficiency, gender inclusivity, enabling business environment and diversification of economic activities have been identified as crucial elements for cooperative success. However, there has been insufficient literature focusing on assessing governance and the ease of doing business within the cooperatives. Additionally, from the studies, it was found that there is a lack of standardized tools available to evaluate the governance quality and the ease of doing cooperative business at the different levels of cooperative structure specifically tailored for fisheries cooperatives.

RESEARCH METHODOLOGY

3. RESEARCH METHODOLOGY

The methodology and processes used in the study are briefly described in this chapter. The blueprint of a research architect is the research methodology, which allows the reader to critically evaluate the overall validity and reliability of the study. It describes the research technique adopted for the present investigation, which includes research design, sampling procedure, empirical measurement of variables, data collection and statistical tools used. The research methodology followed is presented under the following headings.

3.1 RESEARCH DESIGN

Ex post facto research design is a systematic empirical inquiry in which the scientist does not have direct control on independent variables because their manifestations have already occurred (Kerlinger, 1983). Depending upon the nature of study and to provide answers to selected research questions, an *Ex post facto* research design was followed to carry out the study since the variables chosen for the study already occurred and there was no scope for manipulation of any variable.

3.2 LOCALE OF THE STUDY

Assam State has been selected purposively for this study (Fig. 3.1). Assam is situated in the North-East of India and is the largest northeastern state in terms of population while second in terms of area. The state is bordered by Bhutan and the state of Arunachal Pradesh to the north; Nagaland, Arunachal Pradesh and Manipur to the east; Meghalaya, Tripura, Mizoram, and Bangladesh to the south; and West Bengal to the west. Thus, being at the center of the NE states. The state has a total

of 35 districts. The overall fish production of Assam is 44.32 lakh tonnes and ranks the highest among the Northeastern states (Handbook on Fisheries Statistics, 2023). Assam has a total of 1 state level federation, 2 district level federation (Morigaon District & Nagaon District), 604 primary fisheries cooperative societies from 33 districts with 65,691 memberships. Out of the 604 PFCS, 304 (50%) are empanelled with the state level federation, Assam Apex Cooperative Fish Marketing and Processing Federation Ltd. (FISHFED), while 300 (50%) are not affiliated. Among the district federations, Nagaon District Federation of Fishermen Cooperative Societies is empanelled (Annual Report, DoF Assam, 2023). Empanelled societies refer to those primary and district level societies that are officially affiliated with FISHFED and hold shareholder status within the state cooperative federation. While non-empanelled societies refer to those societies which are not affiliated to FISHFED nor hold any shareholder status. This study is exclusively focused on Multi-level Fisheries Cooperatives which includes the State Apex Federation, District Federation and Primary Fisheries Cooperative Societies.

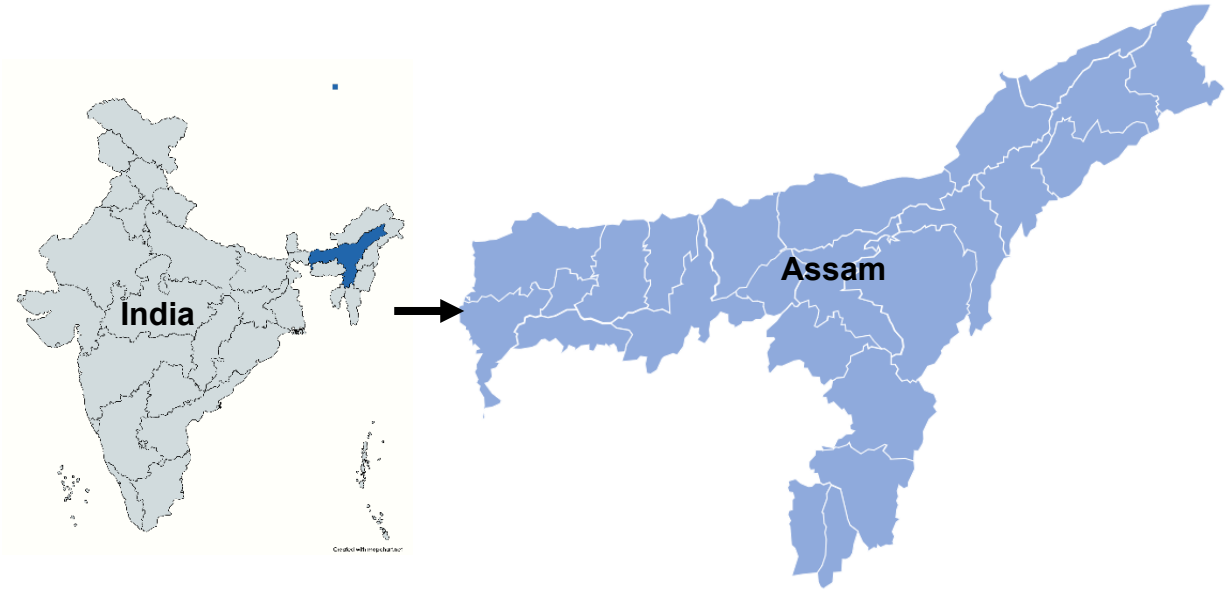

Fig. 3.1 Map of Assam State

3.3 SAMPLING PROCEDURE

3.3.1 Selection of State Fisheries Cooperative Federation

At the state level, Assam Apex Cooperative Fish Marketing and Processing Federation Limited (FISHFED) was purposively selected as it is the only fisheries cooperative federation operating at the state level.

3.3.2 Selection of District Fisheries Cooperative Federation

At the district level, the sample was drawn from total i.e., both Nagaon District Federation of Fishermen Cooperative Societies Limited (NDFFCSL) and Morigaon District Federation of Fishermen Cooperative Societies Limited (MDFFCSL) was selected.

3.3.3 Selection of Primary Fisheries Cooperative Societies

At the primary level, 40 functional PFCS were selected from empanelled and non- empanelled PFCS across the State using convenience sampling due to time, financial, and resource constraints. 20 functional PFCSs from both the categories were selected. Thus, a total of 43 cooperative societies across the three levels were considered for the study (Fig. 3.2). Two Focus Group Discussions (one with executive body members and one with general body members) was conducted in each selected PFCS, district and state federation to collect quality information about selected variables for the study. Empanelled societies refer to those primary and district level societies that are officially affiliated with FISHFED and hold shareholder status within the state cooperative federation. While non-empanelled societies are those that are not affiliated nor hold any shareholder status.

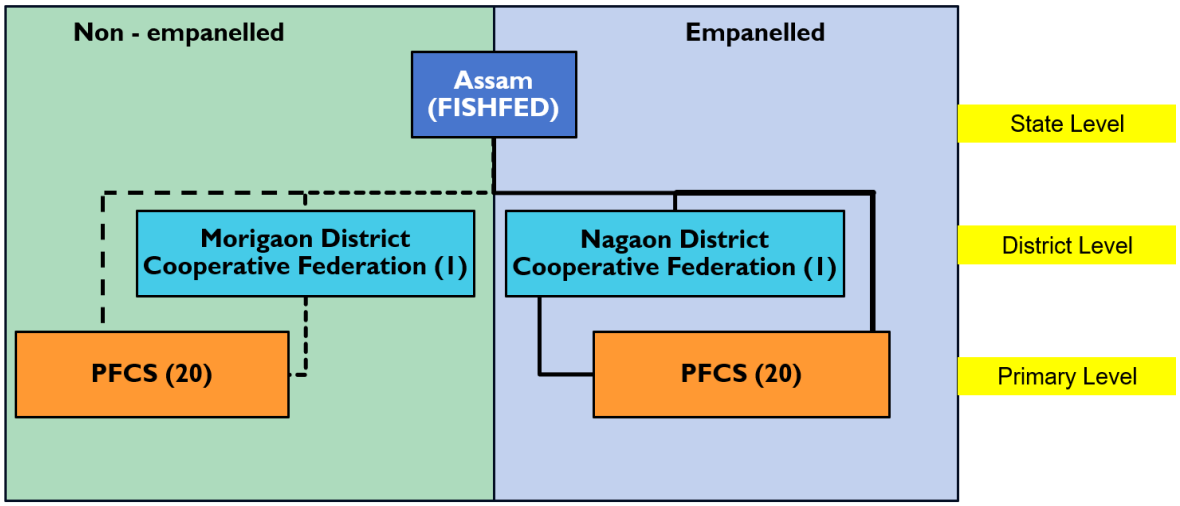

Fig. 3.2 Sampling plan

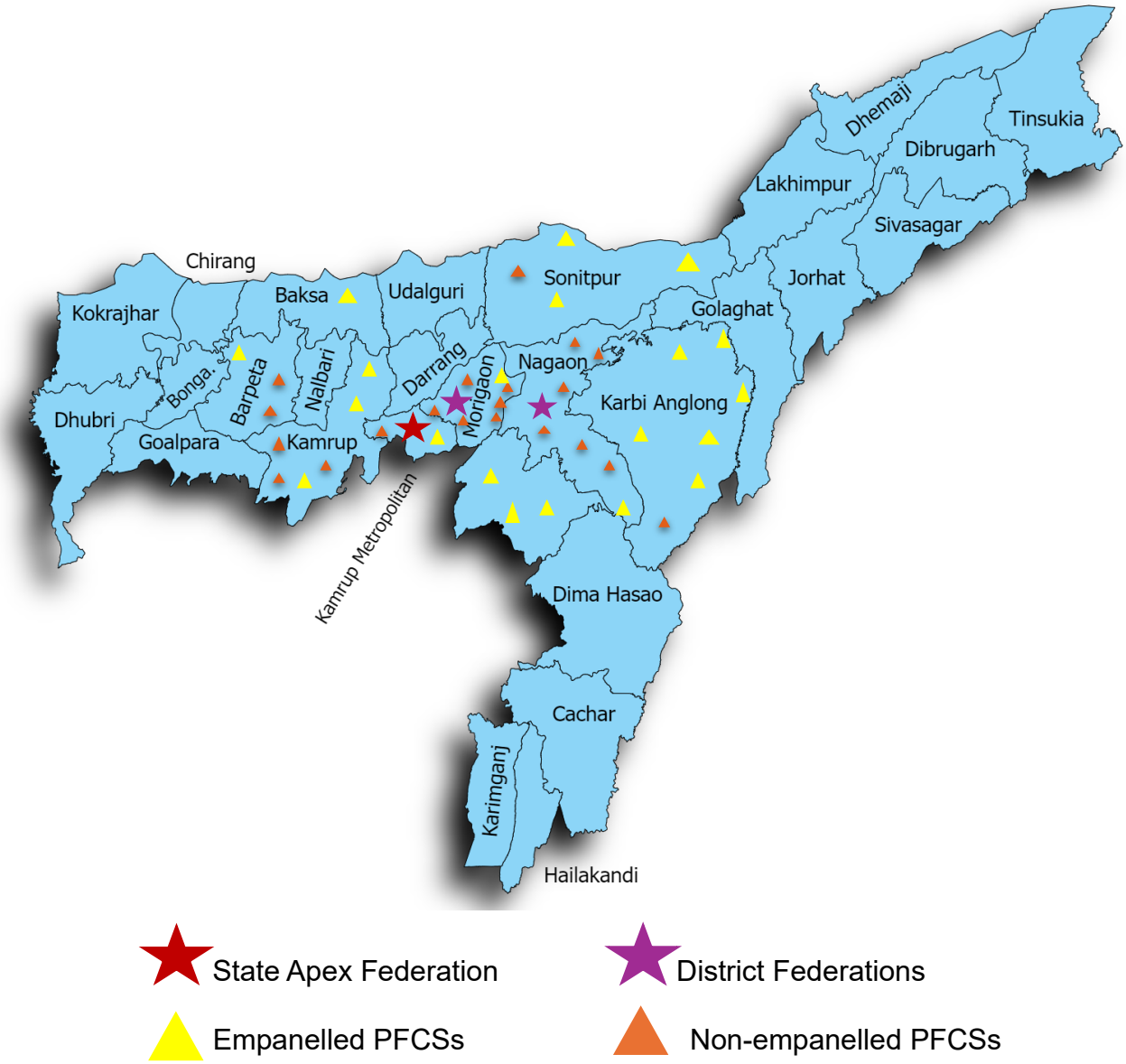

Fig. 3.3 Selected cooperatives at the state, district and primary level

3.4 SELECTION OF VARIABLES AND THEIR EMPIRICAL MEASUREMENTS

Relevant variables were chosen for the current study after a thorough evaluation of relevant research and expert consultation, considering the theoretical framework and the objectives of the study. The first set of variables was related to profile characteristics of primary fisheries cooperative societies, district and state fisheries cooperative federation, followed by variables reflecting governance, ease of doing cooperative business and constraints of fisheries cooperative societies at multiple levels. The variables and their measurements are presented in Table 3.1.

Table 3.1 List of selected variables and their measurements

Variables	Measurements
Society registration status	Structured interview schedule
Bye-laws	
Staff position in society	
Membership status & fee	
Total & authorized share capital	
Working capital & Business turnover	
Net profit and debt	
Audit grade of society	
Society meeting pattern	
Profile of executive members	
Extent of contact	
Infrastructure facilities of society	
Welfare & income generating activities of society	
Women empowerment	
Governance	
Ease of doing business	Fisheries Cooperative Governance Quality Index was followed with suitable modification
Constraints	Ease of doing business Index was developed
Strategies	Constraint Analysis Index
	Content analysis of all selected variables

3.4.1 Operationalization and Measurement of Profile Variables

3.4.1.1 Bye-laws

In operational terms, it is referred to the written rules that govern the internal operations, decision making and management structure of the cooperative, ensuring

transparency, member rights and legal compliance.

3.4.1.2 Society registration status

In operational terms, it is referred to the specific date of official registration and the allocation of a registration number to the cooperative society. The relevant staff members of these societies were approached to provide the accurate registration date and number for their respective cooperative societies.

3.4.1.3 Staff position in society

In operational terms, it is referred to the number of individuals formally hired or involved by the cooperative society to oversee daily operations. Staff members of the cooperative society were requested to provide the present count of individuals employed in either permanent or temporary roles.

3.4.1.4 Membership status & fee

Operationally, it was defined as the overall count of full-time registered members, comprising both fishermen and fisherwomen, in the multi-level fisheries cooperative societies. The membership fee denotes the predetermined amount set by the society for individuals to become registered members of a specific cooperative society.

3.4.1.5 Total share capital & authorised share capital

Operationally, total share capital was defined as the collective sum generated from the accumulated share money contributed by each registered member. Authorised share capital is referred to the number of shares that a cooperative society can issue as stated in its memorandum of association or its articles of incorporation.

3.4.1.6 Working capital and business turnover

Working capital is referred to the total funds available for the day-to-day operations of a cooperative society. This includes the liquid assets and short-term liabilities necessary to meet its current obligations. Business turnover is referred to the total revenue or sales generated by the cooperative society through its operations over a specific period, typically a financial year.

3.4.1.7 Net profit and debt

Net profit in cooperatives is the surplus remaining after all expenses are deducted from total income. This profit is often distributed to members based on their percentage of shares purchased in the cooperative, reserved for future use, or invested in community development. Debt represents the amount borrowed by the respective cooperative society from government lending agencies for the welfare of its members or for the functioning of the cooperative society.

3.4.1.8 Audit grade of society

It is referred to the specific criteria or standards utilized to assess and evaluate the financial records, processes, and internal controls of an organization during financial audit. Cooperative societies are graded A, B, C or D based on their financial performance and income-generating activities.

3.4.1.9 Society meeting pattern

It was operationalized to determine the frequency and conduct of executive and general body meetings, including their scheduling (fortnightly, monthly, quarterly, half yearly, and yearly), timing (morning/afternoon/evening), and venue (society office, temple, school, etc.). The average attendance percentage at these meetings held by cooperative societies over the past year was documented.

3.4.10 Profile of executive body members

It was assessed based on factors such as the chronological age (population census categories), educational attainment, training/skill level, occupational status, and membership experience of the executive body members of Multi-level Fisheries Cooperative Society during the investigation period.

3.4.1.11 Extent of contact with other organizations

Extent of contact was characterized as the level of engagement of cooperative societies in the meetings or activities of other institutions such as the Department of Fisheries, research and training centres, KVKs, state and district cooperative federations, other primary cooperatives, etc. The extent of contact of Multi-level Fisheries Cooperative Society was assessed across three levels: Always,

Sometime, and Never, with corresponding scores of 2, 1, and 0, respectively. Based on the index score, cooperative societies were classified into low (<0.55), medium (0.55-0.70), high (>0.70) categories.

3.4.1.12 Infrastructure facilities of society

Operationally, it was defined as the level of facilities and services provided by cooperative societies, including office buildings, water and electricity supply, computer systems, sanitation facilities, fish storage and transportation facilities, fish marketing facilities, emergency services, etc., for the benefit of its members. The extent of infrastructure facilities of the society was assessed across two levels: Available and Not available, with scores of 1 and 0, respectively. Based on the index score, cooperative societies were classified into low (<0.55), medium (0.55-0.70) and high (>0.70) categories.

3.4.1.13 Welfare & income generating activities of society

The welfare activities and services provided by the cooperative society were assessed based on factors such as organized training sessions, the number of members benefiting from these activities, credit supply, insurance, welfare schemes, and the amount of expenditure allocated through these schemes. Additionally, the income-generating activities of the cooperative society were documented and described. The extent of welfare and income-generating activities of the society was evaluated across two levels: Available and Not available, with scores of 1 and 0, respectively. Cooperative societies were then categorized into low (<0.55), medium (0.55-0.70), high (>0.70) categories.

3.4.1.14 Women empowerment

Empowerment is an evolving process aimed at enabling individuals to think and act autonomously, access resources, exercise choices, and unlock their potential to enhance their overall wellbeing. The indicators and statements pertaining to empowerment were derived from available literature and evaluated using a three-point scale: always, sometime, and never (with scores of 2, 1, and 0, respectively). Using the index score, cooperative societies were classified into low (<0.55), medium (0.55-0.70), high (>0.70) categories levels of empowerment.

Some other terminologies

1. **Executive Body**: In a cooperative society, the executive body comprises members who are elected or selected by the general body members through an election process, which takes place once every five years. These individuals hold executive powers and are responsible for making key decisions within the society.

2. **General Body**: The general body includes all the members of the cooperative society who do not have executive powers. These members are responsible for electing the executive body members during elections held periodically, ensuring the democratic functioning of the cooperative.

3. **Empanelled Cooperative Society**: This refers to primary and district level fisheries cooperative societies that are directly affiliated with the state apex cooperative federation and hold shareholder status within the state cooperative federation.

4. **Non-empanelled Cooperative Society**: This refers to primary and district level fisheries cooperative societies that are not affiliated with the state apex cooperative federation and does not hold any shareholder status within the state cooperative federation.

3.4.4 Fisheries Cooperative Governance

Fisheries Cooperative Governance is the system by which fisheries cooperatives are managed, ensuring democratic participation, accountable empowerment, and strong leadership. It promotes teamwork and collaboration while integrating activities and resources through effective convergence and linkages for cooperative success.

A) **Selection of dimensions:** Cooperative governance provides answers to critical business problems, defines roles and responsibilities, sets mechanisms for setting expectations and ensuring responsibility, and guides community-owned businesses towards socioeconomic and cultural success. Good cooperative governance promotes long-term cooperative growth and competitive advantage, provides opportunity to minimize risks, and adds value to successful business

monitoring (Tripathy *et al*., 2021). The cooperative governance has multidimensional aspects. It includes *democratic control, accountable empowerment, leadership, teaming, convergence and linkage.* Therefore, it was important to select dimensions, which were representative indicators of all these dimensions of governance. The availability of authenticated literature and through discussion with experts in relevant fields played an important role in the identification of these dimensions. The identified dimensions were operationalised as given below:

***a) Democratic control*:** It was enacted by how well cooperative societies practice, protect, promote, and maintain members' participation. Members make sure their representatives make good decisions by choosing and supporting elected officials who collaborate to serve the members' needs.

b) Accountable empowerment: It was defined by the degree to which members are effectively empowered while also being held accountable for the authority they're given. It involves establishing an environment of trust and transparency in which members are at ease taking risks and making decisions.

c) Leadership: It was defined by how well the cooperative articulates its direction and purpose and prepares the organization to move in that direction. The cooperative is responsible for setting the direction and enabling progress towards it by selecting management, ensuring sufficient resources, and monitoring advancement.

d) Teaming: It was defined by the degree of successful collaboration towards a shared goal. The cooperative society must collaborate effectively, which involves reaching common agreement on tasks, setting clear expectations for members and the group, establishing an efficient decision-making process, and providing effective leadership for the group.

e) Convergence and Linkages: It encompasses the integration of cooperative activities, facilitating the flow of information among members, efficient allocation of resources, establishing market linkages, and coordinating various cooperative activities. This dimension emphasizes the interconnectedness and alignment of cooperative efforts towards common goals, ensuring effective collaboration and coordination among stakeholders.

B) Collection, editing and selection of indicators: By referring to the available literature on relevant subjects, a total of 110 indicators/statements were collected. The researchers consulted with cooperative and extension experts for the selection of indicators. The indicators were edited according to 14 informal criteria suggested by Edwards (1957), resulting in the elimination of 60 indicators. From this, 50 indicators were retained after editing and considered for further assessment of governance quality in fisheries cooperatives. Thus, a total of 50 indicators were selected for index construction. The final dimensions of the Fisheries Cooperative Governance Quality Index (FCGQI) and their respective indicators are presented in Annexure - I.

C) Computation of the Composite Index: Each dimension of FCGQI consists of an equal number of indicators. The final index consisting of 50 statements was administered to the group of executive body members and general body members by conducting focus group discussions in each fisheries cooperative society separately on a three continuum scale viz., *To great extent, To some extent* and *Not at all* with a score of 2, 1 and 0, respectively. The overall possible maximum and minimum score ranges between 100 to 0. Scores were summed up to get the total score for governance quality for each cooperative society at different levels. The obtained score was converted into unit index score using following formula;

$$U_{ij} = \frac{Y_{ij} - Min\, Y_{ij}}{Max\, Y_j - Min\, Y_j}$$

Where,

U_{ij} = Unit score of the i^{th} cooperative society on j^{th} dimension

Y_{ij} = Obtained score of the i^{th} cooperative society on the j^{th} dimension

Max Y_j = Maximum possible score on the j^{th} dimension

Min Y_j = Minimum possible score on the j^{th} dimension

Thus, the governance quality index score ranges from 0 to 1 *i.e*. when U_{ij} is minimum, the score is 0 and when U_{ij} is maximum the score is 1. Based on index score cooperative societies were categorized into low (< 0.55), medium (0.55-0.70), high (>0.70) extent of quality of governance. The range values of low, medium and high

categories were followed from human development index categorical range values.

3.4.3 Ease of Doing Business

Ease of doing business pertains to the degree of challenge or simplicity associated with initiating and managing a business within a specific entity. It involves a range of elements including regulatory conditions, legal structures, administrative processes, infrastructure, financial accessibility, and the overall business environment. A greater ease of doing business generally suggests that entrepreneurs and businesses encounter fewer hurdles in establishing, running, and growing their enterprises, thereby stimulating economic progress and advancement.

A. Selection of dimensions: The ease of doing business was assessed using the Ease of Doing Research framework (Krishnan *et al*., 2021). From this framework, four dimensions were selected and adjusted to focus on cooperative business aspects, i.e., Business human capital, Business infrastructure, Business leadership, and Business governance which are essential for cooperative success. The identified dimensions were operationalized as follows:

a) Business Human Capital: This parameter measures the cooperative's ability to maintain a skilled workforce, provide training, promote members' well-being, and recognize contributions. Effective human capital is key to fostering a motivated team that drives business success.

b) Business Infrastructure: This parameter assesses the cooperative's access to essential facilities and resources, such as office space, utilities, and supply sources. Adequate infrastructure is crucial for efficient business operations and income generation.

c) Business Leadership: This parameter focuses on the cooperative's ability to articulate a clear vision, seize business opportunities, and maintain an active online presence. It also includes supporting members in starting business ventures, fostering a culture of entrepreneurship.

d) Business Governance: This parameter evaluates the cooperative's effectiveness in establishing linkages with institutions, managing political challenges, and ensuring proper budget allocation. It also includes monitoring mechanisms to maintain accountability and quality.

B. Collection, editing and selection of indicators: By referring the available literature on relevant subjects, a total of 65 indicators/statements were collected. The researchers consulted with cooperative and extension experts for the selection of indicators. The indicators were edited according to 14 informal criteria suggested by Edwards (1957), resulting in the elimination of 48 indicators. From this, 17 indicators were retained after editing and considered for further assessment of ease of doing business in fisheries cooperatives. Consequently, a total of 17 indicators were selected under four dimensions for index construction. The final dimensions of the Ease of Doing Business in Cooperatives and their respective indicators are presented in Annexure - I.

C. Computation of the Composite Index: The final index consisting of 17 statements was administered to the group of executive body members and general body members by conducting focus group discussions in each fisheries cooperative society separately on a three continuums viz., *To great extent, To some extent* and *Not at all* with a score of 2, 1 and 0, respectively. The overall possible maximum and minimum score ranges between 34 to 0. Scores were summed up to get the total score for Ease of doing business for each level of cooperative society. The obtained score was converted into unit index score using following formula;

$$U_{ij} = \frac{Y_{ij} - Min\ Y_{ij}}{Max\ Y_j - Min\ Y_j}$$

Where,

U_{ij} = Unit score of the i^{th} cooperative society on j^{th} dimension

Y_{ij} = Obtained score of the i^{th} cooperative society on the j^{th} dimension

Max Y_j = Maximum possible score on the j^{th} dimension

Min Y_j = Minimum possible score on the j^{th} dimension

Thus, the Ease of doing cooperative business score ranges from 0 to 1 *i.e*. when U_{ij} is minimum, the score is 0 and when U_{ij} is maximum the score is 1. Based on unit index score cooperative societies were categorized into low (< 0.55), medium (0.55-0.70), high (>0.70) extent of ease of doing business.

3.4.4 Constraints

In the context of fisheries cooperatives, constraints refer to the various challenges or limitations faced by cooperatives in their operations. These may include financial, technical, infrastructural, and governance-related difficulties that hinder the effective functioning and growth of the cooperatives. The Constraint Analysis Index (CAI) was primarily used to quantify the constraints experienced by members of fisheries cooperatives. While Patil and Kokate (2011) originally applied this formula for assessing training needs, it has been adapted here to evaluate cooperative constraints. Based on a pilot study, 20 constraints were identified and administered to both executive members and general body members through focus group discussions, which were conducted separately for each fisheries cooperative society. Responses were rated on a three-point scale: Severe (3), Moderate (2), and Minor (1). The possible score for each society ranged from a minimum of 20 to a maximum of 60. The scores were summed to calculate the total score for the Constraint Analysis Index for each cooperative society. The total score was then converted into an index score using the following formula:

$$\text{CAI} = \frac{\textit{Sum Score of constraint}}{\textit{Total Number of Samples} * \textit{Maximum Score}} * 100$$

3.5 TOOLS AND TECHNIQUES USED FOR DATA COLLECTION

Primary data were collected using the following procedures / methods.

3.5.1 Pilot Study

After locating the area of the study and based on the nature of objectives prior to preparation of information collecting device, pilot study was conducted at fisheries cooperatives in Assam to find out relevant information about the tract pertaining to study. The interview schedule was developed in the light of experiences and information gained out of the pilot study conducted in sampled areas, i.e., 2 PFCSs from upper Assam, 2 from central Assam and 1 from lower Assam regions were included in the pilot study.

3.5.2 Instrument and Techniques Used for Collecting Data

Instrument is the device used to collect the data. The instrument used for collecting data in the present study was a structured interview schedule. Based on the understanding of facts, related reviews and expert consultations, a structured interview schedule was developed to investigate selected variables. Data collection tools were prepared by giving due consideration to selected objectives, variables and respondents. The developed interview schedule pre testing was done in non-sampling areas with 10% of sample size of fisheries cooperatives (5). Based on pre-testing experiences the necessary modifications were made in the interview schedule.

The final interview schedule consists of three parts (ANNEXURE-I). The first part dealt with profile variables of the selected cooperative societies. The second part contains the Fisheries Cooperative Governance Quality Index (FCGQI) with the dimensions measuring governance quality of multi-level fisheries cooperative societies. Third part dealt with variables measuring Ease of Doing Business (EODB) in multi - level fisheries cooperative societies. Fourth part dealt with constraints analysis with the help of Constraints Analysis Index (CAI) for multi-level fisheries cooperative societies.

Using the developed interview schedule, data were collected from multi-level, i.e., the state apex federation (n=1), district level federations (n=2), empanelled (n=20) and non-empanelled (n=20) primary fisheries cooperative societies. Thus, data were collected from a total of 43 fisheries cooperatives from three levels in the month of June and July 2024 by personal interview and focus group discussion (FGD) methods using interview schedule. Two focus group discussions in each cooperative society were conducted to gather information on different aspects of governance quality in cooperative management, ease of doing business within cooperatives and the constraints faced by the fisheries cooperatives at multi-level. First FGD was conducted with the executive body members, while the second FGD was conducted with the general body members of selected cooperative societies to reduce personal biases and ensure quality information. Thus, a total of 86 FGDs including 188 executive body members and 211 general body members, were conducted.

3.6 STATISTICAL TOOLS USED FOR ANALYSIS OF DATA

The data collected from the executive body and the general body members from selected cooperative societies were tabulated item wise with respect to each variable of the study. Master sheets containing the pooled scores of all variables were prepared separately for various objectives to be studied in multi-level fisheries cooperative societies. The collected data was subjected to various appropriate statistical tools to draw meaningful results and logical interpretations. The statistical techniques used in this study include average, frequency, percentage, mean, standard deviation, independent t-test, etc. The statistical analysis was done with the help of computer software, namely MS-Excel Spreadsheet and Statistical Package for the Social Sciences (SPSS).

RESULTS & DISCUSSION

4. RESULTS AND DISCUSSION

The present study was aimed to assess the profile, extent of governance quality, extent of ease of doing business and constraints faced by Multi-level Fisheries Cooperative Societies in Assam. The empirical evidence obtained in the form of factual data, was subjected to suitable statistical and analytical tests in light of the study's objectives. The results are presented and discussed under the following headings:

4.1 Profile of Selected Multi-level Fisheries Cooperative Societies

4.2 Status of Existing Fisheries Resources in Multi-level Fisheries Cooperatives

4.3 Extent of Governance Quality in Multi-level Fisheries Cooperative Societies

4.4 Extent of Ease of Doing Business in Multi-level Fisheries Cooperative Societies

4.5 Constraints faced by Multi-level Fisheries Cooperative Societies

4.6 Strategies for Strengthening Multi-level Fisheries Cooperative Societies

4.1 PROFILE OF SELECTED MULTI-LEVEL FISHERIES COOPERATIVE SOCIETIES

4.1.1 Profile of State Federation of Fisheries Cooperatives

4.1.1.1 Society Registration Status

Assam Apex Cooperative Fish Marketing and Processing Federation Ltd. (FISHFED) is a state level cooperative federation registered under the Assam Cooperative Societies Act, 1949, dated 1 June 1978, headquartered at Guwahati.

4.1.1.2 Byelaws of FISHFED

The by-laws are established for the functioning of the Fisheries Cooperative Federation and in accordance with the Assam Cooperative Societies Act, 1949 and approved by the Registrar of Cooperative Societies Primary cooperatives, cooperative federations at the district level, and people engaged in fishing operations are eligible to become members. FISHFED ensures the coordinated development of primary fishery cooperative societies, covering aspects such as fish production, marketing, and processing, along with providing technical assistance to its member societies. Membership at FISHFED is categorized into four classes. The "A" class

consists of primary fishery cooperative societies, such as fish marketing cooperatives. The "B" class consists of district-level fishery cooperative federations and sub-divisional level cooperative federations. The "C" class includes state-level government or financing agencies. The "D" class includes individuals or societies not covered under "A" and "B" classes, with whom FISHFED is likely to do business. “D” class members are admitted as nominal members. However, these nominal members will not carry the right to vote, participate in the management of FISHFED nor in the sharing of its profits or liabilities.

4.1.1.3 Staff Positions in FISHFED

It was noted that FISHFED is staffed with 11 permanent and 11 temporary staffs, responsible for ensuring the operation and management of the state apex federation. However, posts are filled as per requirement of the federation and as per the approval of the Board of Directors (BODs). Fig. 4.1 highlights the organisational structure of FISHFED.

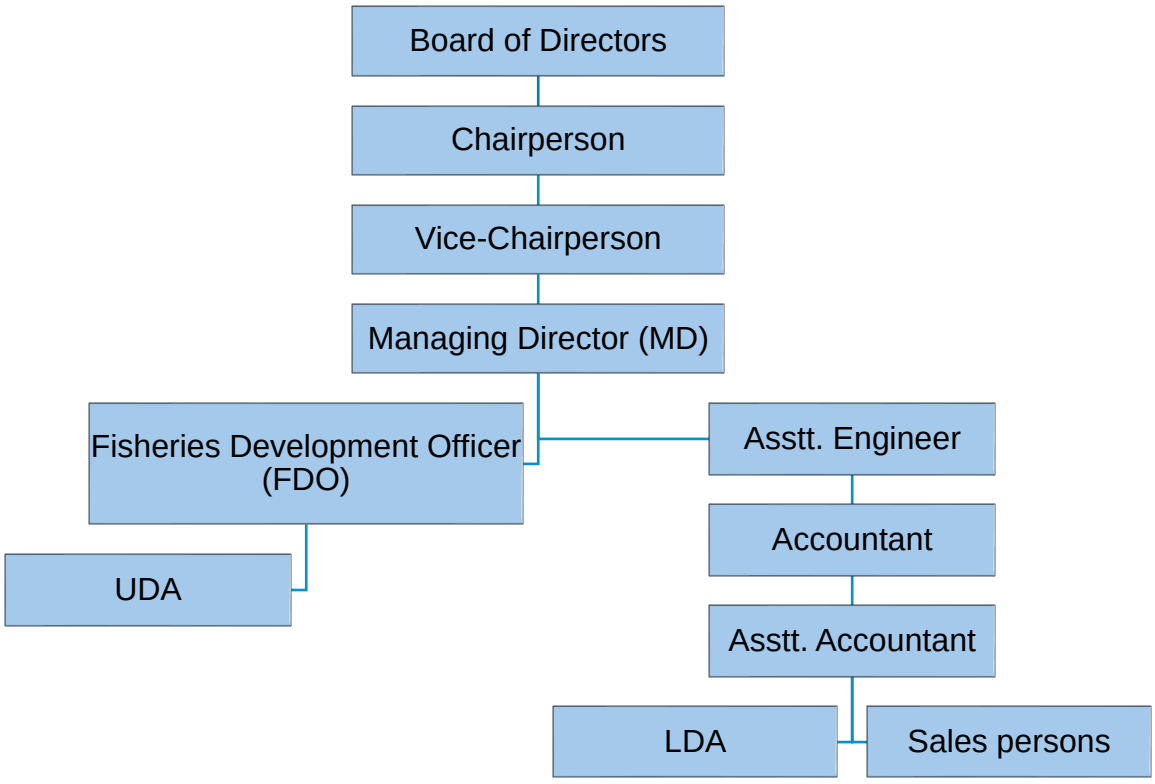

Fig. 4.1 Organisational structure of FISHFED

4.1.1.4 Membership Status and Fee

FISHFED has a membership of 305 empanelled PFCSs out of the total state strength of 604 PFCSs, indicating that only 50% of the total PFCSs are affiliated with the state apex federation. Empanelled societies refer to those primary and district level societies that are officially affiliated with FISHFED and hold shareholder status within the state cooperative federation. The member societies consist of 229 fishery cooperatives, 76 pisciculture cooperatives and 1 district level federation with a total membership of 43,435 individuals. The membership fees to be considered as an empanelled society vary depending on the classification type of the society (Table 4.1). The membership fee of "A" class member is fixed at ₹ 25/- and value of each share is fixed at ₹ 100/- The membership fee of "B" and "D" class member is fixed at ₹100/- and value of each share is fixed at ₹ 1000/-. "A" class and "B" class member should subscribe at least one share. "C" class member need not to pay any application fee.

Table 4.1 Membership Fee of FISHFED

Society Class	Membership fee (in ₹)	Value of share (in ₹)
A (PFCS)	25	100
B (District & Sub- divisional level cooperative federations)	100	1000
C (State government/ financing agencies)	Not required	
D (Nominal members)	100	1000

4.1.1.5 Total Share Capital

The total paid up share capital of FISHFED amounts to ₹ 3.43 Crore, comprising of contributions from the member PFCSs, NCDC, ICDP and the state government. Table 4.2 reveals that the state government has the highest percentage of shares, i.e., 77%, while member PFCS has 15%, NCDC has 7% and ICDP at 1% share. This suggests that the government has a strong foothold and plays a crucial role in the financial and management aspects of the state federation. However, almost 14% of shares are unpurchased and still available for member cooperatives, indicating the scope of more societies to be a member of the federation or to increase their shares.

Table 4.2 Total share capital and number of shares of FISHFED

Share capital	Paid up share capital (in lakh)	No of Shares purchased	No of shares available
Members Shares	0.38 (15%)	380	59620
Government	310.53 (77%)	308000	0
NCDC	28.42 (7%)	28000	0
ICDP	3.80(1%)	4000	0

4.1.1.6 Total Authorised Share Capital and Reserve Fund

FISHFED has a total authorised share capital of ₹ 4 Crore with 4 Lakh equity shares. The federation maintains a reserve fund of ₹ 1.17 Crore allocated for cooperative development and unexpected emergency expenses.

4.1.1.7 Working Capital & Business Turnover

The working capital of FISHFED is ₹ 1.15 Crore while the business turnover from various income generating activities amounts to ₹ 44.11 Lakh, indicating potential growth in operations to improve financial efficiency.

4.1.1.8 Net Profit and Debt

FISHFED currently reports net profits of ₹ 15.67 lakh and has no debts, indicating financial health and stability. This debt-free status provides a solid foundation for reinvestment and expansion opportunities.

4.1.1.9 Audit Grade of Society

The audit grade of FISHFED is B. This grade indicates the financial and operational status of the organization, while also highlighting the opportunities for improvement in the overall performance.

4.1.1.10 Society Meeting Pattern

FISHFED holds its general body meeting annually, while the executive body meetings are held monthly and as per the needs and requirements of the federation. The average attendance for both the meetings are 75-100%, which usually starts at 10:00 am. The executive body meetings take place either at FISHFED office or the Directorate of Fisheries office while the general body meetings are held in conference halls.

4.1.1.11 Profile of Executive Body Members

The executive members of FISHFED consists of 12 Board of Directors (BODs), headed by the Chairperson and Vice-Chairperson, both nominated by the Government of Assam. The Managing Director serves as an ex-officio member from the Department of Fisheries (DoF). Other executive members include the Director of Fisheries, representatives from the Department of Cooperation, the Registrar of Cooperative Societies (RCS), the regional head of National Cooperative Development Corporation (NCDC) and 5 elected representatives from the member societies. The average age of the executive members is 50, with most holding a graduate degree and possessing 5-10 years of experience with the cooperative federation.

4.1.1.12 Extent of Contact with Other Organizations

FISHFED has a high (0.85) extent of contact with other organizations (Table 4.3). This is attributed to consistent contact with the State Department of Fisheries, State Department of Cooperation, Fisheries College & other institutions like National Fisheries Development Board (NFDB), PFCS and district federations, NGOs and Financial institutions like NABARD and World Bank through projects like Assam Agribusiness & Rural Transformation Project (APART) for financial as well as technical assistance.

Table 4.3 Organization wise contact unit score of cooperative societies

Organizations	**Unit Score**
State Department of Fisheries	1
State Department of Cooperatives	1
Fisheries College & other institutions (NFDB)	1
Primary cooperatives	1
District Cooperative Federation	1
Kalong Kapili (NGO)	1
Financial Institutions	1
Other State Cooperative Federation	0.5
FISHCOPFED	0.5
KVK	0.5
Mean Extent of Contact Score	**0.85**

4.1.1.13 Infrastructure Facilities

FISHFED is equipped with a well-furnished society office, meeting hall, and essential utilities such as water and electricity supply, along with toilet facilities. It has modern infrastructure including computers and related accessories, fish transportation facilities, cold storage units and retail outlets through which the member societies are able to sell their fish and fishery products. The retail outlets are equipped with tanks and aerators to support sale of fish in live condition. FISHFED also operates a wholesale fish market and a food outlet in Guwahati, contributing to revenue generation and promotion of fish consumption.

4.1.1.14 Extent of Women Empowerment

The mean score for extent of women empowerment at the state level is 0.83 which is high. This suggests that women are empowered and given equal opportunity in the cooperative decision making and functioning while also indicating room for improvement.

4.1.2 Profile of District Federation of Fisheries Cooperative Societies (DFFCSs)

4.1.2.1 Society Registration Status of Selected DFFCSs

There are only two registered district cooperative federations in Assam. These are the Nagaon District Federation of Fishermen Cooperative Society Limited (NDFFCSL), established in 2013 and the Morigaon District Federation of Fishermen Cooperative Society Limited (MDFFCSL), established in 2016. Both federations were registered under the Assam Cooperative Societies Act 2007. While the Nagaon federation is empanelled with FISHFED and in functional status, the Morigaon federation is not empanelled with FISHFED and currently in non-functioning status.

4.1.2.2 Bye-laws of DFFCSs

These federations act as a coordinator between the PFCS and FISHFED. They assist in coordinating the activities of PFCS to enhance their efficiency and collaboration among members, while also facilitating collective market platform, fish transport facilities and input distribution to the member societies at lower rates.

4.1.2.2 Staff Positions in Selected DFFCSs

The NDFFCSL employs one permanent staff member to overlook the waterbody under the federation. While MDFFCSL does not employ anybody currently.

4.1.2.3 Membership status and Fee

NDFFCSL has a total membership of 10 PFCS from Nagaon District with a membership fee of ₹ 4000/- per share. While, MDFFCSL has a total membership of 21 PFCS from Morigaon District with a membership fee of ₹ 2000/- per share.

4.1.2.4 Total share capital and number of shares

Table 4.4 depicts that NDFFCSL has a total share capital of ₹ 40000/- with ten purchased shares by PFCS. While, MDFFCSL has a total share capital of ₹42000/- with twenty-one purchased shares.

Table 4.4 Total share capital and number of shares of DFFCSs

Shares from	Total share capital (₹)	No of Shares
Nagaon DFFCS	40000	10
Morigaon DFFCS	42000	21

4.1.2.5 Working Capital and Business Turnover

Currently, NDFFCSL has a net working capital of ₹ 47,856/- and was able to achieve a turnover of ₹ 1.24 Lakh through sale of fish. However, MDFFCSL did not carry out their annual audit and therefore these details were not furnished.

4.1.2.6 Audit Grade of Society

NDFFCSL has received an audit grade of 'C,' reflecting its overall score in financial and operational management based on an audit conducted by the Department of Cooperation. In contrast, the audit grade for MDFFCSL was not provided due to the lack of an audit, which reflects the cooperative's level of interest and seriousness in adhering to auditing requirements.

4.1.2.7 Society Meeting Pattern

Both NDFFCSL and MDFFCSL holds their executive body meetings at the Secretary’s home while the annual general meetings are held at the temple or in community halls. Attendance at these meetings typically ranges between 75% and

100%. General body meetings of both federations are held annually and the executive body meetings of NDFFCSL are held monthly while the executive body meetings of MDFFCSL are held half yearly. The meetings usually start at 10 am.

4.1.2.8 Profile of Executive Body Members

The majority (63%) of the executive body members of district level federations are above 50 years old, with the rest (37%) between 35-50 years (Table 4.5). In terms of education, most members have completed at least higher secondary education, with a notable portion (37.5%) having only middle school education. All executive members have over 10 years of membership experience, indicating involvement and continuity in the cooperative. The primary occupation of 75% of the members is fisheries and fish marketing, with a small group (25%) involved in both agriculture and fisheries.

Table 4.5 Profile of Executive Body Members of DFFCSs

Profile Variables	Categories	Chairman (n=2)	Vice Chairman (n=2)	Secretary (n=2)	Members (n=8)
Age	Below 35 years	0	0	0	0
	35-50 years	0	0	1	3 (37%)
	Above 50 years	2	2	1	5 (63%)
Education	Primary school	0	0	0	2(25%)
	Middle school	0	0	0	3(37.5%)
	Higher Secondary	2	2	1	3(37.5%)
	Graduation	0	0	1	0
Membership Experience	Above 10 years	2	2	2	8 (100%)
Major occupation	Fisheries +Fish Marketing	2	2	2	6 (75%)

	Fisheries + Fish Marketing + Agriculture	0	0	0	2 (25%)

4.1.2.9 Extent of Contact with Other Organizations

The overall extent of contact with other organizations at the district level is low with a mean score of 0.52 (Table 4.6). The district federations have an excellent contact with primary societies, and good contact with the Department of Fisheries, Fisheries college & other institutions while there is no contact with KVKs and NGOs. However, the extent of contact of NDFFCSL (0.60) is better than the extent of contact of MDFFCSL (0.45). This may be attributed to its empanelment with FISHFED through which interconnectedness, bi-directional communication and seamless flow of technical assistance is achieved.

Table 4.6 Organization-wise extent of contact of DFFCS

Organizations	Unit Score
Primary Societies	1.00
Department of Fisheries	0.75
Fisheries college & other institutions	0.75
Department of Cooperation	0.50
FISHFED	0.50
Other District Federations	0.50
FISHCOPFED	0.25
KVKs	0
NGOs	0
Mean Extent of Contact Score	**0.52**

4.1.2.10 Extent of Infrastructure Facilities

Both the DFFCS lack basic infrastructure facilities such as a society office, meeting hall, water and electricity supply, computer related accessories, fish transportation vehicles, etc. and hence the scores for infrastructure at the district level is at zero.

4.1.3 Profile of Selected PFCSs

4.1.3.1 Society Registration Status

The year 1978 was considered a benchmark year for categorization as Assam Apex Cooperative Fish Marketing and Processing Federation Limited (FISHFED) was established in 1978. Table 4.7 depicts the society registration status. For empanelled societies, 70% were established before 1978 while 30% were established after 1978. In contrast, for non-empanelled societies, 30% were established after 1978 while 70% were established after 1978. This indicates that most of the non-empanelled PFCS were registered later than empanelled PFCS.

Table 4.7 Society Registration Status of PFCSs

Society Registration	Average year of registration	Frequency (percentage)
Empanelled (n=20)	Before 1978	14 (70%)
	After 1978	6 (30%)
Non empanelled (n=20)	Before 1978	6 (30%)
	After 1978	14 (70%)

4.1.3.2 Bylaws of Selected PFCSs

In Assam, the Primary Fisheries Cooperative Societies (PFCSs) registered prior to 2007 are registered under the Assam Cooperative Societies Act, 1949 while PFCSs registered after 2007 are under the Assam Cooperative Societies Act, 2007. However, all the PFCSs operate under byelaws as per the Assam Cooperative Societies Act, 2007, approved by the Registrar of Cooperative Societies (RCS). Each society frames their own bye-laws and the affairs of the cooperative society is managed according to the terms, conditions and procedure specified on the bye-laws. This may include the name of the cooperative society, area of operation, address of the head office, aims and services provided by the society, eligibility and ineligibility of obtaining membership, procedure for obtaining, withdrawing and termination of membership, members' rights and obligations. The bye-laws also contain the roles of general body and the Board of Directors (BODs). The number of BODs of a society as per the Act is to be 15, while the minimum age to be a member of the society is 18 years.

4.1.3.3 Staff Positions in Selected PFCSs

Out of 20 empanelled societies, only 6 societies had permanent staffs and 2 societies had temporary staffs to support the cooperative's functions. Similarly, out of 20 non-empanelled societies, only 6 societies had permanent staffs and 3 societies had temporary staffs. The lack of staffing may affect the routine activities and proper record keeping of the activities of the society. It is recommended that these cooperatives establish essential staff positions to improve their operational efficiency.

4.1.3.4 Membership Status and Fee

Both types of PFCS have a similar number of total membership with 3071 members from selected empanelled PFCS and 3093 members from selected non-empanelled PFCS (Table 4.8). The proportion of women members in empanelled PFCS is lower (8.50%) as compared to non-empanelled PFCS (40.41%). This may be attributed to lesser number of women members in empanelled PFCS as compared to non-empanelled PFCS. The general body members also comprise of higher percentage of men to that of women in both types of PFCS. The average membership fee for empanelled PFCS is ₹ 98/-, ranging from ₹ 11/- to ₹ 500/-. While the average membership fee for non-empanelled PFCS is higher at ₹ 186/-, ranging from ₹ 11/- to ₹ 1000/-.

Table 4.8 Membership status of selected PFCS

PFCS	Members	Executive Body	General Body
Empanelled	Male	269 (91.50%)	2070 (74.54%)
	Female	25 (8.50%)	707 (25.46%)
Non-empanelled PFCS	Male	174 (59.59%)	1512 (53.98%)
	Female	118 (40.41%)	1289 (46.02%)

4.1.3.5 Total Share Capital

Table 4.9 depicts that empanelled PFCSs have higher total share capital, with 85% having over ₹ 20,000/- and an average share capital of ₹ 91,009/-. In contrast, non-empanelled PFCS largely fall in the lower total share capital category, with 70% holding less than ₹ 10,000/- and an average share capital of ₹ 30,546/-. These findings imply that empanelled PFCSs are more established, financially stronger, and have better access to funding or resources compared to their non-empanelled counterparts. The difference may be attributed to the earlier establishment of empanelled PFCSs and the higher percentage of the government's share in the empanelled PFCSs.

Table 4.9 Distribution of PFCSs based on Total Share Capital

Cooperative system	**Total Share Capital (₹)**	**Frequency (percentage)**	**Average Share Capital (₹)**
Empanelled PFCS (n=20)	<10000	2(10%)	91009
	10000-20000	1(5%)	
	>20000	17(85%)	
Non empanelled PFCS (n=20)	<10000	14(70%)	30546
	10000-20000	2(10%)	
	>20000	4(20%)	

4.1.3.6 Working Capital and Business Turnover

Table 4.10 shows that empanelled PFCS have a higher working capital, with 45% below ₹ 1 lakh, 35% between ₹ 1-5 lakh, and 20% above ₹ 5 lakh, compared to non-empanelled PFCS, where 55% have less than ₹1 lakh. The higher working capital in empanelled PFCS is due to government share in the PFCS and timely grants-in-aid, providing them with greater financial flexibility and operational capacity. In contrast, non-empanelled PFCS, with less external support, may struggle to expand and handle financial challenges.

Table 4.10 Distribution of PFCSs based on Working Capital

Cooperative system	Working **capital capital**	**Frequency**
Empanelled PFCS	<1 **lakh**	**9**
	1-5 **lakh**	**7**
	>5 **lakh**	**4**
Non empanelled PFCS	<1 **lakh**	**11**
	1-5 **lakh**	**6**
	>5 **lakh**	**3**

Table 4.11 depicts that empanelled PFCSs have higher business turnover, with 40% exceeding ₹ 5 lakh, while 60% of non-empanelled PFCSs report turnover below ₹ 1 lakh. This suggests that empanelled PFCSs generally achieve higher business turnover, due to better financial support, efficient management, and possibly larger market access which can be attributed to their access to FISHFED's retail outlets, which sell their fish and link them directly with customers, enhancing their market reach. In contrast, non-empanelled PFCSs, lacks these advantages and face lower turnover, indicating a need for better market access and support to improve their business performance.

Table 4.11 Distribution of PFCSs based on Business Turnover

Cooperative system	**Business turnover**	**frequency**
Empanelled PFCS	<1 lakh	7
	1-5 lakh	5
	>5 lakh	8
Non empanelled PFCS	<1 lakh	12
	1-5 lakh	6
	>5 lakh	2

4.1.3.7 Audit Grade of Society

Both empanelled and non-empanelled PFCSs exhibit similar audit results, with 95% of societies in each category receiving a "C" grade and 5% receiving a "B" grade. No societies from either group earned an "A" or "D" grade (Table 4.12). This indicates that the overall financial and operational performance of both empanelled and non-empanelled PFCS is average, as reflected by the predominant "C" grade. The lack of "A" grades suggests that none of the societies are performing at the highest standard,

pointing to inefficiencies or areas where management, governance, and financial practices can be improved. On the other hand, the absence of "D" grades implies that none of the societies are critically underperforming. To enhance their audit performance, targeted interventions and support in areas such as financial management and governance is necessary.

Table 4.12 Audit grade of Selected PFCSs

Cooperative system	Audit Grade	Frequency	Percentage
Empanelled PFCS	A	0	0
	B	1	5
	C	19	95
	D	0	0
Non empanelled PFCS	A	0	0
	B	1	5
	C	19	95
	D	0	0

4.1.3.8 Society Meeting Pattern

Table 4.13 outlines the meeting patterns of empanelled and non-empanelled PFCSs. For empanelled PFCSs, executive body meetings are mostly held monthly (40%) and quarterly (45%), while general body meetings are exclusively annual (100%). While for non-empanelled PFCSs, executive body meetings are mostly held quarterly (70%), while general body meetings are exclusively annual (100%). For empanelled PFCSs, attendance at executive body meetings is mostly 75-100% (60%) and attendance at general body meetings is mostly 50-75% (75%). For non-empanelled PFCSs, attendance at executive and general body meetings is lower than empanelled PFCSs at 50-75%. Most meetings for both groups occur in the morning, with secretary’s home, temples or society offices being the preferred venues.

Table 4.13 Society Meeting Pattern of Selected PFCSs

Society Meeting Pattern	Cooperative Societies	Categories	Executive Body	General Body
Frequency	Empanelled PFCS (n=20)	Fortnightly	1 (5%)	0
		Monthly	8 (40%)	0
		Quarterly	9 (45%)	0
		Half yearly	2 (10%)	0
		Yearly	0	20(100%)
	Non-empanelled PFCS (n=20)	Fortnightly	0	0
		Monthly	1 (5%)	0
		Quarterly	14(70%)	0
		Half yearly	5 (25%)	0
		Yearly	0	20(100%)
Attendance	Empanelled PFCS (n=20)	25-50%	0	2 (10%)
		50-75%	8 (40%)	15(75%)
		75-100%	12(60%)	8 (15%)
	Non-empanelled PFCS (n=20)	25-50%	0	1 (5%)
		50-75%	11 (55%)	10 (50%)
		75-100%	9 (45%)	9 (45%)
Time session	Empanelled PFCS (n=20)	Morning	11 (55%)	15 (75%)
		Afternoon	7 (35%)	4 (20%)
		Evening	2 (10%)	1 (5%)
	Non-empanelled PFCS (n=20)	Morning	18 (90%)	16 (80%)
		Afternoon	1 (5%)	2 (10%)
		Evening	1 (5%)	2 (10%)
Place	Empanelled PFCS (n=20)	Society office	5 (25%)	5 (25%)
		Community Hall	0	1 (5%)
		Temple	3 (15%)	4 (20%)
		Secretary's home	12 (60%)	10 (50%)
	Non-empanelled PFCS (n=20)	Society office	5 (25%)	4 (20%)
		Community Hall	3 (15%)	4 (20&)
		Temple	3 (15%)	5 (25%)
		Secretary's home	9 (45%)	7 (35%)

4.1.3.9 Profile of Executive Body Members of PFCSs

Among empanelled PFCSs, most executives are above 50 years of age, with 70-80% falling in this category. In contrast, non-empanelled PFCSs have a younger leadership, with the majority (60-70%) between 35-50 years old. Regarding education, empanelled PFCSs show a significant proportion of executives (65%) with a middle school education, while non-empanelled PFCS display a more balanced distribution, with 55% of their executives having completed higher secondary education or above. In terms of membership experience, empanelled PFCSs executives are split between those with more than 10 years (50%) and 5-10 years (35%), while non-empanelled PFCSs has 65% of executive members having 5-10 years of experience and only 25% having more than 10 years of experience. Regarding occupations, empanelled PFCSs leaders are predominantly engaged in fishing and fish marketing (40%), with some involved in agriculture and aquaculture. Non-empanelled PFCSs show a more diversified occupational profile, with 45% involved in both fishing and agriculture, and others engaged in aquaculture or livestock.

Table 4.14 Profile of Executive Body Members of PFCSs

Profile Variables	Coopera-tive Type	Categories	Chairman (n=40)	Vice Chairman (n=40)	Secretary (n=40)	Members (n=160)
Age	Empanelled PFCS (n=20)	Below 35 years	0	0	1(5%)	6
		35-50 years	4(20%)	5(25%)	5(25%)	37
		Above 50 years	16(80%)	15(75%)	14(70%)	37
	Non-empanelled PFCS (n=20)	Below 35 years	0	0	0	5
		35-50 years	12(60%)	14(70%)	14(70%)	48
		Above 50 years	8(40%)	6(30%)	6(30%)	27
Education	Empanelled PFCS (n=20)	Illiterate	0	0	0	8
		Primary school	3 (15%)	3(15%)	1(5%)	15

		Middle school	13 (65%)	13(65%)	4(20%)	31
		Secondary school	0	2(10%)	3(15%)	7
		Higher Secondary	3(15%)	2(10%)	9(45%)	14
		Graduation	1(5%)	0	3(15%)	4
	Non-empanelled PFCS (n=20)	Illiterate	0	0	0	1
		Primary school	0	0	0	8
		Middle school	4(20%)	8(40%)	1(5%)	29
		Secondary school	4(20%)	2(10%)	0	10
		Higher Secondary	10(50%)	5(25%)	11(55%)	23
		Graduation	2(10%)	3(15%)	8(40%)	9
Membership Experience	Empanelled PFCS (n=20)	< 5 years	3(15%)	2(10%)	6(30%)	6
		5 to 10 years	7(35%)	8(40%)	10(50%)	35
		Above 10 years	10(50%)	9(45%)	4(20%)	39
	Non-empanelled PFCS (n=20)	< 5 years	5(25%)	4(20%)	1(5%)	11
		5 to 10 years	13(65%)	13(65%)	14(70%)	67
		Above 10 years	2(10%)	2(10%)	5(25%)	2
Major occupation	Empanelled PFCS (n=20)	Fishing +Fish Marketing	8(40%)	4(20%)	8(40%)	33
		Fishing+ Fish Marketing +Agriculture	8(40%)	4(20%)	3(15%)	20
		Aquaculture +Fish Marketing	2(10%)	2(10%)	3(15%)	11
		Fishing +Fish Marketing +Aquaculture	0	3(15%)	1(5%)	9

		Fishing +Fish Marketing +Daily wage	0	4(20%)	2(10%)	3
	Non-empanelled PFCS (n=20)	Fishing + Fish Marketing	5(25%)	5(25%)	5(25%)	22
		Aquaculture +Fish Marketing +Livestock	1(5%)	3(15%)	5(25%)	22
		Fishing +Fish Marketing +Agriculture	9(45%)	8(40%)	3(15%)	17
		Fishing+ Fish Marketing +Agriculture	0	1(5%)	3(15%)	10
		Fishing +Fish Marketing +Aquaculture	2(10%)	2(10%)	2(10%)	2
		Aquaculture +Fish Marketing	3(15%)	1(5%)	2(10%)	7

The average age of the executive body is higher in empanelled PFCSs (53 years) compared to non-empanelled PFCSs (49 years), with similar trends in the general body. Literacy levels show that both executives of empanelled and non-empanelled PFCSs mostly have middle or secondary education. However, training status is generally low across both types of societies, with non-empanelled PFCSs having no trained members in the general body. Membership experience is higher for empanelled PFCSs (23 years in the executive body) compared to non-empanelled PFCSs (18 years), and the major occupation for both groups is fishing and fish marketing (Table 4.15).The implies that empanelled PFCSs have more experienced and older members, which might indicate stability but also a potential need for leadership renewal. Non-empanelled PFCSs have younger members but lack formal training, which could hinder their efficiency and growth. Both types of PFCSs could benefit from increased training to enhance management and operational effectiveness, and non-empanelled PFCSs might also focus on improving member experience to match the longer-term involvement seen in empanelled societies.

Table 4.15 Profile Summary of Executive and General Body Members

	Empanelled PFCSs		Non empanelled PFCSs	
Profile Variables	**Executive Body (n=90)**	**General Body (n=109)**	**Executive Body (n=98)**	**General Body (n=102)**
Average Age	53 years	50 years	49 years	43 years
Average Literacy level	Middle - Secondary	Primary - Secondary	Middle - Higher Secondary	Middle - Secondary
Average Training Status	Few Trained (26%)	Few Trained (10%)	Few Trained (23%)	No training
Average Membership Experience	23 years	16 years	18 years	10 years
Major Occupation	Fishing and Fish Marketing	Fishing and Fish Marketing	Fishing and Fish Marketing	Fishing and Fish Marketing

4.1.3.10 Extent of Contact of PFCSs with Other Organizations

Among empanelled PFCS, 50% have low contact, 30% have medium contact, and 20% have high contact with other organizations. In contrast, 85% of non-empanelled PFCS have low contact, 15% have medium contact, and none have high contact (Table 4.16). This indicates that empanelled PFCSs are more engaged with external organizations, which could provide them with better access to resources, support, and market opportunities. Non-empanelled PFCSs, with predominantly low contact, may face isolation, limiting their growth potential and access to critical resources. Increasing the extent of contact for non-empanelled PFCSs could improve their integration into broader networks, facilitating better development outcomes.

Table 4.16 Distribution of PFCSs based on Extent of Contact

Cooperative channel	Extent of Contact	Frequency (percentage)
Empanelled PFCSs (n=20)	Low (<0.55)	10 (50%)
	Medium (0.55-0.70)	6 (30%)
	High(> 0.71)	4 (20%)
Non empanelled PFCSs (n=20)	Low (<0.55)	17 (85%)
	Medium (0.55-0.70)	3 (15%)
	High(> 0.71)	0

Empanelled PFCSs have higher contact scores across all organizations, with the highest contact being with other primary fisheries cooperatives (0.90), followed by the Department of Fisheries (0.87) and the Department of Cooperation (0.85). Non-empanelled PFCSs have generally lower contact scores, with the highest contact being with other primary fisheries cooperatives (0.75) and the Department of Fisheries (0.70). The contact with FISHFED and the District Cooperative Federation is minimal for non-empanelled PFCSs, with scores of 0.10 and 0.00, respectively. Thus, the mean contact score for empanelled PFCSs is 0.58, while for non-empanelled PFCSs it is significantly lower at 0.39 (Table 4.17).

Table 4.17 Organization-wise extent of infrastructure facilities unit score of selected PFCS

Organizations	Empanelled PFCSs	Non-empanelled PFCSs
Other primary fisheries cooperatives	0.90	0.75
District Department of Fisheries	0.87	0.70
Department of Cooperation	0.85	0.65
FISHFED	0.65	0.10
District Cooperative Federation	0.55	0.00
CoF & Other institutions	0.45	0.27
NGOs	0.22	0.22
KVKs	0.17	0.20
Mean Extent of Contact Score	**0.58**	**0.39**

4.1.3.11 Extent of Infrastructure Facilities

Among empanelled PFCSs, 80% have low infrastructure facilities, 15% have medium, and 5% have high. In contrast, 90% of non-empanelled PFCSs have low infrastructure facilities, and only 10% have medium, with none having high infrastructure facilities (Table 4.18). This indicates that both empanelled and non-empanelled PFCSs face significant limitations in terms of infrastructure, with non-empanelled PFCSs being slightly more disadvantaged. There is a clear need for investment in infrastructure development across both types of societies to enhance their capacity and long-term sustainability.

Table 4.18 Distribution of PFCSs based on Extent of Infrastructure Facilities

Cooperative type	Extent of Infrastructure Facilities	Frequency (percentage)
Empanelled PFCS (n=20)	Low (<0.55)	16(80%)
	Medium (0.55-0.70)	3(15%)
	High (>0.70)	1(5%)
Non-empanelled PFCS (n=20)	Low (<0.55)	18(90%)
	Medium (0.55-0.70)	2(10%)
	High (>0.70)	0

Table 4.19 Extent of infrastructure facilities with PFCSs

Infrastructure Facilities	Empanelled PFCSs	Non-empanelled PFCSs
Society office	0.35	0.35
Water supply	0.25	0.10
Meeting hall	0.35	0.20
Electricity supply	0.20	0.15
Computer & related accessories	0.15	0.15
Toilet facilities	0.10	0.25
Fish transportation vehicle	0.10	0.25
Fish storage	0.10	0.05

Furnished Landing centre	0.30	0.00
Hatchery	0.10	0.05
Mean Score	**0.20**	**0.16**

4.1.3.12 Extent of Welfare & Income Generating Activities

Empanelled PFCSs operate 17 retail/wholesale shops, 2 fishing accessories shops, and 1 cage culture operation, but have no businesses involved in value-added fish products. On the other hand, non-empanelled PFCS operate 13 retail/wholesale shops and 3 value-added fish product businesses but do not engage in fishing accessories shops or cage culture. This suggests that empanelled PFCSs focus more on retail/wholesale operations and fishing accessories/input shop, while non-empanelled PFCSs are more involved in value-added fish products, offering potential for higher profitability. The absence of cage culture in non-empanelled PFCSs and the lack of value-added products in empanelled PFCSs indicate missed opportunities for diversification in both groups. Expanding into these areas could enhance revenue generation and market presence, contributing to the long-term sustainability and growth of these cooperatives.

Over the past 5 years, 11 empanelled PFCSs received a total of 6.23 lakhs as grant-in-aid through the Department of Fisheries and Department for Cooperation for the development of Fisheries and Cooperatives. While 9 non-empanelled PFCS received a total of ₹ 69.59 lakhs as grant-in-aid through the Department of Cooperation, National Bank for Agriculture and Rural Development (NABARD) as well as through external fundings from organizations like German Agency for International Cooperation (GIZ) for implementing projects in the cooperatives.

4.1.3.13 Extent of Women Empowerment

A total of 16 societies, 8 societies each from empanelled PFCS and non-empanelled PFCS with both men and women members were chosen for the study. Results show that, among empanelled PFCS, 62.5% of societies report a low level of women's empowerment, while 37.5% report a medium level, with none reporting high empowerment. In contrast, non-empanelled PFCS show more diversity, with 25% having low empowerment, 50% at a medium level, and 25% reporting high empowerment (Table 4.20). This suggests that non-empanelled PFCS demonstrate

greater progress in women's empowerment, with some achieving high levels, whereas empanelled PFCS primarily remain at low to medium levels. This may be attributed to non-empanelled societies working in association with NGOs, such as Naduar Min Palan Samabai Samiti, which ensures that women are empowered through their capacity building programs.

Table 4.20 Distribution of PFCSs based on Extent of Women empowerment

Cooperative channel	**Extent of Women Empowerment**	**Frequency (percentage)**
Empanelled (n=20)	Low (<0.55)	5 (62.5%)
	Medium (0.55-0.70)	3 (37.5%)
	High(> 0.70)	0
Non empanelled (n=20)	Low (<0.55)	2 (25%)
	Medium (0.55-0.70)	4 (50%)
	High(> 0.70)	2(25%)

Table 4.21 depicts that non-empanelled PFCS generally score higher, particularly in areas like allowing women to speak during meetings (0.75 vs. 0.63), accessing cooperative federation resources (0.63 vs. 0.50), and benefiting from equal opportunities and benefit sharing (0.63 vs. 0.50). Both types of PFCSs have equal scores (0.56) regarding women having equal say in cooperative decisions and providing women-friendly meeting times. The overall mean score for non-empanelled PFCSs is higher (0.60) compared to empanelled PFCSs (0.53). This suggests that non-empanelled PFCS are performing better in empowering women across several indicators, while empanelled PFCSs lag behind in terms of equal access to resources and opportunities. This may be attributed to higher number of women membership in non-empanelled PFCSs with higher women members holding positions in the executive body as compared to empanelled PFCSs with lower women membership.

Table 4.21 Indicator-wise unit score of Women Empowerment of selected PFCSs

Women Empowerment	Empanelled PFCSs	Non-empanelled PFCSs
Women members are allowed to speak during meeting	0.63	0.75
Women have equal say in all the cooperative decisions	0.56	0.56
Women have access to cooperative federation resources and assets.	0.50	0.63
Women members get equal opportunities and benefit sharing	0.50	0.63
Cooperative federation meetings are held at women friendly time and place	0.50	0.56
Women members are given preference to attend skill development trainings	0.50	0.50
Mean Score	**0.53**	**0.60**

4.2 STATUS OF EXISTING FISHERIES RESOURCES

In Assam, most of the beels and community ponds are managed by cooperatives, providing income-generating activities for the fisher community. Members of cooperatives also pool their resources such as individual ponds to carry out income generating activity. Table 4.22 illustrates the fishery resource utilization pattern. The leasing of water bodies such as beels and parts of rivers is managed by the state government through the Department of Fisheries, Assam Fisheries Development Corporation (AFDC), Deputy Commissioners, Sub-divisional Officers and Panchayats through cooperative leases acquired through auctions. These societies have agreements ranging from 5 to 7 years, allowing them to utilize the water bodies and existing fisheries resources through culture and capture fisheries. Empanelled PFCSs show a strong reliance on leased water bodies, with 15 societies leasing and only 5 owning their water resources. These societies generally operate under higher lease amounts, with 6 paying over ₹ 5 lakh. On the other hand, non-empanelled PFCSs display a similar pattern, although more of them own their

resources (7 societies) and tend to lease for lower amounts, with 6 societies leasing for less than ₹ 1 lakh. This suggests that non-empanelled PFCS might be more constrained by financial limitations, which impacts their ability to invest in higher-quality or larger water bodies. Empanelled PFCSs have better access to perennial water bodies (11 societies), which are more sustainable and productive compared to the 9 societies that rely on seasonal water bodies. Non-empanelled PFCSs, however, show a heavier reliance on seasonal water bodies (13 societies), which could limit their year-round productivity. In terms of operational area, both types of societies predominantly operate on small water bodies (<100 hectares). However, empanelled PFCS manage larger areas more frequently, with 4 societies working on water bodies over 500 hectares compared to only 1 non-empanelled society.

Empanelled PFCSs lean towards more productive and controlled methods, with 8 societies practicing semi-intensive culture and 5 engaged in intensive culture. Only 4 societies rely on traditional catch fishing. Non-empanelled PFCSs also primarily use semi-intensive culture (11 societies) and have similar numbers (5 societies) engaging in intensive culture.

Empanelled PFCSs have better access to consistent, high-quality fish seeds, with 8 societies always using quality seeds and 3 sourcing from government hatcheries, while 10 rely on private farms. In contrast, non-empanelled PFCSs face more inconsistency, with only 5 societies always using quality seeds and 14 relying on private farms, while only 2 source from government hatcheries. This suggests that empanelled PFCSs are better positioned for sustainable production due to higher seed quality, whereas non-empanelled PFCSs could benefit from improved access to government resources and more consistent seed quality to enhance their productivity.

Fishing gear and craft usage also differ between the two types of societies. Empanelled PFCSs use a broader range of fishing gear, with 10 societies using combinations of cast nets, gill nets, drag nets, and dip nets. Non-empanelled PFCSs, however, heavily rely on drag nets, which might limit their flexibility in fishing techniques. Both groups primarily use plank boats, but empanelled PFCSs have more diverse craft usage, including FRP boats and canoes. In terms of production, empanelled PFCSs are more productive, with 6 societies producing more than 10

tonnes annually, whereas the majority of non-empanelled PFCSs (11 societies) produce less than 5 tonnes.

Table 4.22 Fisheries Resources of Selected PFCSs

Fishery Resource Variables	Categories	EPFCSs (n=20)	NEPFCSs (n=20)
Type of ownership	Owned	**5**	**7**
	Leased	**15**	**12**
Lease Amount (in lakhs)	<1	**4**	**6**
	1 to 5	**5**	**4**
	>5	**6**	**1**
Type of Water Body	Seasonal	**9**	**13**
	Perennial	**11**	**7**
Area (Ha)	<100	**14**	**16**
	100-500	**2**	**1**
	>500	**4**	**1**
Type of Fishing practice	Catch	**4**	**3**
	Semi-intensive culture	**8**	**11**
	Intensive culture	**5**	**5**
Quality of Fish seeds for culture	Always	**8**	**5**
	Sometimes	**5**	**11**
Source of Fish seed	Government Hatchery	**3**	**2**
	Private Farms	**10**	**14**
Type of gear used	Cast net, Gill net, Drag net, Dip net	**10**	**4**
	Cast net, Drag net	**5**	**4**
	Drag net	**2**	**11**
Type of craft used	Plank boat, FRP Boat	**2**	**0**
	Plank boat, Canoe	**5**	**3**
	Plank boat	**10**	**5**
Fish Production (in tonnes / Annum)	<5	**6**	**11**
	5-10	**5**	**3**
	>10	**6**	**2**

Both empanelled and non-empanelled PFCSs majorly (100%) cultivate Catla (*Catla catla*), Rohu (*Labeo rohita*), Mrigal (*Cirrhinus mrigala*). However, differences emerge in the cultivation of other species. Common Carp (*Cyprinus carpio*) is more prevalent among empanelled PFCS (82.35%) compared to non-empanelled PFCS (61.11%). Similarly, Grass Carp (*Ctenopharyngodon idella*) cultivation is slightly higher in empanelled societies (47.06%) than non-empanelled ones (44.44%). Catfishes (*Wallago attu, Ompok pabda, Ompok pabo*) and Chital (*Notopterus chitala*) are captured more frequently by empanelled societies (23.53% and 11.76%,

respectively), while non-empanelled societies show lower figures (16.67% for both species).

Conversely, non-empanelled PFCSs have a greater focus on Silver Carp (*Hypopthalmichthys molitrix*) (38.89% compared to 29.41% in empanelled societies) and Bighead Carp (*Hypopthalmichthys nobilis*) (27.78% compared to 17.65%). Indigenous species (*Puntius* species, *Amblypharyngodon mola*, *Anabas testudineus*) are more commonly captured by empanelled PFCS (29.41%), while only 11.11% of non-empanelled societies capture these species. Additionally, Jayanti Rohu, a genetically improved strain of Rohu, is absent from empanelled societies but present in 11.11% of non-empanelled PFCS.

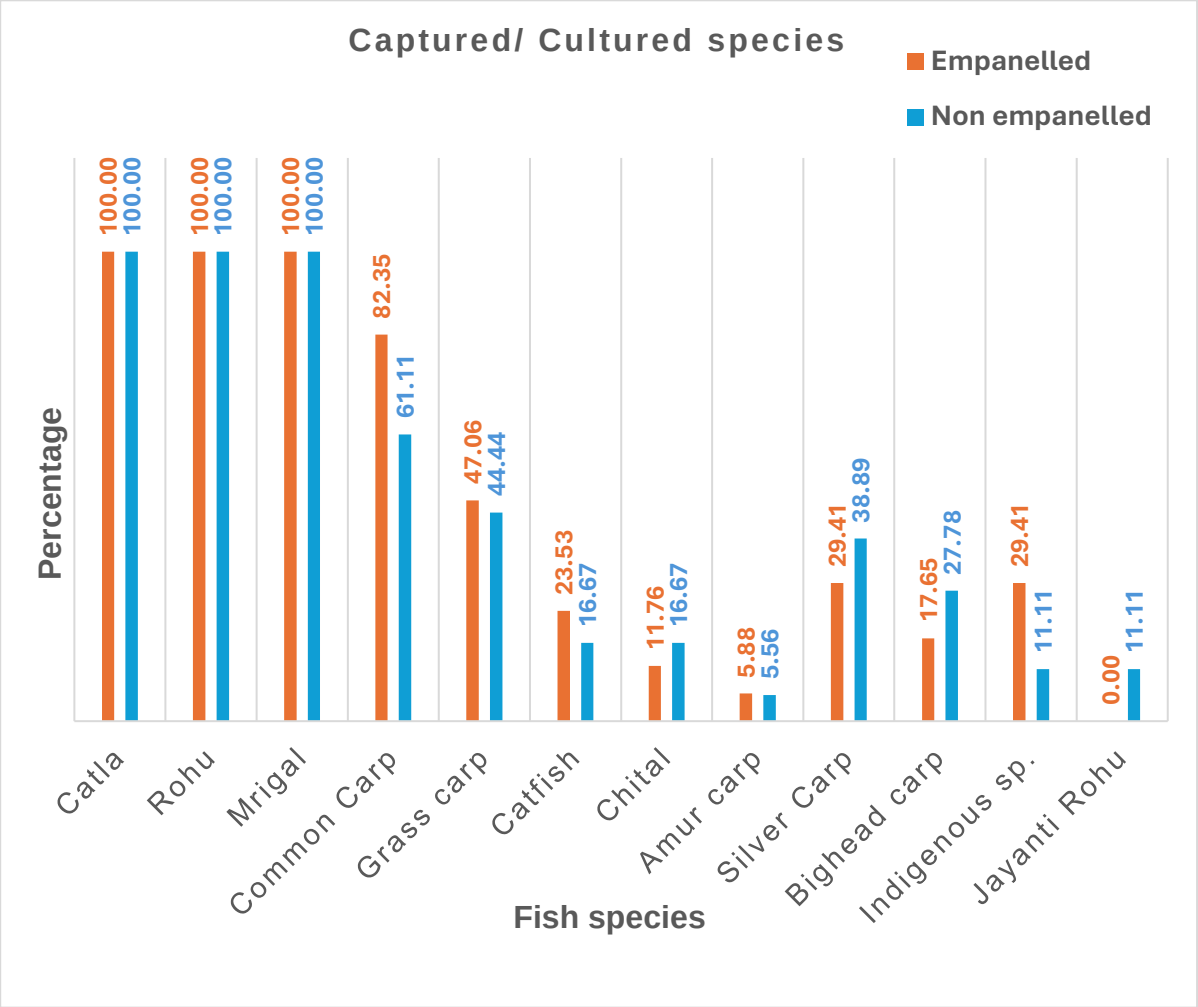

Fig. 4.2. Fisheries resources of selected PFCS

4.3 EXTENT OF GOVERNANCE QUALITY IN MULTI-LEVEL FISHERIES COOPERATIVE SOCIETIES

4.3.1 Dimension-wise Extent of Governance Quality of FISHFED

The study shows that FISHFED achieved a high Fisheries Cooperative Governance Quality Index (FCGQI) score of 0.77 (Table 4.23), indicating high governance. Democratic Control scored 0.90, reflecting active member participation and a well-functioning democratic process. Leadership scored 0.67, showing that leadership is moderately effective but has room for improvement. Teaming scored 0.62, indicating that while collaboration is present, it could be further strengthened. Convergence & Linkage scored the highest at 0.96, demonstrating FISHFED's strong coordination and networking capabilities. Accountable Empowerment scored 0.75, reflecting a moderately balanced environment of empowerment and accountability. Overall, these scores indicate that FISHFED's governance is strong, with convergence and linkage being key strengths, though leadership and teamwork are areas that could benefit from improvement.

Table 4.23 Dimension-wise mean governance index score of FISHFED

Dimensions	**Index score**
Democratic Control	0.90
Accountable empowerment	0.75
Leadership	0.67
Teaming	0.62
Convergence & Linkage	0.96
Overall Governance	**0.77**

4.3.2 Dimension-wise Extent of Governance Quality of DFFCSs

The overall governance score at the district level is 0.57, which falls under the medium category (0.55-0.70) (Table 4.24). However, there is a noticeable difference between the two: Nagaon DFFCS scores significantly higher with a governance score of 0.77, placing it in the high category, whereas Morigaon DFFCS scores only 0.37, indicating weaker governance. Nagaon excels in Accountable Empowerment (0.83), Teaming (0.80), and Democratic Control (0.75), highlighting effective collaboration, strong accountability, and active member participation. In contrast, Morigaon

struggles across all dimensions, particularly in Accountable Empowerment (0.25) and Leadership (0.30), reflecting a need for improvement in leadership and accountability structures. Morigaon DFFCS could benefit from adopting Nagaon DFFCS' best practices to strengthen its governance.

Table 4.24 Dimension-wise mean governance index score of DFFCSs

Dimension	Nagaon DFFCS	Morigaon DFFCS	Mean Unit Score
Democratic control	0.75	0.48	0.61
Accountable empowerment	0.83	0.25	0.54
Leadership	0.73	0.30	0.51
Teaming	0.80	0.40	0.60
Convergence & Linkage	0.75	0.42	0.58
Overall Governance	**0.77**	**0.37**	**0.57**

4.3.3 Dimension-wise Extent of Governance Quality of selected PFCSs

Table 4.25 and Fig. 4.3 depicts that for democratic control, both empanelled and non-empanelled PFCSs show similar patterns, with 50% of empanelled and 65% of non-empanelled societies achieving medium scores. However, 40% of empanelled PFCSs score high, compared to only 25% of non-empanelled ones, indicating better democratic engagement among empanelled PFCSs. In terms of accountable empowerment, empanelled PFCSs demonstrate stronger performance, with 45% achieving medium scores and 20% scoring high, while non-empanelled PFCSs lag behind with 60% scoring low and only 10% achieving high accountability. This points to a governance gap in non-empanelled societies regarding transparency and decision-making empowerment. The leadership dimension shows significant disparity: 80% of non-empanelled PFCSs scored low, while only 50% of empanelled societies fall into this category, with 30% of empanelled PFCSs reaching high scores. This suggests that empanelled PFCSs benefit from more effective leadership structures and strategies.

Teaming dimension shows that 65% of non-empanelled PFCSs scored low, while empanelled PFCSs demonstrated more balanced performance with 35% scoring low and 65% in the medium category. This highlights that non-empanelled PFCSs struggle with teamwork and internal cohesion. Convergence and linkages, a

crucial factor in cooperative success, are weak across both societies, with 80% of non-empanelled PFCSs and 50% of empanelled PFCSs scoring low. This indicates a significant area for improvement in networking and collaborative opportunities.

Finally, governance quality is notably higher in empanelled PFCSs, with 20% scoring high and 35% medium, compared to 75% of non-empanelled PFCS showing low governance scores. This overall analysis indicates that empanelled PFCSs are generally better governed, benefiting from stronger leadership, teamwork, greater accountability, better linkage and convergence achieved through affiliation with a larger state federation. Non-empanelled PFCSs need targeted interventions to enhance their governance structures, particularly in leadership and convergence areas, to improve their overall effectiveness and sustainability.

Table 4.25 Distribution of PFCSs based on Extent of Governance Quality

Dimensions	Categories	Empanelled PFCSs (n=20)	Non-empanelled PFCSs (n=20)
Democratic Control	Low (<0.55)	2 (10%)	2 (10%)
	Medium (0.55-0.70)	10 (50%)	13 (65%)
	High (>0.70)	8 (40%)	5 (25%)
Accountable Empowerment	Low (< 0.55)	7 (35%)	12 (60%)
	Medium (0.56-0.70)	9 (45%)	6 (30%)
	High (>0.70)	4 (20%)	2 (10%)
Leadership	Low (<0.55)	10 (50%)	16 (80%)
	Medium (0.55-0.70)	4 (20%)	2 (10%)
	High (>0.70)	6 (30%)	2 (10%)
Teaming	Low (<0.55)	7 (35%)	13 (65%)
	Medium (0.55-0.70)	13 (65%)	6 (30%)
	High (>0.70)	0 (0%)	1 (5%)
Convergence & Linkages	Low (<0.55)	10 (50%)	16 (80%)
	Medium (0.55-0.70)	6 (30%)	2 (10%)
	High (>0.70)	4 (20%)	2 (10%)
Governance	Low (<0.55)	9 (45%)	15 (75%)
	Medium (0.55-0.70)	7 (35%)	3 (15%)
	High (>0.70)	4 (20%)	2 (10%)

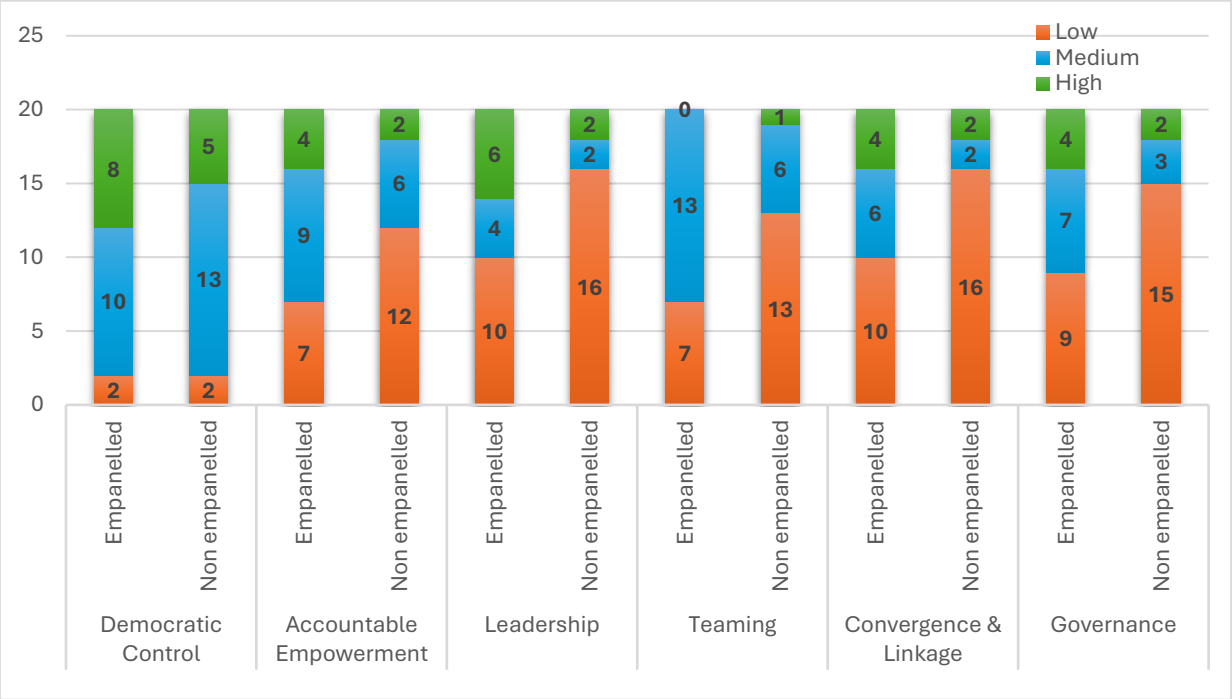

Fig. 4.3. Dimension-wise extent of governance quality of PFCSs

Table 4.26 presents the mean governance index scores between empanelled and non-empanelled PFCSs across the dimensions. Overall, empanelled PFCSs outperform non-empanelled PFCSs in governance across all dimensions with varying degrees of significance. For democratic control, empanelled PFCS scored slightly higher (0.69) than non-empanelled PFCSs (0.66), but with a *p*-value of 0.22, the difference is not statistically significant. This suggests that both types of PFCSs maintain relatively similar levels of democratic engagement and member participation in decision-making processes. Accountable empowerment shows a more notable difference, with empanelled PFCSs scoring 0.57 compared to 0.47 for non-empanelled PFCSs. The *p*-value of 0.04 indicates a statistically significant gap, suggesting that empanelled societies tend to have stronger accountability mechanisms and better practices that empower members to contribute meaningfully to governance. This may be attributed to FISHFED's efforts to maintain accountability of the member empanelled PFCSs.

In the leadership dimension, empanelled PFCSs once again have a higher score (0.52) compared to non-empanelled PFCSs (0.46), though the *p*-value of 0.30 indicates that this difference is not statistically significant. However, the trend

suggests that empanelled PFCSs benefit from more effective leadership structures. The teaming dimension is where both types of societies show nearly identical performance, with empanelled PFCSs scoring 0.57 and non-empanelled PFCSs scoring 0.50, and a non-significant *p*-value of 0.10. This suggests that internal collaboration and teamwork are similar across both categories, though empanelled PFCSs may have a slightly higher score.

Convergence and linkage, a crucial indicator of how well cooperatives network and collaborate with external stakeholders, shows a significant difference. Empanelled PFCSs scored 0.56, while non-empanelled PFCSs scored 0.46, with a statistically significant *p*-value of 0.02. This implies that empanelled PFCS are better integrated into broader networks and have stronger external partnerships, contributing to their overall effectiveness. This may be attributed to FISHFED's efforts to link and converge with empanelled societies through training and capacity building programs. Finally, the overall FCGQI score further reinforces the pattern, with empanelled PFCSs achieving a higher score (0.58) than non-empanelled PFCSs (0.51), with a significant *p*-value of 0.04. This suggests that PFCSs empanelled with FISHFED are supported by better accountability, convergence, and leadership, demonstrate stronger governance structures and practices.

Table 4.26 Comparison of mean governance index score of PFCSs

Dimensions	**Empanelled PFCSs (n=20)**	**Non-empanelled PFCSs (n=20)**	***'p'* value**
Democratic Control	0.69	0.66	0.22
Accountable empowerment	0.57	0.47	0.04
Leadership	0.52	0.46	0.30
Teaming	0.57	0.50	0.10
Convergence & Linkage	0.56	0.46	0.02
Governance	0.58	0.51	0.04

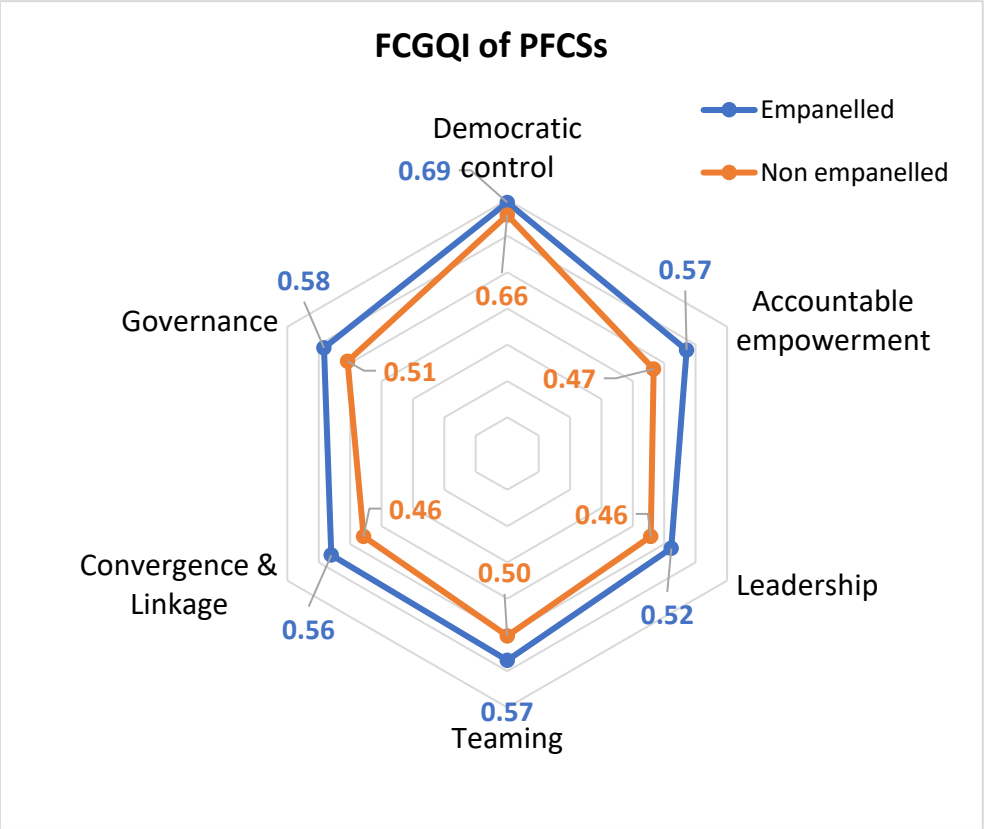

Fig. 4.4 Comparison of governance quality among Empanelled and Non-empanelled PFCSs

Table 4.27 reveals that among the 10 indicators for democratic control, "Membership is open to all active fishers and voluntary" scores the highest in non-empanelled PFCSs with a score of 0.83, while in empanelled PFCSs, "The organizational structure of a cooperative society is well-designed" holds the top position with a score of 0.89. On the other hand, the lowest-scoring indicator in non-empanelled PFCSs is "All rights and responsibilities of members are defined," scoring 0.43, while in empanelled PFCSs, "All the executive body members are elected" records the lowest score at 0.50. Overall, the mean democratic control index is slightly higher for empanelled PFCSs (0.69) compared to non-empanelled PFCSs (0.66). These findings suggest that empanelled cooperatives have a more structured approach to governance, while non-empanelled cooperatives exhibit stronger inclusivity in their membership practices.

Table 4.27 Indicator-wise mean unit index score of democratic control

Democratic control indicators	Empanelled PFCS	Non-empanelled PFCS
The organizational structure of a cooperative society is well-designed	0.89	0.70
The registration procedure is transparent and professionally managed	0.81	0.64
Membership is open to all active fishers and voluntary	0.78	0.83
Members have equal rights to vote and participate in the cooperative election	0.75	0.70
All the executive body members are elected	0.50	0.73
Regular conduct of executive/general body meetings	0.79	0.70
All the decisions happen in the presence of a quorum of members	0.70	0.59
All rights and responsibilities of members are defined	0.51	0.43
Representation of youth, marginalized and vulnerable people in society	0.50	0.55
Free flow of information to each member without any discrimination	0.70	0.73
Mean democratic control index score	**0.69**	**0.66**

Table 4.28 reveals the mean accountable empowerment index for empanelled PFCSs at 0.57, while for non-empanelled PFCSs, it is lower at 0.47. The indicator "All members are empowered to express their views/opinions" scores the highest in both empanelled (0.84) and non-empanelled (0.86) PFCSs, suggesting that member participation in decision-making is strong in both cooperative types. However, the "Regular assessment of members' technical and functional skills" shows the lowest scores, particularly in non-empanelled PFCSs at 0.23, indicating a significant gap in skill development initiatives. This is attributed to FISHFED's regular training needs assessment of empanelled PFCSs. Other notable differences include "Performance benchmarking with local and regional cooperatives," where empanelled PFCSs score 0.41, compared to a much lower 0.08 in non-empanelled PFCSs, pointing to a lack of competitive assessment among non-empanelled PFCSs.

Table 4.28 Indicator-wise mean unit index score of Accountable Empowerment

Accountable Empowerment indicators	Empanelled PFCS	Non-empanelled PFCS
All the members are empowered to express their views/opinions	0.84	0.86
Delegation and distribution of authority among executive body members to hold them accountable	0.55	0.51
Regular assessment of member's technical and functional skills	0.41	0.23
Performance benchmarking with local and regional cooperatives	0.41	0.08
Access to safety standards, healthcare, and social welfare services for members	0.56	0.28
Following standard operating procedures for all cooperative activities	0.51	0.58
Regular maintenance of record books & statutory registers	0.60	0.55
Cooperative performance & financial reports are published regularly	0.51	0.43
Financial & social audits of society happen at regular interval	0.49	0.49
A cooperative society is free from debt and non-performing assets	0.83	0.68
Mean accountable empowerment index score	**0.57**	**0.47**

Table 4.29 reveals that the mean leadership index score is 0.52 for empanelled PFCSs and 0.46 for non-empanelled PFCSs, indicating a relatively stronger leadership environment in empanelled PFCSs. Among the indicators, "Leaders are actively listening to the problems of members" shows the highest score for empanelled PFCSs at 0.73, and for non-empanelled PFCSs at 0.69, reflecting a strong engagement in both cooperative types. Conversely, the indicator "Leaders rehabilitate defunct operations and promote cooperative startups" registers the lowest values, with 0.35 for empanelled and 0.25 for non-empanelled PFCSs, pointing to challenges in revitalizing non-performing areas.

Table 4.29 Indicator-wise mean unit index score of Leadership

Leadership indicators	Empanelled PFCS	Non-empanelled PFCS
The leaders are educated, trained, and responsible for their work	0.36	0.43
Leaders are actively listening to the problems of members	0.73	0.69
Leaders have good rapport-building and networking skills	0.51	0.50
Leaders demonstrate transparency and fairness in decision-making and financial matters	0.63	0.58
Leaders identify opportunities and develop strategies to capitalize on them	0.43	0.38
Leaders possess strategic thinking skills to address issues and challenges	0.48	0.40
Leaders handle timely grievances of members and ensure accountability	0.64	0.59
Leaders strive hard to diversify the services and income-generating activities of society	0.43	0.21
Leaders keep informing members about the society's functioning and welfare/subsidy schemes	0.69	0.56
Leaders rehabilitate defunct operations and promote cooperative start-ups	0.35	0.25
Mean leadership index Score	**0.52**	**0.46**

Table 4.30 illustrates that the mean teaming index score is 0.57 for empanelled PFCS and 0.50 for non-empanelled PFCSs, indicating a stronger teaming environment in empanelled PFCSs. The highest scoring indicator is "The general body members and executive body members have group harmony," with scores of 0.80 for empanelled and 0.75 for non-empanelled PFCSs. In contrast, the lowest score is observed in the indicator "Society works in line with District and State level cooperative bodies/federations," with 0.44 for empanelled PFCSs and 0.26 for non-empanelled PFCSs. This suggests that while there is a reasonable level of internal cooperation within societies, there is a significant gap in collaboration with district and state cooperative federations, particularly in non-empanelled PFCSs. Additionally, the relatively low scores in "Members are satisfied with the society's functional activities"

further point to a need for improvements in functional efficiency and satisfaction among members.

Table 4.30 Indicator-wise mean unit index score of Teaming

Teaming indicators	Empanelled PFCS	Non-empanelled PFCS
The general body members and executive body members have group harmony	0.80	0.75
All the cooperative members stand together to resolve common issues	0.69	0.71
Members show mutual support and cooperation when a task is to be performed for society	0.59	0.61
Members have confidence in each other and trust among them	0.43	0.51
Cooperative members maintain political and religious neutrality	0.64	0.60
Cooperative society members are committed to the society's welfare	0.53	0.56
Link with other societies and foster collaboration	0.51	0.23
Members are satisfied with the society's functional activities	0.40	0.34
Society shares financial and other benefits among all members	0.69	0.54
Society works in line with District and State level cooperative bodies/federations	0.44	0.26
Mean Teaming index score	**0.57**	**0.50**

Table 4.31 shows that the mean score for Convergence and Linkages is 0.56 for empanelled PFCSs and 0.46 for non-empanelled PFCSs, indicating better connectedness in empanelled PFCSs. The highest-scoring indicator is "Cooperative collaborates with other cooperatives/federations/KVK/other organizations to achieve common goals," with scores of 0.80 for empanelled and 0.65 for non-empanelled PFCSs. However, the indicator "Cooperative conducts training programs in association with research institutes, DoF, KVK, NGOs, etc., for technology transfer" scores the lowest, with 0.38 for empanelled and 0.23 for non-empanelled PFCSs. These findings suggest that while empanelled PFCSs demonstrate stronger convergence and linkages, both types of cooperatives show room for improvement,

particularly in establishing external collaborations and conducting training programs to enhance technology transfer. Improving linkages with research institutes and funding agencies could significantly boost cooperative performance and governance quality.

Table 4.31 Indicator-wise mean unit index score of Convergence & Linkages sentence case

Convergence & Linkage indicators	**Empanelled PFCS**	**Non-empanelled PFCS**
Cooperative collaborates with other cooperatives/federations/ KVK/ other organizations to achieve common goals	0.80	0.65
Cooperative conduct training programs in association with research institutes, DoF, KVK, NGOs, etc. for technology transfer	0.38	0.23
Cooperative collaboration with DoF to ensure effective resource management practices	0.70	0.55
Cooperative receives input resources through other external organizations	0.63	0.60
Cooperative avail schemes/ subsidies through DoF / DoC	0.70	0.60
Members convey suggestions and grievances at the administrative level for policy implications	0.60	0.33
Officials/ project coordinators from the State Federation, DoF, KVK, NGOs, etc. visit the cooperative society regularly	0.60	0.58
Cooperative facilitates bi-directional communication among multi-level cooperatives	0.53	0.50
Cooperative link with funding agencies (NABARD, NCDC, DCB, etc.) for facilitating business activities	0.55	0.55
Cooperative has tie-ups with Traders/Business Organizations for market linkage	0.13	0.00
Mean Convergence & Linkage Index Score	**0.56**	**0.46**

Table 4.32 exhibit the correlation analysis between governance and profile attributes of cooperative societies. It indicates that training status, education of EB, infrastructure facilities, income generating activities and extent of contact with other organizations were found positively correlated with cooperative governance quality in

empanelled and non-empanelled PFCSs. Kyazze *et al.* (2017) also reported cooperative governance positively correlated with welfare performances (0.671).

Table 4.32 Correlation between governance and profile attributes of Cooperatives

Variables	EPFCS	NEPFCS
Membership fee	0.270	0.606
Total share capital	0.273	0.154
Attendance in meetings	0.416	0.133
Age of executive body members	0.237	-0.029
Experience of executive body members	0.303	0.290
Education of executive body members	0.754	0.364
Training status of executive body members	0.529	0.698
Infrastructure facilities	0.498	0.745
Income generation activities	0.534	0.750
Extent of contact with other organizations	0.555	0.775

4.3.4 Cooperative wise FCGQI Score

Table 4.33 presents the overall ranking of FCGQI for selected empanelled PFCSs. The top-ranked society, No. 48 Thekera Min Samabai Samiti Limited, achieved the highest governance quality score of 0.76, reflecting high governance quality. Other societies, such as Bhai Bhai Min Plan Samabai Samiti Ltd. and No. 10 No Kolong Nadi Part-IV Min SS Ltd., follow closely with FCGQI scores of 0.73, also categorized under high governance quality. This is attributed to strong member interest and participation with its members being active fishers and also due to the close interconnectedness with the state federation through which technical and financial assistance flows out. Eight PFCSs show medium level of governance and eight PFCSs show low level of governance.

Table 4.33 Empanelled PFCS-wise governance unit index score

Rank	Empanelled PFCSs	FCGQI	Governance Quality
1	No. 48 Thekera Min SS Ltd.	0.76	**High**
2	Bhai Bhai Min Plan Samabai Samiti Ltd.	0.73	
	10 No Kolong Nadi Part-IV Min SS Ltd.		
3	No. 1,1 (A) and 2 Upper Part Brahmaputra FCS Ltd.	0.71	
4	Satgaon Jalgutha Matsyajibi SS Ltd.	0.69	**Medium**
5	141/142 Baralimari Sitalmari Min SS Ltd.	0.66	
6	Kalai Khuwa Pachim Khaloibandha Min SS Ltd.	0.64	
7	Oujari Malputa Matsyajibi Min SS LTD.	0.63	
8	Rupahi Union Fishing and Farming SS Ltd.	0.60	
9	Agragati Min SS Ltd.	0.59	
10	Naduar Kaibatra Massmora Fishery Coop. SS Ltd.	0.56	
11	14/15 No Nisari Haria Min SS Ltd.	0.55	
12	No.3(C) Lower Part Brahmaputra Min Samabai Samiti Ltd.	0.54	**Low**
13	Satanguri Fishery SS Ltd.	0.52	
	Langsoliet Pisciculture Cooperative Society Ltd.		
14	147 Manipur Fishery Cooperative SS Ltd.	0.51	
15	Durimari Anchalik Matchyajibi SS LTD.	0.47	
16	Pub-Nasatra Baradi F.C.S. Ltd.	0.46	
	Dongarkuchi Pakabetbari Min C.S. Ltd.		
17	Hajo Panipara Namasudra MashMoria Besa Kina Samabai Samiti Ltd.	0.39	

Table 4.34 presents the overall ranking of FCGQI for selected non-empanelled PFCSs. Naduar Min Palan Samabay Samiti Ltd ranks the highest with a score of 0.81, reflecting high governance quality and Sampawati Meen Palan Samabay Samiti Ltd. follow with score of 0.74. A total of three societies fall under medium governance, while the remaining fifteen exhibit low governance quality. This suggests that majority

of the empanelled PFCSs has a low governance quality while Naduar and Sampawati has a high governance quality which may be attributed to its affiliation with NGOs and other external organizations through various project implementation which may help in the training and capacity building of the members while enhancing their technical skills in fisheries. Also, it may be attributed to members' interest and participation coupled with diverse income generating activities.

Table 4.34 Non-empanelled PFCSs-wise governance quality index score

Rank	Non-Empanelled PFCS	FCGQI	Governance Quality
1	Naduar Min Palan Samabay Samiti Ltd	0.81	**High**
2	Sampawati Meen Palan Samabay Samiti Ltd.	0.74	
3	M/S Bidi Pisciculture Cooperative Society Ltd.	0.68	**Medium**
4	Chandrapur Anchalik Min Samabai Samiti Ltd.	0.65	
5	Dawgafu Pisciculture Co-operative Society Ltd.	0.56	
6	Diparbil Pachpara Min Samabai Samiti Ltd.	0.54	**Low**
7	Borhola Min Samabai Samiti Ltd.	0.53	
8	M/S Matri Shakti Pisciculture Cooperative Society Ltd.	0.51	
	M/s Asimbon Pisciculture Co-operative Society Ltd.		
9	M/s Pai-Pai Pisciculture Co-operative Society Ltd.	0.49	
10	Barpeta Fish Marketing C.S. Ltd.	0.48	
11	19/20/22 No kapili Nodi Min SS Ltd.	0.47	
12	Langvoku Pisciculture Cooperative Society Ltd.	0.43	
	Ruwe Pisciculture Cooperative Society Ltd.		
13	Khatowal Gaon Min Palan Samabay Samiti Ltd	0.42	
14	Adarsha Min Palan Samabai Samiti Ltd.	0.40	
	M/S Nimso Fishery Farming Coop. Society Ltd.		
	M/s Natun Asha Pisciculture Co-operative Society Ltd.		
15	Langkar-om Fishery Cooperative Society Ltd.	0.39	
16	Pachigaon Samabay Mach Silpa Samiti Ltd	0.36	

Table 4.35 Mean Governance Quality Index Score at Multi-level Fisheries Cooperatives

Dimensions	State Apex	District Federation	PFCSs
Democratic Control	0.90	0.61	0.68
Accountable Empowerment	0.75	0.54	0.52
Leadership	0.67	0.51	0.49
Teaming	0.62	0.60	0.54
Convergence & Linkage	0.96	0.58	0.51
Overall Governance Quality	**0.77**	**0.57**	**0.55**

The analysis suggests that the State Apex body exhibits the highest governance score (0.77), indicating its strong institutional structure and effective governance, followed by the District Federation with a score of 0.57. Similarly. the Primary Fisheries Cooperative Societies (PFCSs) scores medium (0.55) governance quality. To further strengthen governance at multi-levels, it is essential to empower PFCSs and particularly the District Federations through affiliation with the state federation. This connection can effectively bridge the gap between the higher and lower levels, enhancing governance across the different levels and leading to more resilient cooperative structures.

4.4 EXTENT OF EASE OF DOING BUSINESS IN MULTI-LEVEL FISHERIES COOPERATIVES

4.4.1 EoDB at State Apex Federation

Table 4.36 presents the dimension-wise Ease of Doing Business (EoDB) index score for FISHFED. The highest score is achieved in Business Leadership (0.93), closely followed by both Business Human Capital and Business Infrastructure, each scoring 0.87. Business Governance records a comparatively lower score of 0.70,

indicating room for improvement in governance-related practices. The overall EoDB score of 0.85 suggests a strong potential for smooth business operations.

Table 4.36 Dimension-wise mean EoDB score for FISHFED

Dimensions	Mean unit score
Business Human Capital	0.87
Business Infrastructure	0.87
Business Leadership	0.93
Business Governance	0.70
Overall EoDB	0.85

4.4.2 EoDB at DFFCSs

Table 4.37 compares the Ease of Doing Business (EoDB) index scores across various dimensions for Nagaon and Morigaon District Federations of Fishermen Cooperative Societies (DFFCSs). Nagaon DFFCS demonstrates higher overall performance with an EoDB score of 0.42, while Morigaon DFFCS lags behind with a score of 0.20, reflecting a significant disparity between the two federations. In particular, Nagaon DFFCS performs better in Business Human Capital (0.56) and Business Infrastructure (0.38), whereas Morigaon DFFCS scores notably lower in both dimensions, with 0.25 in each. The Business Leadership and Business Governance scores are also significantly lower for Morigaon, at 0.19 and 0.10 respectively, compared to Nagaon's 0.38 and 0.35. The overall EoDB index score for both federations average out to 0.31, indicating a low level of ease of doing business across the district federations.

Table 4.37 Dimension-wise EoDB score for DFFCS

Dimensions	Nagaon DFFCS	Morigaon DFFCS	Mean Unit Score
Business Human Capital	0.56	0.25	0.41
Business Infrastructure	0.38	0.25	0.31
Business Leadership	0.38	0.19	0.28
Business Governance	0.35	0.10	0.23
Overall EODB	0.42	0.20	0.31

4.4.3 EoDB of selected PFCSs

Table 4.38 highlights that in Business Human Capital, both categories reflect a significant gap, with 80% of EPFCSs and 90% of NEPFCSs scoring low, highlighting a lack of adequate skills and workforce capabilities. Addressing this gap through focused training and development is crucial to enhancing operational performance. In the Business Infrastructure dimension, EPFCSs perform better, with 20% achieving medium to high scores, compared to just 15% in NEPFCSs. This suggests that infrastructure improvements are more prevalent in empanelled societies, supporting more effective operations. However, Business Leadership remains a key weakness, especially in NEPFCSs, where 90% of societies score low, indicating the need for leadership development initiatives. Business Governance shows a relatively better performance in EPFCSs, with 15% achieving medium scores compared to only 5% in NEPFCSs while 5% NEPFCSs scored high. This disparity suggests that empanelled societies benefit from stronger governance structures, which promote transparency and accountability. Finally, in terms of overall Ease of Doing Business (EoDB), 80% of EPFCSs and 90% of NEPFCSs score low, highlighting the need for significant improvements across all dimensions, particularly in leadership and governance, to help cooperatives reach their full potential.

Table 4.38 Distribution of PFCSs based on Dimension-wise Extent of EODB

Dimensions	Categories	EPFCS	NEPFCS
Business Human Capital	Low (< 0.55)	16 (80%)	18 (90%)
	Medium (0.55-0.70)	2 (10%)	0 (0%)
	High (>0.70)	2 (10%)	2 (10%)
Business Infrastructure	Low (< 0.55)	13 (65%)	15 (75%)
	Medium (0.55-0.70)	4 (20%)	3 (15%)
	High (>0.70)	3 (15%)	2 (10%)
Business Leadership	Low (<0.55)	16 (80%)	18 (90%)
	Medium (0.55-0.70)	2 (10%)	1 (5%)
	High (>0.70)	2 (10%)	1 (5%)
Business Governance	Low (<0.55)	17 (85%)	18 (90%)
	Medium (0.55-0.70)	3 (15%)	1 (5%)
	High (>0.70)	0 (0%)	1 (5%)
Ease of Doing Business	Low (< 0.55)	16(80%)	17 (85%)
	Medium (0.55-0.70)	2 (10%)	1 (5%)
	High (>0.70)	2(10%)	2(10%)

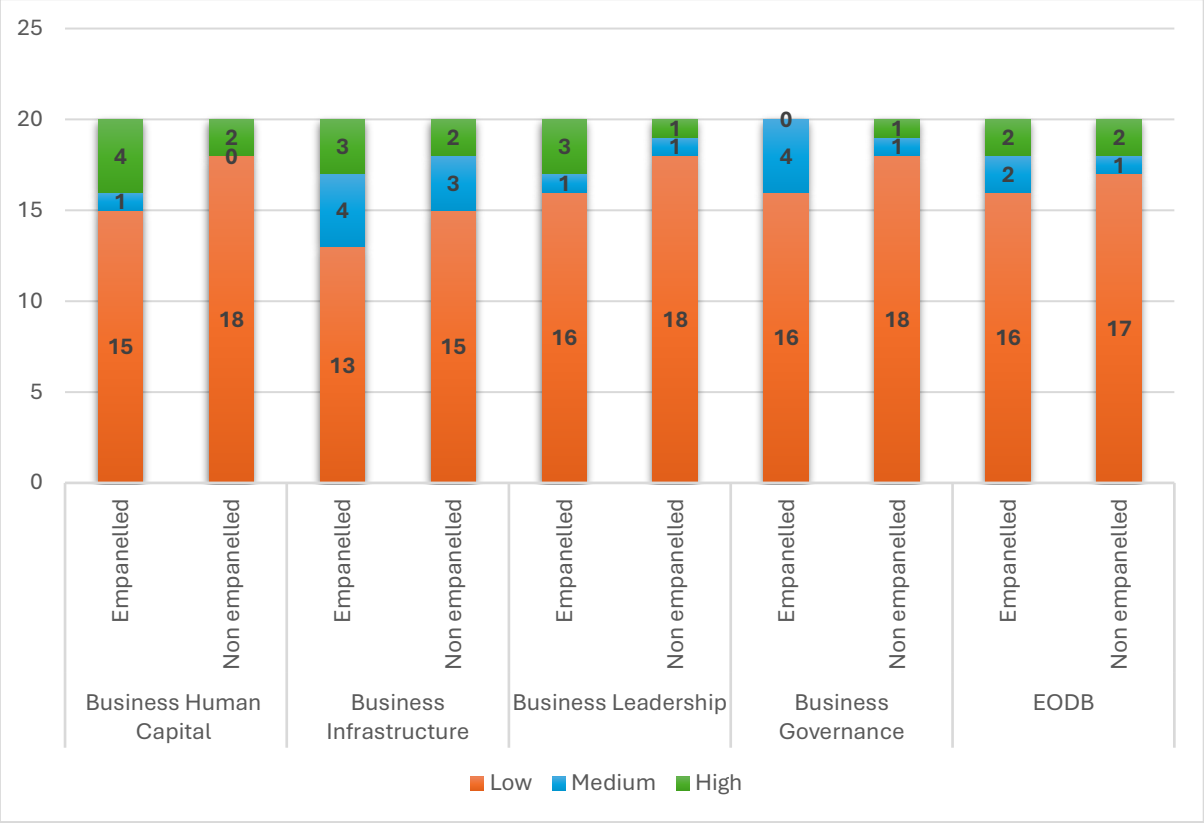

Fig. 4.5 Dimensions-wise Extent of Ease of Doing Business in selected PFCSs

Table 4.39 highlights that PFCS has a better score across most dimensions compared to NEPFCS. In Business Human Capital, EPFCS score 0.38, slightly higher than NEPFCS at 0.28, though with a *p*-value of 0.18, indicating no significant difference as demonstrated by the independent sample t-test results. Business Infrastructure shows a larger gap, with EPFCS scoring 0.49 and NEPFCS at 0.38, but again, the *p*-value (0.11) suggests no significant difference statistically. For Business Leadership, both EPFCS and NEPFCS score similarly at 0.31 and 0.28 respectively, with a non-significant *p*-value of 0.63. However, in Business Governance, EPFCS outperform NEPFCS (0.38 vs. 0.24), and the *p*-value of 0.01 indicates a significant difference, highlighting better governance in empanelled societies. The overall EoDB index shows EPFCS scoring 0.39 and NEPFCS at 0.31, with a *p*-value of 0.09, indicating that although empanelled societies perform better, the difference is not statistically significant. These findings suggest that while the overall EoDB index score of both PFCS is low, empanelled societies generally perform better with governance as the most distinct area of improvement between the two groups.

Table 4.39 Dimensions-wise mean Ease of Doing Business Scores for selected PFCS

Dimensions	EPFCS	NEPFCS	'*p*' value
Business Human Capital	0.38	0.28	0.18
Business Infrastructure	0.49	0.38	0.11
Business Leadership	0.31	0.28	0.63
Business Governance	0.38	0.24	0.01
EoDB	**0.39**	**0.31**	**0.09**

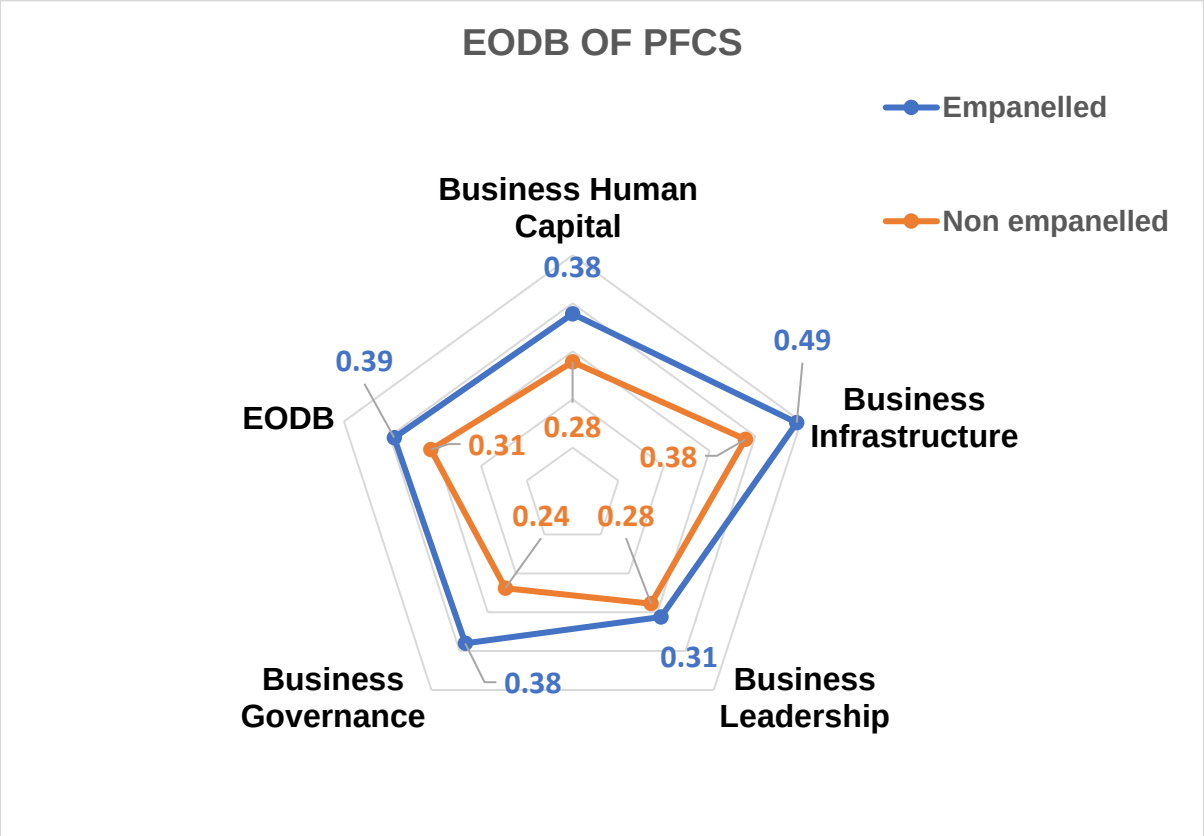

Fig. 4.6 Comparison of mean Ease of Doing Business index score among EPFCSs and NEPFCSs

Table 4.40 highlights that EPFCS perform better in having competent and skilled staff (0.55 vs. 0.32), indicating a stronger workforce. Both EPFCS and NEPFCS score relatively low in assessing training needs (0.26 vs. 0.20), suggesting an area for improvement in skill development for both. Additionally, both types of cooperatives show a similar commitment to members' socioeconomic well-being

(0.52 vs. 0.50), but EPFCS outperform NEPFCS in recognizing and rewarding contributions (0.17 vs. 0.08). This may be attributed to inspiration from the state federation which initiates such rewards for member PFCS. Overall, EPFCS have a higher mean Business Human Capital score (0.38 vs. 0.28), indicating better strategies for managing and supporting their human capital. However, both groups have room to improve in training and recognition practices.

Table 4.40 Indicator-wise mean unit index score of Business Human Capital

Business Human Capital	**EPFCS**	**NEPFCS**
The Cooperative society has an adequate number of competent & skilled staff	0.55	0.32
The Cooperative society periodically assesses the training needs of the staff/members and tries to improve their competencies	0.26	0.20
The Cooperative society takes the initiative for the socioeconomic well-being of its members/staff	0.52	0.50
The Cooperative society recognizes and rewards the contribution of members/staff	0.17	0.08
Mean Business Human Capital Index Score	0.38	0.28

Table 4.41 highlights that EPFCS generally have better Business Infrastructure compared to NEPFCS, with a mean score of 0.49 versus 0.38. EPFCS score higher in having adequate supply sources for business activities (0.52 vs. 0.35), suggesting they are better equipped with necessary resources such as fish seed and feed. Both EPFCS and NEPFCS score low in access to basic infrastructure facilities like office space and internet (0.23 vs. 0.16), pointing to a common challenge in this area. Additionally, EPFCS slightly outperform NEPFCS in having accessible business infrastructure (0.52 vs. 0.46) and more adequate fields for business activities (0.67 vs. 0.53). This may be attributed to EPFCS' access to retail fish outlets of FISHFED which is as an added advantage to market their products. These results indicate that while EPFCS are generally better positioned in terms of infrastructure, both groups face limitations in accessing basic facilities needed to run their operations effectively.

Table 4.41 Indicator-wise mean unit index score of Business Infrastructure

Business Infrastructure	EPFCS	NEPFCS
The Cooperative society has an adequate supply source of critical inputs for business activities	0.52	0.35
The Cooperative society has access to basic infrastructure facilities like office space, water & electricity, computers with high-speed internet connectivity, etc.	0.23	0.16
The Cooperative society has adequate and easily accessible business infrastructure facilities to run income-generating activities	0.52	0.46
The Cooperative society has adequate fields/farms for carrying out the business activities	0.67	0.53
Mean Business Infrastructure Index Score	**0.49**	**0.38**

Table 4.42 indicates that both EPFCS and NEPFCS exhibit similar performance in Business Leadership, with mean scores of 0.31 and 0.28, respectively. EPFCS slightly outperform NEPFCS in proactive steps to harness business or funding opportunities (0.50 vs. 0.45) and demonstrate a marginal advantage in visionary leadership for promoting business activities (0.41 vs. 0.30). However, both types of cooperatives score very low in having an online platform or active social media presence (0.05 for EPFCS, 0.02 for NEPFCS), revealing a significant gap in digital connectivity. Interestingly, NEPFCS score slightly higher in encouraging members to start business ventures through financial and marketing support (0.33 vs. 0.28). This may be attributed to NEPFCS' interconnectedness with NGOs. Overall, the results suggest that while both societies have low scores in leadership activities, they have significant room for improvement, particularly in leveraging online platforms to enhance connectivity and business growth.

Table 4.42 Indicator-wise unit index score of Business Leadership

Business Leadership	EPFCS	NEPFCS
The Cooperative society always takes proactive steps to harness the business/funding opportunities	0.50	0.45
The Cooperative society has visionary and proactive leadership for promoting business activities	0.41	0.30
The Cooperative society has an online platform/active social media presence to connect people	0.05	0.02

The Cooperative society encourages its members to start business ventures through financial and marketing support	0.28	0.33
Mean Business Leadership Index Score	**0.31**	**0.28**

Table 4.43 highlights that EPFCS outperform NEPFCS in the Business Governance dimension, with a mean score of 0.39 compared to 0.26 for NEPFCS. The most significant difference lies in the linkage and convergence with institutions at various levels (village, district, state, and national), where EPFCS score 0.56, far higher than NEPFCS at 0.23. This suggests that empanelled societies have stronger institutional networks, which could enhance their operational capacity. Both EPFCS and NEPFCS show similar scores in facing political or bureaucratic hindrances (0.52 vs. 0.49), indicating that both group experiences significant interference in starting business activities. However, both types of societies score low in having an adequate budget for business start-ups and an internal monitoring mechanism for ensuring quality of output, showing minimal difference between EPFCS (0.26, 0.17) and NEPFCS (0.24, 0.16). The supportive, innovative business environment is also stronger in EPFCS (0.37) compared to NEPFCS (0.20). These results highlight that while EPFCS are better governed, both types of cooperatives need improvements in financial resources and fostering a more innovative business environment.

Table 4.43 Indicator-wise mean unit index score of Business Governance

Business Governance	**EPFCS**	**NEPFCS**
The Cooperative Society has good linkage and convergence with village/district/state/national level Institutions	0.56	0.23
The Cooperative society has political/bureaucrat hindrances to start their business activities	0.52	0.49
The Cooperative society has an adequate budget for starting business activities	0.26	0.24
The Cooperative society has an internal mechanism for monitoring to ensure the quality of output	0.17	0.16
The business environment of the Cooperative society is supportive, and innovative and enables business excellence	0.37	0.20
Mean Business Governance Index Score	**0.39**	**0.26**

Table 4.44 exhibit the correlation analysis between EODB, governance and profile attributes of cooperative societies. It was found that training status, education

of EB, infrastructure facilities, income generating activities, extent of contact with other organizations and governance were found positively correlated with the ease of doing business.

Table 4.44 Correlation between EODB, governance and profile attributes of cooperatives

Variables	EPFCS	NEPFCS
Membership fee	0.442	0.577
Total share capital	0.376	0.154
Attendance of GB in meetings	0.541	0.341
Age of executive body members	0.151	-0.194
Experience of executive body members	0.042	0.571
Education of executive body members	0.789	0.401
Training status of executive body members	0.529	0.718
Infrastructure facilities	0.684	0.868
Income generation activities	0.559	0.657
Extent of contact with other organizations	0.527	0.888
Governance	0.848	0.824

4.4.4 Cooperative wise EODB Unit Index Score

Table 4.45 highlights the Ease of Doing Business index scores for selected Empanelled PFCS. Bhai Bhai Min Plan Samabai Samiti Ltd. ranks highest with a score of 0.80, followed by No. 48 Thekera Min Samabai Samiti Ltd. (0.74) falling under the high EODB quality category, indicating strong operational capacity and business efficiency. While 10 No Kolong Nadi Part-IV Min SS Ltd. and No. 1,1 (A) and 2 Upper Part Brahmaputra FCS Ltd. falls in tme medium EoDB range. The remaining 16 societies fall in the low EoDB category with scores ranging from 0.51 to 0.13. This suggests that while a few cooperatives are excelling in business performance, the

majority still struggle with operational challenges, insufficient infrastructure, and leadership issues. To improve the overall business environment, these cooperatives must focus on enhancing their business infrastructure, governance, and leadership capabilities to move toward higher operational effectiveness.

Table 4.45 EPFCS wise Ease of Doing Business Index Score

Rank	Empanelled Cooperative Societies	EODB Score	EODB Quality
1	Bhai Bhai Min Plan Samabai Samiti Ltd.	**0.80**	**High**
2	No. 48 Thekera Min SS Ltd.	**0.74**	
3	10 No Kolong Nadi Part-IV Min SS Ltd.	**0.65**	**Medium**
4	No. 1,1 (A) and 2 Upper Part Brahmaputra FCS Ltd.	**0.64**	
5	Satgaon Jalgutha Matsyajibi SS Ltd.	**0.51**	**Low**
6	Rupahi Union Fishing and Farming SS Ltd.	**0.48**	
7	141/142 Baralimari Sitalmari Min SS Ltd.	**0.41**	
8	No.3(C) Lower Part Brahmaputra Min Samabai Samiti Ltd.	**0.39**	
9	Naduar Kaibatra Massmora Fishery Coop. SS Ltd.	**0.37**	
10	Dongarkuchi Pakabetbari Min C.S. Ltd.	**0.33**	
11	Agragati Min SS Ltd.	**0.32**	
12	14/15 No Nisari Haria Min SS Ltd.	**0.29**	
	Oujari Malputa Matsyajibi Min SS LTD.	**0.29**	
	Satanguri Fishery SS Ltd.	**0.29**	
13	147 Manipur Fishery Cooperative SS Ltd.	**0.28**	
14	Langsoliet Pisciculture Cooperative Society Ltd.	**0.27**	
15	Kalai Khuwa Pachim Khaloibandha Min SS Ltd.	**0.26**	
16	Hajo Panipara Namasudra MashMoria Besa Kina Samabai Samiti Ltd.	**0.21**	
17	Durimari Anchalik Matchyajibi SS LTD.	**0.15**	
18	Pub-Nasatra Baradi F.C.S. Ltd.	**0.13**	

Table 4.46 highlights the Ease of Doing Business index scores for selected Non-empanelled PFCS. Naduar Min Palan Samabay Samiti Ltd ranks the highest

with an EODB score of 0.76, categorized under high EODB quality, indicating its relatively strong business operations and management capacity. Sampawati Meen Palan Samabay Samiti Ltd follows closely with a score of 0.71 and Barpeta Fish Marketing C.S. Ltd with medium score at 0.55. While the rest 17 societies fall in the low EoDB category with scores ranging from 0.42 to 0.12. Overall, this ranking suggests that while a few societies are performing well, most of the non-empanelled cooperatives struggle with significant business inefficiencies, requiring attention to leadership, governance, and business infrastructure to improve their business outcomes.

Table 4.46 Ranking of NEPFCS based on Ease of Doing Business index score

Rank	Non-Empanelled Cooperative Societies	EODB Score	EODB Quality
1	Naduar Min Palan Samabay Samiti Ltd	**0.76**	**High**
2	Sampawati Meen Palan Samabay Samiti Ltd.	**0.71**	
3	Barpeta Fish Marketing C.S. Ltd.	**0.55**	**Medium**
4	Chandrapur Anchalik Min Samabai Samiti Ltd.	**0.42**	**Low**
	M/S Bidi Pisciculture Cooperative Society Ltd.		
5	Dawgafu Pisciculture Co-operative Society Ltd.	**0.34**	
6	M/s Asimbon Pisciculture Co-operative Society Ltd.	**0.33**	
7	Langvoku Pisciculture Cooperative Society Ltd.	**0.32**	
8	M/s Pai-Pai Pisciculture Co-operative Society Ltd.	**0.27**	
9	19/20/22 No kapili Nodi Min SS Ltd.	**0.23**	
10	M/S Nimso Fishery Farming Coop. Society Ltd.	**0.21**	
11	Langkar-om Fishery Cooperative Society Ltd.	**0.18**	
	M/S Matri Shakti Pisciculture Cooperative Society Ltd.		
12	Borhola Min Samabai Samiti Ltd.	**0.16**	
13	Ruwe Pisciculture Cooperative Society Ltd.	**0.15**	
14	Adarsha Min Palan Samabai Samiti Ltd.	**0.14**	
15	Diparbil Pachpara Min Samabai Samiti Ltd.	**0.13**	
	M/s Natun Asha Pisciculture Co-operative Society Ltd.		
16	Khatowal Gaon Min Palan Samabay Samiti Ltd	**0.12**	
	Pachigaon Samabay Mach Silpa Samiti Ltd		

Table 4.47 Mean unit score of EoDB in Multi-level Fisheries Cooperatives

Dimensions	State Apex	DFFCSs	PFCSs
Business Human Capital	0.87	0.41	0.33
Business Infrastructure	0.87	0.31	0.44
Business Leadership	0.93	0.28	0.30
Business Governance	0.70	0.23	0.31
Overall EoDB Index Score	**0.85**	**0.31**	**0.35**

The State Apex performs significantly better across all dimensions, with high scores in Business Human Capital (0.87), Business Infrastructure (0.87), Business Leadership (0.93), and Business Governance (0.70), leading to an overall EoDB score of 0.85, indicating a high level of ease of doing business. In contrast, the District Federation, EPFCS, and NEPFCS exhibit lower performance across these dimensions, with all three categorized under "low" in terms of EoDB. EPFCS shows better performance relative to NEPFCS, particularly in Business Infrastructure (0.49) and Business Governance (0.38) which may be attributed to its affiliation with the state federation but still remains in the "low" EoDB category with a score of 0.39. This suggests that while the State Apex is well-equipped and performs efficiently, the lower-level cooperatives, especially District Federations and NEPFCS, face significant challenges in leadership, infrastructure, and governance, limiting their operational efficiency and business potential. Improvements in these areas through proper resource distribution and capacity building programs could enhance their overall EoDB and strengthen cooperative performance across levels.

4.5 CONSTRAINTS FACED BY MULTI-LEVEL FISHERIES COOPERATIVES

4.5.1 Constraints of State Apex Federation

Table 4.48 categorizes constraints faced by FISHFED into governance-related and business-oriented issues, each with varying levels of impact. Key governance constraints like poor sensitization and participation among cooperatives, lack of coordination, and favoritism during auctions indicate challenges in organizational cohesion and leadership. Some of these, like poor sensitization, have a relatively high CAI score of 66.67, highlighting their critical nature. Business-oriented constraints

such as weak financial status, shortage of technical resources, and low fish catch pose significant operational hurdles, with financial constraints also scoring 66.67. Other issues, like lack of credit facilities and inadequate transport, score lower but still reflect notable barriers.

Table 4.48 Constraints faced by State Apex Federation

Sl. No	Constraints (FISHFED)	CAI Score
Governance Related		
1	Poor sensitization among cooperatives	66.67
2	Poor participation of member cooperatives	
3	Lack of coordination among member cooperatives	
4	Limited welfare schemes	
5	Lack of motivation	
6	Lack of technical knowhow in accounting, record keeping	33.33
7	Illiteracy	
8	Favoritism during auction of water bodies	
9	Political influence	
Business Oriented		
1	Weak financial status	66.67
2	Shortage of technical human resources	
3	Inadequate transport facilities	
4	Low supply of seeds/ low fish catch	
5	Inadequate fish storage facilities	
6	Weed infestation in water bodies	
7	Lack of credit facilities	33.33
8	Indebtedness	
9	High cost of fishing equipment	
10	Poaching of fishes	
11	Natural calamity-flood	

4.5.2 Constraints of District Fisheries Cooperatives

Table 4.49 highlights the constraints of district level federations. Governance issues such as poor member participation (100 CAI score) and lack of coordination (83.33) are major obstacles, alongside challenges like illiteracy and poor administrative awareness. Business constraints, notably weak financial status (100), inadequate transport (83.33), and a shortage of technical resources (66.67), severely impact operational efficiency. Additionally, recurring issues like poor marketing, high equipment costs, and environmental factors like floods and poaching further strain

the cooperative's effectiveness, emphasizing the need for stronger governance and improved business resources.

Table 4.49 Constraints faced by DFFCSs

Sl. No	Constraints (DFFCSs)	CAI Score
Governance Related		
1	Poor member interest/participation	100
2	Lack of coordination in cooperatives	83.33
3	Lack of welfare schemes	
4	Illiteracy	
5	Favoritism during auction of water bodies	
6	Lack of motivation	66.67
7	Lack of technical knowhow in accounting, record keeping	
8	Poor awareness of cooperative administration	33.33
9	Political influence	
Business Oriented		
1	Weak financial status	100
2	Poor marketing facilities	
3	High cost of fishing equipment	
4	Natural calamity-flood	
5	Poor marketing facilities	
6	Inadequate transport facilities	83.33
7	Lack of credit facilities	
8	Shortage of technical human resources	66.67
9	Low supply of seeds/ low fish catch	
10	Weed infestation in water bodies	50.00
11	Poaching of fishes	50.00

4.5.3 Constraints of Empanelled Primary Fisheries Cooperatives

Table 4.50 highlights key governance and business constraints faced by EPFCS. Governance issues like illiteracy (91.67 CAI score), political influence (88.33), and lack of coordination (85.00) are major barriers to cooperative management, alongside limited welfare schemes and poor administrative awareness. On the business side, low fish catch (98.33), high equipment costs (93.33), and weak financial status (83.33) significantly impact operations. Other challenges, such as natural calamities, inadequate credit, and weed infestation, further strain resources.

These constraints underscore the need for improved governance, financial stability, and technical resources to enhance cooperative performance.

Table 4.50 Constraints faced by EPFCSs

S. No	Constraints (EPFCS)	CAI Score
Governance Related		
1	Illiteracy	91.67
2	Political influence	88.33
3	Lack of coordination in cooperatives	85.00
4	Lack of welfare schemes	83.33
5	Poor awareness of cooperative administration	81.67
6	Lack of technical knowhow in accounting, record keeping	70.00
7	Favoritism during auction of water bodies	65.00
8	Lack of motivation	63.33
9	Poor member interest/participation	55.00
Business Oriented		
1	Low fish catch	98.33
2	High cost of fishing equipment	93.33
3	Weak financial status	83.33
4	Inadequate transport facilities	
5	Shortage of technical human resources	
6	Natural calamity-flood	80.00
7	Lack of credit facilities	76.67
8	Indebtedness	
9	Weed infestation in water bodies	68.33
10	Poaching of fishes	66.67
11	Poor marketing facilities	45.00

4.5.4 Constraints of Non-empanelled Primary Fisheries Cooperatives

Table 4.51 highlights significant governance and business challenges faced by EPFCS. Governance constraints such as lack of technical knowhow in accounting (90.33 CAI score), poor coordination (81.67), and political influence hinder cooperative management. Additionally, limited welfare schemes, poor member participation, and low motivation further weaken governance. On the business side, major obstacles include a shortage of technical human resources (98.67), low fish catch (96.33), and weak financial status (86.67). Other operational issues, such as high equipment costs, inadequate transport, and indebtedness, compound

difficulties. These constraints point to a need for stronger governance structures and business resource enhancements for improved cooperative performance.

Table 4.51 Constraints faced by NEPFCSs

S. No	Constraints (EPFCS)	CAI Score
Governance Related		
1	Lack of technical knowhow in accounting, record keeping	90.33
2	Lack of coordination in cooperatives	81.67
3	Political influence	
4	Lack of welfare schemes	73.33
5	Favoritism during auction of water bodies	
6	Poor awareness of cooperative administration	58.33
7	Poor member interest/participation	56.67
8	Lack of motivation	53.33
9	Illiteracy	48.33
Business Oriented		
1	Shortage of technical human resources	98.67
2	Low supply of seeds/ low fish catch	96.33
3	Weak financial status	86.67
4	High cost of fishing equipment	81.67
5	Inadequate transport facilities	80.00
6	Weed infestation in water bodies	
7	Natural calamity-flood	78.33
8	Indebtedness	75.00
9	Poaching of fishes	70.00
10	Lack of credit facilities	65.00
11	Poor marketing facilities	40.00

4.6 STRATEGIES FOR STRENGTHENING MULTI-LEVEL FISHERIES COOPERATIVES

4.6.1 Strategies for Strengthening State Federation

At the state level, the focus should be on providing overarching support, policy guidance, and access to resources that can trickle down to district and primary cooperatives.

- Strengthen Financial Support and Credit Facilities: Weak financial status is a pervasive issue across cooperatives. FISHFED should work with government

financial institutions to create targeted financial products for cooperatives, including low-interest loans, subsidies, and credit access schemes.

- Enhance Technical Assistance Programs: The unavailability of technical assistance is a top constraint. The State Federation should partner with universities, research institutes, and the Department of Fisheries to provide ongoing training in modern fishing techniques, equipment usage, and cooperative management.
- Promote Digital and Marketing Platforms: Many cooperatives lack online presence and digital connectivity. State-level federations can establish an online platform to market fish products, track cooperative performance, and connect cooperatives to buyers and government schemes.
- Policy Advocacy and Political Neutrality: Political influence is a critical issue. FISHFED should advocate for a politically neutral environment, ensuring that cooperatives can operate without external political interference. Transparency during water body auctions is also essential to prevent favouritism. Reducing the lease amount could help enhance the operational efficiency of cooperatives.

4.6.2 Strategies for Strengthening District Federation

District Federations play a critical intermediary role between state and primary cooperatives. Empowering them will ensure better coordination and resource distribution.

- Improve Coordination and Communication: Lack of coordination is a significant issue. District Federations should create formalized communication channels among primary cooperatives to promote resource sharing and knowledge exchange. Regular meetings and district-level platforms can foster coordination.
- Build District-Level Technical Hubs: To address the unavailability of technical assistance at the primary level, district-level technical support hubs should be established to provide hands-on assistance. These hubs can offer advice on sustainable fishing practices, market linkages, and financial management.

- Strengthen Infrastructure and Transport: District Federations should work with local governments to improve transport infrastructure, ensuring that cooperatives have easier access to markets. This could include creating cold storage and transportation facilities to reduce post-harvest losses.
- Disaster Preparedness Programs: With natural calamities, such as floods, being a major constraint, district-level cooperatives should work closely with government disaster management agencies to create flood resilience programs, including early warning systems and insurance for fishery assets.

4.6.3 Strategies for Strengthening Primary Cooperatives

Primary cooperatives face the most operational challenges and require targeted assistance to improve their daily functioning.

- Improve Business Leadership and Governance: Many cooperatives suffer from weak leadership and governance. Leadership training programs should be initiated for cooperative managers, focusing on strategic planning, transparency, and record-keeping. Training should include technical know-how in accounting and business administration.
- Enhance Access to Seeds and Technical Inputs: Given the constraint of low fish seed supply and high input costs, primary cooperatives should be linked with government hatcheries or private seed farms. Subsidized inputs, such as fish seeds and equipment, should be provided to reduce operational costs. River ranching programs are essential for boosting fish populations and enhancing fish catches in rivers, ultimately leading to increased turnover for cooperative societies. Through this, cooperatives can promote sustainable practices while maximizing their economic returns.
- Increase Member Engagement and Education: Poor member participation and illiteracy affect primary cooperatives' success. A cooperative literacy program should be introduced, targeting both financial literacy and cooperative governance. Awareness programs should encourage member participation and involvement in decision-making processes.
- Capacity Building and Training: Regular workshops on cooperative management, financial literacy, and leadership skills needs to be offered to

PFCSs. Providing training in accounting, record keeping, and governance practices can address issues like lack of technical knowhow.

- Develop Market Linkages: Poor marketing facilities need to be addressed by creating stronger ties with local traders, establishing fish markets, and promoting cooperatives' products. Digital marketing and branding efforts should be supported at the primary level to increase visibility.
- Fisheries Welfare Schemes and Social Security: Welfare schemes need to be introduced, such as health insurance, pensions, and accident coverage for members. These welfare schemes will improve member morale, participation, and interest in cooperative activities.
- Encouraging Women's Participation and capacity building: To improve women's participation in cooperatives, targeted awareness campaigns, incentivized membership, and gender-sensitive policies can encourage more women to join and take leadership roles. Capacity building for women can be strengthened through skill development programs focusing on leadership, financial literacy, technical training on value added products, and vocational education. Establishing partnerships with NGOs and government bodies can bring additional resources and support, while promoting policy reforms ensures women's long-term inclusion and advancement in cooperatives.

SUMMARY & CONCLUSION

5. SUMMARY AND CONCLUSION

Cooperatives are typically voluntary, democratically run business organizations established to serve the mutual interests of their members. The fisheries cooperative sector plays a vital role in improving the livelihoods, nutrition, and social security of fishers. In Assam, while the state-level fisheries cooperative sector is well-established, district federations lag behind. Primary and district-level cooperatives focus primarily on accessing subsidies and grants, neglecting fish production, marketing, and member development. Despite a structured state federation, coordination and accountability across all levels, i.e., Primary Fisheries Cooperative Societies (PFCS), District Federations, and the State Federation, are lacking, hindering smooth operations and business activities. Governance is critical for cooperative success, yet there has been little focus on assessing governance quality and ease of doing business. Furthermore, standardized tools to evaluate these factors at different levels, specifically for fisheries cooperatives, are lacking. Considering these points, the study titled "**Governance Assessment of Multi-level Fisheries Cooperatives in Assam**" was planned with the following specific objectives.

- To evaluate the governance quality of multi-level fisheries cooperatives in Assam.
- To assess the ease of doing business in multi-level fisheries cooperatives.
- To identify the constraints and suggest strategies for strengthening multi-level fisheries cooperatives.

5.1 RESEARCH METHODOLOGY

The State of Assam was purposively selected for the present study due to its substantial number of fisheries cooperatives (604), its central location among the Northeastern states of India, and its leading position in fisheries within the region. This study focuses on Multi-level Fisheries Cooperatives, including the State Apex Federation, District Federations, and Primary Fisheries Cooperative Societies. At the state level, FISHFED was selected as the sole fisheries cooperative federation, while at the district level, both Nagaon and Morigaon District Federations were chosen. At the primary level, 40 functional PFCS (20 empanelled and 20 non-empanelled) were

selected through convenience sampling. In total, 43 cooperative societies across these three levels were included in the study for assessing the cooperative governance quality, ease of doing business, and constraints using the Fisheries Cooperative Governance Quality Index, Ease of Doing Business Index for Cooperatives, and the Constraint Analysis Index, respectively. Two Focus Group Discussions (FGDs) were conducted for each selected PFCS, district, and state federation, one with executive body members and the other with general body members to collect comprehensive information on selected variables for the study to minimize bias and ensure the collection of high-quality information from the cooperatives. The statistical analysis was done with the help of computer software, namely MS-Excel Spreadsheet and Statistical Package for the Social Sciences (SPSS).

5.2 SALIENT FINDINGS

5.2.1 Profile of Multi-level Fisheries Cooperatives

At the state level, FISHFED has 305 empanelled PFCS out of 598, representing 52% affiliation. With an authorized capital of rs.400 lakh, a working capital of rs.115.66 lakh, and a net profit of rs.15.67 lakh, FISHFED is financially stable. The federation also benefits from modern infrastructure, including well-equipped offices, cold storage units, fish transportation vehicles, and retail outlets. FISHFED maintains a high level of contact (0.85) with external organizations such as the Department of Fisheries, the Department of Cooperation, and NGOs, which enhances its operational capacity. Additionally, FISHFED generates revenue through various income-generating activities, including retail and wholesale fish shops and food outlets. However, the audit grade for FISHFED stands at a "B," suggesting areas for improvement. At the district level, Nagaon and Morigaon District Federations show discrepancies in performance. Nagaon DFFCS, with 10 PFCS, has a working capital of rs.47,856 and a turnover of rs.1.24 lakh. However, Morigaon DFFCS lacks audit data and is non-functional. Both federations suffer from inadequate infrastructure, with no office space or fish transportation vehicles. Nagaon maintains a moderate contact score (0.60) with external organizations, while Morigaon's contact score is lower (0.45). The lack of infrastructure and poor external engagement severely limit the business potential of these federations. At the primary level, empanelled and non-empanelled PFCS show distinct differences. Empanelled PFCS generally outperform

non-empanelled PFCS in terms of financial health, with an average share capital of rs.91,009 compared to rs.30,546 in non-empanelled PFCS. Empanelled PFCS also report higher business turnover, with 40% achieving turnovers above rs.5 lakh, while 60% of non-empanelled PFCS report turnovers below rs.1 lakh. Both groups receive predominantly "C" grades in audits, indicating similar operational challenges. However, empanelled PFCS maintain better external contacts (0.58) compared to non-empanelled PFCS (0.39), with stronger connections to the Department of Fisheries and other cooperatives. In terms of infrastructure, 80% of empanelled PFCS have limited facilities, while 90% of non-empanelled PFCS report inadequate infrastructure. When it comes to welfare and income-generating activities, empanelled PFCS focus on retail and wholesale fish shops and accessory shops, while non-empanelled PFCS engage more in value-added fish product businesses. Despite their lower infrastructure and external contact, non-empanelled PFCS show diversity in income-generating activities, but they lack the support and resources available to empanelled PFCS through FISHFED.PFCS have higher scores in allowing women to speak in meetings, access resources, and receive equal opportunities. The findings highlight the need for infrastructure investment, better financial management, and enhanced women's empowerment to improve the performance and sustainability of fisheries cooperatives in Assam.

5.2.2 Governance Quality of Multi-level Fisheries Cooperatives

FISHFED achieved a high FCGQI score of 0.77, reflecting robust governance practices. Its highest performing dimension was Convergence and Linkages, with a score of 0.96, indicating strong networking and partnerships with external organizations such as NGOs, financial institutions, and government departments. Democratic Control also scored well at 0.90, demonstrating active member participation and a transparent decision-making process. However, Leadership scored 0.67, and Teaming scored 0.62, both areas showing room for improvement in leadership effectiveness and internal collaboration. Accountable Empowerment scored a moderate 0.75, highlighting a balanced environment of empowerment and accountability but indicating that further efforts are needed to enhance member engagement. At the district level, the overall governance score was 0.57, falling into the medium governance category. However, a notable disparity exists between the two federations. Nagaon District Federation achieved a high governance score of

0.77, performing strongly in Accountable Empowerment (0.83) and Teaming (0.80), indicating effective collaboration and strong accountability mechanisms. Democratic Control scored 0.75, showcasing active participation and well-functioning governance. On the other hand, Morigaon District Federation performed poorly, with a governance score of 0.37, struggling significantly in Accountable Empowerment (0.25) and Leadership (0.30). This indicates the need for substantial improvements in governance structures, particularly in accountability and leadership at the district level. The governance assessment of PFCS highlights a clear gap between empanelled and non-empanelled cooperatives. Empanelled PFCS demonstrated stronger governance with a mean FCGQI score of 0.58, while non-empanelled PFCS scored 0.51, reflecting weaker governance structures. In Democratic Control, empanelled PFCS scored 0.69, slightly higher than non-empanelled PFCS at 0.66, although the difference was not statistically significant (p-value 0.22). Accountable Empowerment showed a more notable gap, with empanelled PFCS scoring 0.57, compared to 0.47 for non-empanelled PFCS (p-value 0.04), suggesting that empanelled societies benefit from stronger accountability mechanisms. In the Leadership dimension, empanelled PFCS scored 0.52, while non-empanelled PFCS scored 0.46, although this difference was not statistically significant (p-value 0.30). The Teaming dimension showed near-equal performance between the two, with empanelled PFCS scoring 0.57 and non-empanelled PFCS scoring 0.50 (p-value 0.10). Convergence and Linkages showed a significant gap, with empanelled PFCS scoring 0.56 and non-empanelled PFCS scoring 0.46 (p-value 0.02), indicating that empanelled PFCS are better integrated into networks and external partnerships. Among the empanelled PFCS, No. 48 Thekera Min Samabai Samiti Ltd. scored the highest governance quality rank with an FCGQI score of 0.76. This high rank is attributed to strong member participation, active fishers, and its close affiliation with FISHFED, which provided technical and financial assistance, enhancing the cooperative's governance quality. Among the non-empanelled PFCS, Naduar Min Palan Samabay Samiti Ltd. scored the highest governance quality rank with an FCGQI score of 0.81. This high governance score is attributed to the society's strong member interest, active participation, and affiliation with NGOs and external organizations, which provided technical support and capacity-building programs.

5.2.3 Ease of Doing Business in Multi-level Fisheries Cooperatives

At the state level, FISHFED, the apex cooperative federation, demonstrates high ease of doing business with an overall EoDB score of 0.85. The federation excels in Business Leadership with a score of 0.93, followed by Business Human Capital and Business Infrastructure, both scoring 0.87. Business Governance, although still relatively strong, is the lowest scoring dimension at 0.70, suggesting that governance practices could still be improved. The district federations display significant disparity in their ease of doing business. Nagaon DFFCS shows moderate efficiency with an EoDB score of 0.42, while Morigaon DFFCS struggles with a low score of 0.20. Nagaon DFFCS outperforms Morigaon in all dimensions, particularly in Business Human Capital (0.56 vs. 0.25) and Business Infrastructure (0.38 vs. 0.25). This reflects the stronger organizational and operational structure of Nagaon DFFCS compared to Morigaon, which suffers from poor leadership and governance. At the primary level, both Empanelled PFCS (EPFCS) and Non-Empanelled PFCS (NEPFCS) face considerable challenges in their operations. The overall EoDB scores for EPFCS and NEPFCS are 0.39 and 0.31 respectively, indicating a low ease of doing business for both categories. EPFCS perform slightly better in most dimensions, particularly in Business Infrastructure (0.49) and Business Governance (0.38). However, both groups struggle significantly with Business Leadership and Human Capital, with 80% of EPFCS and 90% of NEPFCS scoring low in these dimensions. Among the empanelled PFCS, Bhai Bhai Min Plan Samabai Samiti Ltd. scored the highest Ease of Doing Business rank with a score of 0.80, attributed to strong business infrastructure, leadership, and efficient management practices. Among the non-empanelled PFCS, Naduar Min Palan Samabay Samiti Ltd. scored the highest Ease of Doing Business rank with a score of 0.76, due to strong member participation, effective resource management, and external support from NGOs.

5.2.4 Constraint faced by Multi-level Fisheries Cooperatives

State Apex Federation (FISHFED) struggles with weak financial status, lack of technical assistance, and poor cooperative awareness, all with a high Constraint Assessment Index (CAI) of 66.67. Additional issues include poor member participation, inadequate transport, and poor marketing facilities. District Fisheries Cooperatives face significant constraints like weak financial status, poor member participation, and marketing issues (CAI 100). Other concerns include natural

calamities, high equipment costs, and poor coordination. Empanelled Primary Fisheries Cooperatives (EPFCS) report issues such as low fish catch (CAI 98.33), high equipment costs, illiteracy, and political influence, as well as inadequate welfare schemes and credit facilities. Non-Empanelled Primary Fisheries Cooperatives (NEPFCS) have the most severe constraints, including lack of technical assistance (CAI 98.67), low seed supply, and inadequate accounting skills. Other challenges include weak financials, high equipment costs, and poor marketing. Addressing these constraints is essential to improving the governance, operations, and sustainability of fisheries cooperatives in Assam.

5.2.5 Strategies for strengthening Multi-level Fisheries Cooperatives

At the state level, the focus is on providing strong financial support and improving credit facilities. FISHFED is encouraged to collaborate with financial institutions to offer low-interest loans and targeted financial products. Enhancing technical assistance through partnerships with research institutions and promoting digital platforms for marketing and cooperative performance tracking are also crucial strategies. Additionally, ensuring political neutrality and transparency, especially in water body auctions, will help create a more favorable operational environment. At the district level, strategies include improving coordination and communication among primary cooperatives and establishing district-level technical hubs to provide hands-on technical support. Strengthening infrastructure, especially transport facilities, will ensure better market access for cooperatives. Introducing disaster preparedness programs is essential for mitigating the risks of natural calamities like floods. For primary cooperatives, leadership and governance improvement are key. Leadership training, enhanced access to seeds and technical inputs, and developing strong market linkages will help boost their performance. Increasing member engagement, through education and welfare schemes, such as health insurance and pensions, will enhance participation and ensure long-term sustainability of these cooperatives .

5.3 CONCLUSION

The study on multi-level fisheries cooperatives in Assam highlights several key findings related to governance, ease of doing business (EoDB), constraints, and areas for improvement. Governance scores indicate that the State Apex body, FISHFED, has the strongest governance structure, with a high score of 0.77, showcasing effective leadership, convergence, and member participation. District federations, particularly Nagaon DFFCS, perform moderately with a governance score of 0.57, but Morigaon DFFCS lags behind, revealing a need for better leadership and accountable empowerment. Empanelled Primary Fisheries Cooperative Societies (EPFCS) generally outperform non-empanelled societies (NEPFCS), with medium governance quality (0.58) compared to the lower score of NEPFCS (0.51). The affiliation with FISHFED plays a crucial role in supporting empanelled societies, providing stronger governance and external linkages. The highest-ranked empanelled society in governance is No. 48 Thekera Min Samabai Samiti Ltd. with a score of 0.76, while among non-empanelled societies, Naduar Min Palan Samabay Samiti Ltd. ranks highest with 0.81 which is attributed to its affiliation with NGOs and other external organization for training and capacity building. Regarding EoDB, the State Apex Federation exhibits the highest score (0.85), driven by robust business leadership, infrastructure, and human capital. However, both district federations and PFCS struggle, with most classified as low performing in business operations. Among EPFCS, Bhai Bhai Min Plan Samabai Samiti Ltd. and No. 48 Thekera Min Samabai Samiti Ltd. rank highest in EoDB, while Naduar Min Palan Samabay Samiti Ltd. leads in non-empanelled cooperatives. Despite these top performers, the majority of cooperatives face challenges, particularly in business governance and leadership. The study reveals that improving governance and business operations requires targeted strategies, such as enhancing leadership development, strengthening convergence with external organizations, and investing in business infrastructure and human capital. Addressing these areas will help cooperatives reach their full potential, ensuring development and growth across all levels of fisheries cooperatives in Assam.

5.4 IMPLICATIONS OF THE STUDY

- This study aimed to assess the current profile of multi-level fisheries cooperatives in Assam, providing valuable insights for policymakers to develop targeted interventions. These interventions could include training programs, guidelines, and incentives to improve governance through democratic decision-making, strategic leadership, teamwork, and accountable empowerment.
- The study introduced the 'Fisheries Cooperative Governance Quality Index' (FCGQI) and the ‘Ease of Doing Business Index for Cooperatives’ a novel methodology that can be extended to other States to evaluate governance quality and the ease of doing business. This would support the development of broader strategies and policy interventions to strengthen fisheries cooperatives throughout the state.
- Ranking fisheries cooperatives based on governance quality and ease of doing business will help the Department of Fisheries, Assam, in creating strategic and targeted interventions aimed at enhancing the performance of Primary Fisheries Cooperative Societies (PFCS) across the state.
- The study also identified the key constraints in fisheries cooperatives in Assam. These findings should guide the Department of Fisheries in promoting the sustainable development of fisheries cooperatives in the State.

5.5 SUGGESTIONS FOR FUTURE RESEARCH

- Comprehensive study on governance in multi-level fisheries cooperative societies in other States can be taken up.
- Comprehensive study on ease of doing business in multi-level fisheries cooperative societies in other States can be taken up.
- A comparative study among agriculture, dairy and fisheries cooperative societies can be taken up.
- A case study on why fisheries cooperative societies are not performing at par with dairy and agriculture cooperative societies can be taken up.
- Standardization and further refinement of FCGQI and EoDB can be taken up by using large scale sample size and involving experts rating.

REFERENCES

6. REFERENCES

Agu-Aguiyi, F., Onyia, C., Umebali, E. and Sotonye, M., 2018. Performance of fishery cooperative societies in Rivers State Nigeria. *International Journal of Community and Cooperative Studies*, 6(1), pp.50-74.

Ambilikumar, V., 2017. Performance of primary level fishermen development & welfare cooperative societies in Kerala: An evaluation. *International Journal of Management and Social Science Research Review,* 1(38), pp.9-16.

Bachu, U. and Eunice, B.L.G., 2024. A Study On Fisherwomen Co-Operative Societies In Visakhapatnam District Of Andhra Pradesh, India. *Journal of Survey in Fisheries Sciences*, pp.55-62

Baticados, D. B., Agbayani, R. F. and Gentoral, F. E., 1998. Fishing cooperatives in Capiz, central Philippines: Their importance in managing fishery resources. *Fisheries research*, 34(2), pp.137-149.

Borah, S., 2017. Current Status and Future Scope of Producers' Cooperatives in Livelihood Generation of Assam. *IOSR Journal of Humanities and Social Science*, 22, pp.85-91.

Chandra, G., 2009. Fisher management regimes and fisheries governance in floodplain wetland of Assam. In 4th World Congress on Conservation Agriculture on Innovation for Improving Efficiency, Equity and Environment, organized jointly by FAO, Indian Council of Agricultural Research, pp. 1-11.

Chandrashekar, B. S., 2014. Fishery co-operative societies in India: Problems and prospects. *Global Journal for Research Analysis*, 3(7), pp.92-94.

Christian, M., Obi, A., Zantsi, S., Mdoda, L. and Jiba, P., 2024. The Role of Cooperatives in Improving Smallholder Participation in Agri-Food Value Chains: A Case Study of One Local Municipality in Eastern Cape, South Africa. *Sustainability* 2024, 16, 2241.

Das, G.C.B., 2019. Governance and institutional arrangement in floodplain wetlands fisheries of India: comparative study of Assam and Bihar. *Journal of the Inland Fisheries Society of India*, p.82.

Das, R., 2016. Sustainable livelihood promotion through co-operative model: A study of Nagshankar Co-operative. *Researchgate*, pp.1-16.

Dendup, T. and Aditto, S., 2020. Performance and challenges of agriculture cooperatives in Bhutan. *Khon Kaen Agr. J*, *48*, pp.1194-1205.

Department of Fisheries, 2023. Annual report 2022-23. Department of Fisheries, Government of Assam.

Department of Fisheries, 2023. Annual Report 2022-23. Ministry of Fisheries, Animal Husbandry and Dairying. https://dof.gov.in/

Dinesh, R., 2023. Evaluating Governance in inland primary fisheries cooperative

societies of Tamil Nadu. M.F.Sc. Dissertation, ICAR-Central Institute of Fisheries Education, Mumbai.

Edwards, A. L., 1957. Techniques of attitude scale construction. Vakils, Feffer and Simons Private Ltd., Bombay.

FISHCOPFED, 2022. National Federation of Fishers Cooperatives Ltd. Ministry of Fisheries, Animal Husbandry and Dairying, Government of India. Available at http://www.fishcopfed.in/DataBank (accessed on 12.12.2023).

Groenevald, H., 2016. Doing co-operative business report: Methodology and exploratory application for 33 countries. International Co-operative Alliance, Brussels. p.13.

Haldar, P. K. and Saha, S., 2015. An insight into the performance of fishermen cooperative societies in Tripura. *International Journal of Advanced Research and Innovative Ideas in Education*, 1(5), pp.879-889.

Handbook on Fisheries Statistics, 2023. Department of Fisheries, Ministry of Fisheries, Animal Husbandry and Dairying, Government of India, New Delhi.

Handoyo, S., 2017. An exploratory study on the relationship of public governance and ease of doing business. *Asia Pacific Management and Business Application*, 6(2), pp.75-88.

ICA. (1995). http://usa2012.coop/about-co-ops/7-cooperative-principles.

ILO, 2004. Promotion of cooperatives. 89th Session, International Labour Organization, Geneva. Pp. 138.

Jamaluddin, F., Saleh, N.M., Abdullah, A., Hassan, M.S., Hamzah, N., Jaffar, R., Abdul Ghani Aziz, S.A. and Embong, Z., 2023. Cooperative governance and cooperative performance: A systematic literature review. *SAGE Open*, *13*(3), p.21582440231192944.

Jentoft, S., 1986. Fisheries Cooperatives: Lesson Drawn from International Experiences, *Canadian Journal of Development Studies,* 7 (2), pp.197-209.

Kalidas, K., Mahendran, K. and Akila, K., 2020. Constraints in Coconut Value Chain—A Framework for Analysis Using Response Priority Index. *Current Journal of Applied Science and Technology*, *39*(16), pp.76-82.

Kashyap, A. and Argade, S., 2019. Gender analysis of fisheries cooperatives in Nagaon district of Assam. *Indian Cooperative Review,* 57(1), pp.43-53.

Kerlinger, F. N., 1983. Foundations of Behavioural Research. New York: Holt, Rinehart and Winston.

Krishnan, P., Ananthan, P. S., Soam, S. K., Prasad, R. and Srinivasarao, C., 2021. Ease of Doing Research (EoDR): A Methodological Framework for Agricultural Research Organizations, Indian Council of Agricultural Research (ICAR), New Delhi. p.30.

Kumari, S. and Sharma, A., 2021. Performance of Fisheries Cooperative Societies of Chandil Reservoir in Jharkhand. *Journal of Indian Fisheries Association*, *48*(2).

Kyazze, L. M., Nkote, I. N. and Wakaisuka-Isingoma, J., 2017. Cooperative governance and social performance of cooperative societies. *Cogent Business & Management*, 4(1), pp. 5-14.

Kyazze, L. M., Nsereko, I. and Nkote, I., 2020. Cooperative practices and non-financial performance of savings and credit cooperative societies. *International Journal of Ethics and Systems*, 36(3), pp.411–425.

Lafont, J., Saura, J. R. and Ribeiro-Soriano, D., 2023. The role of cooperatives in sustainable development goals: A discussion about the current resource course. *Resources Policy*, *83*, 103670.

Madau, F.A., Furesi, R. and Pulina, P., 2018. The technical efficiency in Sardinian fisheries cooperatives. *Marine Policy*, *95*, pp.111-116.

Mahanayak, B. and Panigrahi, A. K., 2021. Sustainable management of fishermen co-operative societies in India: A review. *International Journal of Fisheries and Aquatic Studies*, 9(3), pp.253–259.

Mhembwe, S. and Dube, E., 2017. The role of cooperatives in sustaining the livelihoods of rural communities: The case of rural cooperatives in Shurugwi District, Zimbabwe. *Jàmbá: Journal of Disaster Risk Studies*, *9*(1), pp.1-9.

Ministry of Cooperation, 2023. Annual report 2022-23. Ministry of Cooperation, Government of India. Available at: https://cooperation.gov.in/ministry-cooperation

Ministry of Cooperation, 2023. National Cooperative Database Report 2022-2023. Ministry of Cooperation, Government of India. https://cooperatives.gov.in/en

Mishra, B. K., 1997. Fisheries Co-operatives in India. *Co-op Dialogue*, 7(2), pp.28.

Motamed, M. K., Fatideh, B. A. and Sabet, S. S., 2011. The role of fisheries cooperative societies in the social and economic development of Guilan beach seine cooperative members. *Journal of Research Peace Gender and Development*, 1(10), pp.286-291.

Nair, S. R., Pandey S. K, Sharma, A. and Salim, S. S., 2010. An evaluation of the business performance of fishery cooperative societies in Vasai Taluka of Thane District, Maharashtra. *Indian Cooperative Review*, pp. 225-233.

Nair, S.R., Pandey, S.K., Sharma, A. and Shyam, S.S., 2007. An evaluation of the business performance of fishery cooperative societies in Vasai Taluka of Thane District, Maharashtra. *Indian Cooperative Review*, pp.224-233.

Nasar, R., Das, S.K. and Pati, M.K., 2022. Performance evaluation of Primary Fishermen's Cooperative Societies in North 24 Parganas district of West Bengal. *Indian Journal of Animal Health*, *61*(2), pp.307-317.

Njaya, F., 2007. Governance challenges for the implementation of fisheries co-management: experiences from Malawi. *International Journal of the Commons*, *1*(1), pp.137-153.

Novak, J.M. and Axelrod, M., 2016. Patterns of Multi-Level Fisheries Governance and Their Impact on Fishermen's Adaptation Strategies in Tamil Nadu, India. *Environmental Policy and Governance*, *26*(1), pp.45-58.

Odetola, S.K., Awoyemi, T.T. and Ajijola, S., 2015. Impact of cooperative society on fish farming comercialization in Lagos State, Nigeria. *African journal of agricultural research*, *10*(18), pp.1982-1988.

Patil, D. G., 2014. Cooperative Movement, Nashik. Chaitanya Prakashan. *ISSN*, 6 (8), pp.1007-1172.

Patil, S.S. and Kokate, K.D., 2011. Training need assessment of subject matter specialists of Krishi Vigyan Kendras. *Indian Research Journal of Extension Education*, 11(1), pp.18-22.

Pegu, C., Sarkar, A., Biswas, P., Upadhyay, A. D., Pal, P. and Singh, Y. J., 2018. Members' perception towards fishermen's cooperative societies: a study in Tripura. *International Journal of Agriculture Science,* 10(10), pp.6104-6108.

Pongener, B. and Sharma, A., 2018. Constraints Faced by the Fishery Enterprises: A SWOC Analysis. *International Journal of Current Microbiology and Applied Sciences*, *7*(5), pp.1595-1603.

Rajaratnam, S. D., Noordin, N., Said, M. S. A., Juhan, R. and Hanif, F. M., 2010. Success factors of cooperatives in Malaysia: An exploratory investigation. *Malaysian Journal of Co-Operative Studies*, 6, pp.1–18.

Registrar of Cooperative Societies, 2023. Department of Cooperation, Government of Assam.

Rujan, J., 2023. Evaluating Governance in Marine Primary Fisheries Cooperative Societies of Tamil Nadu. M.F.Sc. Dissertation, ICAR-Central Institute of Fisheries Education, Mumbai.

Sajesh, V. K., 2023. Research Institute–Cooperatives Linkage: An approach for transferring fisheries technologies. *Food and Scientific Reports*, 4(4), pp. 46-51.

Sanyal, T., Saha, A. and Mukherjee, P., 2023. Activities of fisheries co-operative societies in India to boost up and optimise the resources and economy of farmers: a review. *Journal of Fisheries*, *11*(2), pp.112301-112301.

Sapovadia, V., 2004. Fishermen cooperatives: A tool for socio-economic development. *IIFET Japan Proceedings*, pp.1-11.

Shah, A. A., Jehangir, M., Faiz, N., Iftikhar, S., Akhtar, S., Khan, A. T. A., Ahmad, A. and Gillani, A., 2023. Perceived ease of doing business and business growth of SMEs. *Russian Law Journal*, *11*(9S), pp.229-241.

Sharma, P., Mazal, B., Rani, S., Sharma, R. and Masoodi, Z., 2018. Constraints faced by the fishermen in collection of fish and adoption of technology in Southern Rajasthan. *Journal of Pharmacognosy and Phytochemistry*, 7(3), pp.2613-2615.

Solomon, P., 2023. Can cooperatives be a tool for poverty reduction? Social capital perspectives of fisher's cooperatives in India. *Marine Policy*, *147*, p.105373.

Sreeranganadhan, K., 2012. Role of cooperative societies in the marketing of fish and fish products in Kerala. Major Project report, UGC, New Delhi, pp.297.

Thakur, A., 2015. Assessment of status of the fishery cooperatives, SHGs and Fishermen Groups in Bastar District of Chhattisgarh. M.F.Sc.(Aquaculture) Thesis, Department of Fisheries, Indira Gandhi Krishi Vishwavidyalaya, Raipur.

Thavai, A., 2023. Evaluating Governance in Inland Primary Fisheries Cooperative Societies of Maharashtra. M.F.Sc. Dissertation, ICAR-Central Institute of Fisheries Education, Mumbai.

Thomson, K.T., 2013. Engaging Communities and Cooperatives in Fisheries Governance: Emerging Challenges and Pathways in Kerala, India. *Digital Library of the Commons, Indiana University.*

Tripathy, K. K., Paliwal, M. and Nistala, N., 2021. Good Governance Practices and Competitiveness in Cooperatives: An Analytical Study of Kerala Primary Agricultural Credit Societies. *International Journal of Global Business and Competitiveness,* 16, pp.153–161.

Twumasi, M., Jiang, Y., Addai, B., Ding, Z., Chandio, A.A., Fosu, P., Asante, D., Siaw, A., Danquah, F.O., Korankye, B.A. and Ntim-Amo, G., 2021. The impact of cooperative membership on fish farm households' income: The case of Ghana. *Sustainability*, *13*(3), p.1059.

Tyagi, L. K., Bisht, A. K., Pal, A. and Lal, K. K., 2013. Functioning of Fishing Cooperative Societies in Selected States of India. *Journal of Community Mobilization and Sustainable Development*, 8(1), pp.90-93.

Tyagi, L. K., Bisht, A. K. and Pal, A., 2014. Performance of Fishing Cooperative Societies in Implementing Fish Conservation Measures: Case Studies from Two Reservoirs of Orissa. *Journal of Community Mobilization and Sustainable Development*, 9 (1), pp.48-51.

Unal, V., Guclusoy, H. and Franquesa, R., 2009. A comparative study of success and failure of fishery co-operative in the Aegea, Turkey. *Journal of Applied Ichthyology*, 25(4), pp.394 - 400.

Upadhyay, A. D., Sinha, M., Roy, A. K., Dhanze, J. R. and Pandey, D. K., 2013. Evaluation of Performance of Primary Fisheries Cooperative Societies (MSS) of Tripura. *Economic Affairs*, 58(3), pp.271-284.

Wasave, S., Sharma, A. and Wasave, S., 2015. A glance of fishermen's cooperative

societies of various countries around the globe. *Journal of Extension Systems,* 31(1), pp.63-76.

Wasave, S., Sharma, A. and Wasave, S., 2020. Organizational roles performed by marine fisheries cooperatives of Maharashtra state, India. *Journal of Experimental Zoology, India*, 23(1), pp.781–786.

Wasave, S., Sharma, A., Kokate, K., Datta, S., Ojha, S., Landge, A. and Wasave, S., 2021. Participation of Marine Fisheries Cooperatives in the Social Development of the Fisher Community. *Indian Journal of Ecology*, 44 (1), pp.124-129.

Wassie, F.A., 2020. Determinants of business cooperatives' success in North Gondar Zone, Ethiopia. *Horn of African Journal of Business and Economics (HAJBE)*, *3*(2), pp.13-28.

Wimalasena, H.D. and Rupamoorthy, K., 2005. A review of the present status of fishermen's co-operatives of Sri Lanka.

PLATES

PLATES

Plate 1- Focus Group Discussion with members of FISHFED

Plate 2- Focus Group Discussion with members of Nagaon District Fisheries Cooperative Federation

Plate 3- After FGD with members of No. 48 Thekera Min Samabai Samiti

Plate 4- Discussion with Dr. Dhrubajyoti Sharma, Managing Director, FISHFED

Plate 5- After FGD with members of Chandrapur Anchalik Min Samabai Samiti

Plate 6- After FGD with members of Sampawati Meen Palan Samabay Samiti

Plate 7- After FGD with members of Bhai Bhai Min Plan Samabai Samiti Ltd

Plate 8- After FGD with members of Naduar Min Palan Samabay Samiti Ltd.

Plate 9- After FGD with members of Borhola Min Samabai Samiti Ltd.

Plate 10 FGD with members of Barpeta Fish Marketing CS Ltd.

ANNEXURE

ANNEXURE-I

Interview Schedule

Governance Assessment of Multi-level Fisheries Cooperatives in Assam

Part A: Profile of Multi-level Fisheries Cooperatives

1. Basic Information

i) State Federation

a. Name of fisheries cooperative federation		
b. Date of registration		
c. Registration number		
d. Contact person		
e. Mobile No.		
f. Total number of PFCS empanelled		
g. Total number of District Federation empanelled		
h. Staff position	Temporary	Permanent
i. Membership fee		
j. Audit grade of the cooperative federation (Average of last 3 years)		
k. Total number of PFCS member of the federation in the beginning		
l. Total number of PFCS member of the federation at present		
m. Total number of male in administrative body		
n. Total number of female in administrative body		
o. Total no. of males in executive body		
p. Total no. of females in executive body		
q. Total no. of males in general body		
r. Total no. of females in general body		

ii) District Federation

a. Name of fisheries cooperative federation		
b. Date of registration		
c. Registration number		
d. Contact person		
e. Mobile No.		
f. Area of operation		
g. Empanelled with FISHFED		Yes/ No
h. Staff position	Temporary	Permanent
i. Membership fee		

j. Audit grade of the cooperative federation (Average of last 3 years)	
k. Total number of PFCS in the district	
l. Total number of PFCS member of the federation in the beginning	
m. Total number of PFCS member of the federation at present	
n. Total number of male in administrative body	
o. Total number of female in administrative body	
p. Total no. of males in executive body	
q. Total no. of females in executive body	
r. Total no. of males in general body	
s. Total no. of females in general body	

iii) Primary Fisheries Cooperative Societies

a. Name of fisheries cooperative society		
b. Date of registration		
c. Registration number		
d. Contact person		
e. Mobile No.		
f. Area of operation (No. of villages covered)		
g. Empanelled with	FISHFED	
	District Cooperative Federation	
	None	
h. Staff position	Temporary	Permanent
i. Membership fee		
j. Audit grade of the cooperative society (Average of last 3 years)		
k. Total number of fishers/fish farmers in the operational area		
l. Total no. of active fishermen /fisherwomen in cooperative society		
m. Total members in society		
n. Total no. of males in executive body		
o. Total no. of females in executive body		
p. Total no. of males in general body		
q. Total no. of females in general body		

r. Category of members			
s. General	OBC	SC	ST

2. Funding source of cooperative (average of last 3 years)

Organization	Share (%)	Year	Amount (in Rs..)

3. Schemes availed by cooperative federation

Name of the scheme(s)	Funding pattern	Government subsidy on (Craft/gear/others)	Amount allocated

4. Financial status of cooperative/federation

Capital	2020-21	2021-22	2022-23
Authorised share capital			
Present share capital			
Debt			
Working capital			
Sales Turn over			
Net Profit			
Reserve Fund			

Shares (%)	**Government**	
	Member	
	Others (Specify)	

5. Cooperative/federation meeting pattern

a. Frequency of conducting a meeting					
Meeting Interval	Fortnightly	Monthly	Quarterly	Half-yearly	Yearly
Executive body					
General body					

b. Average attendance percentage during meetings					
Attendance %		Up to 25%	25% - 50%	50% - 75%	75% - 100%
Management Body	Male				
	Female				
Executive body	Male				
	Female				

c. Time of conducting federation meeting		
Morning (Hrs.)	Afternoon (Hrs.)	Evening (Hrs.)
d. Place for conducting meeting		

Federation Office
DoF Office
Society Office
Secretary's home
Temple
Community Hall
Other (Mention)

6. Profile of the executive body members

a.Age	**Chairperson**	**Vice-chairperson**	**Secretary**	**M 1**	**M 2**	**M 3**	**M 4**
Below 35							
35-50							
Above 50							
b. Education							
Illiterate							
Primary school							
Middle school							
Secondary							
Higher secondary							
Diploma							
Graduation							
Post graduation							
c. Experience of membership							
Less than 5 years							
5-10 years							
More than 10 years							
d. Occupation of executive body members							
Only fisheries							
Aquaculture							
Fisheries + Agriculture							
Fisheries + Livestock							
Fisheries + Labourer							
Other (Mention)							
e. Training attended status of executive body members (in the last 3 years)							
Yes							
No							
f. In which area training attended by Executive body members							
No Training							
Society functioning training							
Value addition							

Culture practice							
Fish marketing							
Fish health management							
Fish breeding							
Others (Specify)							
g. Role of Executive body members							
Chairperson							
Vice Chairperson							
Secretary							
Member 1							
Member 2							
Member 3							
Member 4							

7. Training organised by cooperative/ federation in the last 3 years

Total No. of members trained (Male/Female)		
Sl. No.	Area of training programme	Organisation
1		
2		
3		

8. Infrastructure facilities available with cooperative/ federation

Infrastructure	Yes	No
Federation office		
Meeting hall/ Community service centre		
Computer & related accessories		
Fish transport vehicle		
Fish retail outlet		
Mobile fish retail van		
Cold storage		
Boat & gear repair facilities		
Fish storage		
Input supply & services (feed, seed, etc.)		
Others (specify)		

9. Income generating activities of the cooperative federation

i.

ii.

10. Information about fishing business

a. Beel/river/pond

Beel/river/pond name	

Beel/river/pond ownership	
Nature of beel/river/pond	Perennial/ Seasonal
Area (ha)	
Lease amount	
Lease period	
Department/ organisation of the lessor	

b. Type of fish culture:

i. Intensive
ii. Semi-intensive
iii. Extensive/traditional

c. Cultured/captured species:

i.
ii.

d. To what extent are you getting quality fish seed for stocking? (Mostly/Sometimes/ Never)

e. Source of fish seed used for stocking.

i. Government hatchery
ii. Private hatchery
iii. College of Fisheries
iv. Others

f. Fish seed stocked (Fry/fingerlings):

i. Annual fish production (Average of last 3 years):

j. Fishing gears & crafts

Type of gear used for harvesting	Type of craft used in fishing

k. Marketing Details

Type of fish product (live/ value added)	
Harvesting season	
Quantity Sold last year (kg)	
Purchasing price (Rs)	
Selling price (Rs/kg)	
Purchase from whom	
Sold to whom (Wholesaler/Retailer/Consumer)	
Selling place (Farm/ landing centre/ market, etc)	

11. Extent of contact with other organizations:

Organizations	Always	Sometimes	Never
Department of Fisheries			
Department of Cooperation			
Fisheries colleges and other research Institutes			
KVKs			
NGOs			
National cooperative federation			
District cooperative federation			
Primary cooperatives			
Financial institutions (NABARD, NCDC, DCB)			
Industry association			
Other organisations			

12. Women empowerment

Statements/indicators	**Always**	**Sometimes**	**Never**
Women have access to cooperative/federation resources and assets			
Women members are allowed to speak during meeting			
Women have equal say in all the cooperative decisions			
Women members are given preference to attend skill development trainings			
Cooperative federation meetings are held at women friendly time and place			
Women members get equal opportunities and benefit sharing			

Part B: Fisheries Cooperative Governance Quality Index

Democratic Control	To great extent	To some extent	Not at all
1. The organizational structure of the cooperative/federation is well designed			
2. The registration procedure is transparent and professionally managed			
3. Membership is open to all cooperatives and voluntary			
4. Members have equal right of voting and participating in the cooperative election			
5. All the executive body members are elected			
6. Regular conduct of executive/general body meetings			
7. All the decisions happen in the presence of quorum of members			
8. All rights and responsibilities of members are defined			
9. Representation of youth, marginalized and vulnerable people in society			
10. Free flow of information to each member without any discrimination			

Accountable Empowerment	To great extent	To some extent	Not at all
1. All the members are empowered to express their views/opinions			
2. Delegation and distribution of authority among executive body members to hold them accountable			
3. Regular assessment of member's technical and functional skills			
4. Performance benchmarking with other states' federation and national federation.			
5. Facilitating access to safety standards, healthcare, and social welfare services for members.			
6. Following standard operating procedures for all the cooperative activities			
7. Regular maintenance of record books & statutory registers			
8. Cooperative performance & financial reports are published regularly			
9. Financial & social audits of society happen at regular interval			
10. A cooperative society is free from debt and non-performing assets			

Teaming	To great extent	To some extent	Not at all
1. The general body members and executive body members have group harmony			
2. All the cooperative/federation members stand together to resolve common issues			
3. Members show mutual support and cooperation when a task is to be performed for the federation			
4. Members have confidence on each other and trust among them all the cooperative/federation members stand together to resolve common issues			
5. Cooperative Federation members maintain political and religious neutrality			
6. Cooperative federation members are committed to the society's welfare			
7. Link with other Primary societies, district federations and other state federation and fostering collaboration			
8. Members are satisfied with the federation's functional activities			
9. Federation shares financial and other benefits among all members			
10. Federation works in line with Primary and District level cooperative bodies/federations			

Leadership	To great extent	To some extent	Not at all
1. Leaders are educated, trained and responsible for their work			
2. Leaders are actively listening the problems of member			
3. Leaders have good rapport building and networking skills			
4. Leaders demonstrate transparency and fairness in decision-making and financial matters			
5. Leaders identify opportunities and develop strategies to capitalize on them			
6. Leaders possess strategic thinking skills to address issues and challenges			
7. Leaders handle timely grievances of members and ensure accountability			
8. Leaders strive hard to diversify the services and income generating activities of federation			
9. Leaders keep informing members about the federation functioning and welfare/subsidy schemes			
10. Leaders rehabilitate defunct operations and promote cooperative start-ups			

Convergence and Linkages	To great Extent	To some extent	Not at all
1. Cooperative/federation collaborates with other federation/DoF/ DoC/ KVK/ other organizations to achieve common goals.			
2. Cooperative/federation conduct training programmes in association with research institutes, DoF, KVK, NGOs, etc. for technology transfer.			
3. Cooperative/federation collaborate with DoF to ensure the effective resource management practices.			
4. Cooperative/federation provides input resources to member societies through other external organizations			
5. Cooperative/federation avail schemes/ subsidies through DoF/DoC.			
6. Members convey suggestions and grievances at administrative level for policy implications.			
7. Officials/ project coordinators from State federation, DoF, KVK, NGOs, etc. visits the cooperative society regularly.			
8. Cooperative/federation facilitates bi-directional communication among multi – level cooperatives.			
9. Cooperative link with funding agencies (NABARD, NCDC,DCB) for facilitating business activities.			
10. Cooperative/federation has tie up with Traders/Business Organisation for market linkage.			

Part C: Ease of Doing Business in Cooperatives

Statements	To great extent	To some extent	Not at all
Business Human Capital			
1. The cooperative/federation has an adequate number of competent & skilled staff			
2. The cooperative/federation periodically assesses the training needs of the staff/members and tries to improve their competencies			
3. The cooperative/federation takes initiatives for socio-economic wellbeing of its members/staff			
4. The cooperative/federation recognizes and rewards the contribution of members/staff			
Business Infrastructure			
1. The cooperative/federation has access to basic infrastructure facilities like office space, water & electricity, computers with high-speed internet connectivity, etc.			
2. The cooperative/federation has adequate and easily accessible business infrastructure facilities to run the income generating activities			
3. The cooperative/federation has adequate field/farms for carrying out the business activities			
4. The cooperative/federation has adequate supply source of critical inputs for business activities			
Business Leadership			
1. The cooperative/federation has visionary and proactive leadership for promoting business activities			
2. The cooperative/federation always takes proactive steps to harness the business/funding opportunities			
3. The cooperative/federation has online platform/active social media presence to connect people			
4. The cooperative/federation encourages its members for starting business ventures through financial and marketing support			
Business Governance			
1. The cooperative/federation has good linkage and convergence with village/district/state/national levels Institutions			
2. The cooperative/federation has political/bureaucratic hindrance to start their business activities			
3. The cooperative/federation has adequate budget for starting business activities			
4. The cooperative/federation has internal mechanism for monitoring to ensure the quality of output			
5. The business environment of the cooperative/federation is supportive, innovative and enabling business excellence			

Part D: Constraints

Constraints	Severe	Moderate	Minor
1. Weak financial status			
2. Indebtedness			
3. High cost of fishing equipment			
4. Lack of technical know-how in accounting, record keeping			
5. Poor awareness of cooperative administration			
6. Unavailability of technical staff			
7. Poor member interest/participation			
8. Favouritism during auction of water bodies			
9. Lack of coordination in cooperatives			
10. Poaching of fishes			
11. Political influence			
12. Lack of welfare schemes			
13. Inadequate transport facilities			
14. Low supply of seeds/ low fish catch			
15. Lack of processing facilities			
16. Poor marketing facilities			
17. Weed infestation in water bodies			
18. Natural calamity (flood)			
19. Lack of motivation			
20. Others (Specify)			

Part E:
Suggestions for strengthening multi-level fisheries cooperatives.

i.
ii.
iii.