

International Journal of Agriculture Extension and Social Development

Volume 9; SP-Issue 4; April 2026; Page No. 26-29

Received: 02-02-2026
Accepted: 05-03-2026

Indexed Journal
Peer Reviewed Journal

Mobile applications for fisheries and Aquaculture in India: An overview

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DOI: <https://doi.org/10.33545/26180723.2026.v9.i4Sa.3496>

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Abstract

The rapid growth of information and communication technologies (ICT) has significantly transformed the fisheries and aquaculture sector in India. One of the standout innovations in this space is the rise of mobile applications, which have become essential tools for sharing information, improving decision-making, and enhancing the productivity and safety of fishers and aquaculture professionals. With smartphones, users can easily access crucial information like market prices, potential fishing zones (PFZ), weather updates, ocean conditions, disease management, and best practices in aquaculture. These apps help fishers pinpoint fishing locations more effectively, reduce fuel consumption, minimize risks while at sea, and boost overall operational efficiency. This review highlights a variety of mobile applications designed for fisheries and aquaculture in India, categorizing them into aquaculture-focused and fisheries-focused groups. Apps related to aquaculture, such as Aqua Brahma, Mathsya Kiran, mJhinga, Aqua Farmer, Aquall, Fish Disease Advisory, Fish Names, CIFT Lab Test, and Vanamei Shrimp App, provide valuable insights into fish farming techniques, disease detection, market trends, hatchery management, and supply inputs. On the fisheries side, applications like mKRISHI® Fisheries, Fisher Friend Mobile Application (FFMA), INCOIS, Thoondil, Machli, Odaku, Sagar Vani, Sagara, and PFZ-Advisory offer real-time data on potential fishing zones, ocean forecasts, navigation help, disaster alerts, and safety guidelines for fishers out at sea. This review emphasizes the importance of mobile technologies in modernizing the fisheries sector and driving digital transformation within the industry.

Keywords: Fisheries, aquaculture, mobile, applications

Introduction

In the fast-moving world of today, mobile phones are now vital instruments in our daily routines. Mobile applications are now a vital part of various industries (Abbibrinda *et al.*, 2020) ^[1]. With the rapid technological advancements in mobile devices, the landscape of Information and Communication Technology (ICT) has been transformed, fundamentally changing how we communicate and interact with apps, resources, and our environment. The main aim of ICT is to connect people and devices for smooth interactions (Jivthesh *et al.*, 2022) ^[9]. In the Fisheries sector, mobile or smartphone applications—often called Apps—are becoming increasingly important. Fishers can access a wealth of solutions and information with just a tap on their screens. This data is conveniently stored on their mobile devices for easy access (Kamble *et al.*, 2022). The National Fisheries Development Board (NFDB) emphasizes that the future of aquaculture hinges on embracing innovative production technologies, effectively managing underutilized water resources, and establishing strong market connections. To elevate fisheries into a modern, world-class industry, it's crucial to adopt cutting-edge technologies like blockchain,

AI, IoT, and mobile applications. Smartphone apps offer quick access to reliable information, ensuring that fishers can stay informed about market rates, business opportunities, potential fishing zones, live weather updates, and distress alerts, all of which enhance their operations and safety. Recently, a variety of fishing applications have been introduced to educate users and deepen their understanding of the marine environment while they're out at sea.

Importance of mobile applications in fisheries and aquaculture

The fishing community is one of the most vulnerable groups out there, facing a host of challenges that threaten their lives and livelihoods. They deal with unpredictable weather and ocean conditions, dangerous areas at sea, a lack of reliable GPS data on fish locations, poor fish processing, storage problems, shifting market trends, and government initiatives. Before heading out, fishermen need to stay updated on ocean factors like surface temperature, wind direction, wind speed, wave activity, and rainfall. Thankfully, there are mobile apps that can help them with safety measures and smarter fishing practices. Knowing

where to find fish in deeper waters is key to a successful catch (Singh and Rajana, 2022)^[19]. Generally, fishermen put in a lot of hard work at sea to bring home good catches, and mobile apps make it easier to find those prime fishing spots. They use GPS to mark specific locations digitally. These apps come packed with tools designed to improve the fishing experience and strengthen connections within the fishing community. Users can access these mobile applications from anywhere in the world for effective fishing. The apps offer essential tools for anglers, including solunar charts, tidal charts, detailed weather reports with radar maps, forecasts, incident reporting, advanced GPS tracking, catch logbooks, and sea depth information. In this review paper, we took a look at various applications used in fisheries and aquaculture that can help speed up and enhance development in the sector. We also provided a brief overview of these apps based on their ratings and download statistics from the app store, which give insight into user preferences and the app's popularity (Lahiri and Das, 2025)^[11].

Applications for Aquaculture

1. Aqua Brahma

The App, created by Mile Deep Works Pvt. Ltd. back in 2015, is all about connecting farmers with suppliers and hatcheries. It keeps users informed with daily updates on news, market trends, and trade materials. Plus, it's user-friendly, supporting a variety of languages like Telugu, Hindi, English, Marathi, Bengali, Kannada, Tamil, Malayalam, and Gujarati (Dhenuvakonda and Sharma, 2020)^[5].

2. Mathsya Kiran

This app was created as part of a Master's research project at ICAR-CIFE in Mumbai back in 2019. You can download it for free from the Play Store. It serves as a fantastic resource for anyone interested in inland fisheries, offering information in both text and eye-catching image formats. Plus, it works offline, making it super user-friendly for anyone looking to dive into fish farming (Abbibrinda, 2020)^[1].

3. mJhinga

The mJhinga mobile application was introduced by ICAR-CIFE, the Central Institute of Fisheries Education in Mumbai, with financial backing from the National Agricultural Higher Education Project in 2019. It offers guidance on establishing new ponds, cultivating a healthy shrimp crop, and understanding market prices. Additionally, it features a digital notebook for logging daily inputs, harvests, and expenses. Primarily designed for shrimp aquaculture, it displays current market price trends. This dynamic bilingual application assists farmers in independently identifying issues. Furthermore, it includes an option to consult with experts (Abbibrinda, 2020)^[1].

4. Aqua Farmer App

The application was created by Aqua App in 2018. It assists farmers in obtaining the most recent market prices, insights on best practices, news, events, and videos pertaining to aquaculture. The app is available in English, Telugu, and Hindi.

5. Aquall App

The application was created by Aquall Foods and Products Pvt. Ltd in 2016. It serves as an e-commerce platform for farmers, offering a comprehensive range of seeds, feeds, chemicals, aerators, and hardware products. The platform is accessible in both Telugu and English (Lahiri and Das, 2025)^[11].

6. Fish Disease advisory

The application was created by ICAR-CIFRI in 2018. It provides information regarding diseases, their causative agents, and remedial measures in English (Singh and Rajana, 2022)^[19].

7. Fish Names

The application was created by Drapes in 2017. It assists users in identifying more than 120 species of sea fish and 72 species of river fish, both offline and in image and text formats. The app is offered in the English language.

8. CIFT Lab Test

The application was created in 2019 by ICAR-CIFT and is designed to offer information regarding various types of sample testing and analysis related to different fish and fish-based products, fishing gear materials, packaging materials, microbiological parameters, and quality parameters of ice and water samples, among others (Lahiri and Das, 2025)^[11].

9. Vanamei Shrimp app

In 2017, ICAR-CIBA created an application that offers technical insights into the farming of Pacific white shrimp. This includes best management practices, input calculators, disease diagnosis, risk assessments for shrimp farms, government regulations, and frequently asked questions, all presented in English (Dhenuvakonda and Sharma, 2020)^[5].

Applications for Fisheries

1. mKRISHI® Fisheries

The application was created by Tata Consultancy Services (TCS) Innovation Lab in Mumbai, in partnership with the ICAR-Central Marine Fisheries Research Institute and the Indian National Centre for Ocean Information Services (INCOIS) in 2017. This app is the outcome of a comprehensive analysis. Additionally, it offers information regarding sea surface temperature and the occurrence of phytoplankton. It is helpful to identify the regions that are unsafe in the ocean by fishermen using the previous data of wind speed and wind direction. It is recommended that fishermen venture into the ocean only when the information map displays a blue color. A decrease in diesel usage also leads to a cleaner environment. This service is exclusively available to individuals who are registered and affiliated with organizations like TCS, ICAR, or CMFRI. The app is offered in multiple languages including Telugu, English, Tamil, Malayalam, Odia, Bangla, Kannada, Marathi, and Gujarati (Abbibrinda, 2020)^[1].

2. FFMA (A Fisher Friend Mobile Application)

Created by the M.S. Swami Nathan Research Foundation in 2016, FFMA serves as a comprehensive solution for various knowledge needs, including PFZ, ocean state forecasts, danger zone alerts, disaster notifications, and SOS (Save

Our Soul). It refreshes data on fishing shoal movements and identifies danger zones, such as sunken shipwrecks, every 24 hours, while also updating additional information like wave height and wind speed every 6 hours. The Fisher Friend Mobile Application offers valuable insights to fishermen, including potential fishing zones and TUNA species-specific forecasts, GPS capabilities, and traditional fishing areas. It also issues disaster alerts for events like cyclones and tsunamis (Dhenuvakonda and Sharma, 2020) ^[5].

3. INCOIS

The application was created by INCOIS in 2016. It provides ocean information services, including PFZ and TUNA PFZ, for the benefit of the Fishermen Community in India, presented in English.

4. Thoondil

The THOONDIL app has been created by the Tamil Nadu Department of Fisheries in collaboration with the National Centre for Coastal Research. It offers real-time information such as weather forecasts and potential fishing zones, among other features. The app includes several essential tools like a compass, weather updates, PFZ, daily journeys, my crew, my boats, live view, past trips, rescue setup, incident reporting, and SOS functionality. Boat owners can track their vessel's live position from the shore using the live read feature available in this app. This application proves particularly beneficial during storms or cyclones, aiding in the location of boats and the rescue of fishermen (Abbibrinda, 2020) ^[1].

5. Machli

The application was created by Reliance Foundation Information Services in 2019. It offers ocean state forecasts for Indian fishermen within a 50 km radius of each fish landing site along the entire Indian coastline. The app is available in Telugu, Kannada, Marathi, Hindi, English, Gujarati, Malayalam, and Tamil (Dhenuvakonda and Sharma, 2020) ^[5].

6. Odaku

The application is created by Odaku Online Services Pvt. Ltd. It serves as an online service platform tailored for fishermen in India. Equipped with GPS functionality, it allows for the storage of valuable data in the cloud. These borders are cloud-based, enabling fishermen to download borders specific to their region, addressing the challenges posed by international and local borders. Additionally, it offers the capability to share locations or fishing routes among groups, back up data, access an online marketplace, and buy or sell pre-owned boats, as well as back up catch data (Dhenuvakonda and Sharma, 2020) ^[5].

7. Sagar Vani

INCOIS created the application in 2017. It offers details on PFZ, ocean state forecasts, high wave alerts, and tsunami early warnings in English (Dhenuvakonda and Sharma, 2020) ^[5].

8. Sagara

App developed by NIC e-Gov Mobile Apps in 2018. It is a

digital initiative by the Department of Fisheries and NIC Kerala for monitoring fishing crafts and crews going for the fishing operation. App is available in English, Kannada, Malayalam, and Tamil (Dhenuvakonda and Sharma, 2020) ^[5].

9. PFZ- Advisory

Created by Mobile Seva in 2015. This multilingual application is designed to distribute potential fishing zone advisories to fishermen in the coastal regions of India. Dated 9 Sep 2015. The Potential Fishing Zone (PFZ) advisories provide fishing communities with regular updates on chlorophyll levels, sea temperature, and water visibility, enabling them to efficiently locate areas rich in fish while conserving fuel and minimizing time spent searching. The app is accessible in Urdu, Telugu, Kannada, Marathi, Hindi, English, Gujarati, Malayalam, and Tamil (Dhenuvakonda and Sharma, 2020) ^[5].

Conclusion

The swift rise of mobile apps in India's fisheries and aquaculture sector has really boosted efficiency, decision-making, and safety by offering real-time insights into fishing areas, weather conditions, market trends, and disease management. These applications are helping farmers manage their operations better, adopt sustainable fishing methods, and enhance their livelihoods. Yet, there are still hurdles to overcome, such as digital illiteracy, unreliable internet access, and language differences, which call for dedicated efforts from policymakers and stakeholders. All in all, with ongoing technology integration and support from institutions, mobile applications have immense potential to drive sustainable growth and transform the sector.

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