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# A FISHER-FRIENDLY MOBILE APPLICATION FOR NAGAPATTINAM

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The fishing communities of Nagapattinam, in Tamil Nadu, India, are now using a mobile app which is helping them solve issues related to seafaring safety, low incomes and timeliness in reaching fish shoals. The Fisher Friend Mobile Application has been introduced to the community using a participatory approach, helping ensure the usefulness and accuracy of the technology.

*Cover The Fisher Friend Mobile Application is bringing solutions to the problems frequently seen by the fisher community in India*

The coastal fishing community is one of the most vulnerable groups among the poor in India. They confront several difficulties in their lives and livelihoods, including poverty, vulnerability to natural calamities, diminishing fish stocks, increasing competition with other users of coastal resources, exclusion from alternative employment opportunities, and poor access to markets and infrastructure facilities.

However, the Fisher Friend Mobile Application (FFMA) is bringing solutions to the various issues faced by the fisher community in India. FFMA provides timely and accurate seafaring information to improve the safety and incomes of fisher folk. The app has been designed to provide easy access to relevant information and knowledge related to fishing for small craft fishers. FFMA offers the following services and information to fisher folk:

- Potential fishing zone (PFZ) and GPS facility for navigating directly to fishing zones;
- Specific ocean state forecast (OSF) such as wave height, wind speed and direction;
- Danger zones in the sea, such as sunken boats, rock substrata and dead coral;
- Better market prices for various fish varieties;
- Emergency disaster alerts for e.g. tsunamis, cyclones and high waves;

- Proximity to the international border line (IBL) with Sri Lanka alerts;
- SOS facility that can help rescue fishers in critical situations;
- Calling facility – fishermen can communicate with each other and relevant government departments such as the fisheries department and the Indian Coast Guard;
- Government scheme information and daily news.

### **Evolution of the tool**

FFMA was conceptualised and developed in 2007 using a Binary Runtime Environment for Wireless platform – an application development platform for CDMA-based mobiles – in partnership with Qualcomm. Technology advancements helped the M.S. Swaminathan Research Foundation (MSSRF) to redevelop FFMA into an Android platform in 2013, and using a participatory approach that involved various stakeholders, including the fisher community, the pilot app was launched in Tamil, Telugu and English. A total of 1,026 fishers across three states (Andhra Pradesh, Puducherry and Tamil Nadu) partook in the pilot phase to refine the app and make it more user friendly. In 2 years, the app went through 37 revisions. FFMA enables fisher folk access to timely fishing-related information; minimises their risks

whilst at sea; and maximises their economic benefits. Hence, reach of the pragmatic pan-India FFMA model was extended to benefit fisher folk across coastal India. In 2015, FFMA was made available in all the regional languages of coastal India. FFMA is also available on the Google Play store for easy access by different stakeholders. Currently, 21,000 users have accessed FFMA, all of them living in 39 districts of five coastal states: Andhra Pradesh, Kerala, Odisha, Puducherry and Tamil Nadu.

To promote the application across all the 625 coastal districts in India, evidence-based ground level experiences of implementation and learnings from where the app is already being used extensively, are required. With this in mind, the Nagapattinam district of Tamil Nadu was selected for the study because the fishers have been using the app in a sustained manner over a period of 10 years. Moreover, this district is geographically situated at the head of the Bay of Bengal, and experiences frequent extreme events associated with climate change.

The main aim of the study was to understand the implementation procedures of the project team to promote FFMA in Nagapattinam, and how it is benefitting fishers' lives and livelihoods. A total of 100 fishers from seven villages in Nagapattinam were randomly selected and provided with sampling questionnaires and interviews to collect information regarding the utility of FFMA. MSSRF staff involved in project implementation in the district were also interviewed to find out more about the promotional strategies of FFMA.

### **FFMA in Nagapattinam**

The district of Nagapattinam is located on the Bay of Bengal coast. It covers an area of 2,715 km<sup>2</sup>, with a total population of 1.6 million of which 78% live in the rural areas. The district has a coastline of about 190 km, but most areas are situated either below sea level or at not more than 5 m above sea level.

Therefore, there is a high probability of seawater intrusion and disasters such as cyclones, floods, drought, and tsunamis.

Nagapattinam was the most affected district of India in the 2004 Indian Ocean tsunami, where over 7,000 lives were lost and approximately 40,000 houses were destroyed. Therefore, the genesis of FFMA stems from a post-tsunami rehabilitation context. In 2007, FFMA was piloted in three districts of Tamil Nadu, including Nagapattinam. Initially, implementation benefitted from the 'village knowledge centre' (VKC) already operating with the support of MSSRF. Village level partners supported the implementation process as village heads, traditional *panchayat* (village council) leaders and volunteers, and other key stakeholders in the villages were sensitised about the application. Similar orientation was given to stakeholders in the other two districts. During the pilot phase, around 500 fishers from Cuddalore, Kanyakumari and Nagapattinam took part in the process; they provided critical feedback on FFMA in terms of technology, content and accuracy of data.

A multi-level capacity building and awareness raising strategy is now being rolled out by FFMA's

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implementation team to increase visibility of the app, including village level meetings, one-to-one interactions, promoting fishers as FFMA ambassadors, and with social media campaigns. More than 8,223 fishers have been trained in Nagapattinam on FFMA and its features; as a result, 3,593 fishers in Nagapattinam are using the app for getting day-to-day fishing-related early warnings and other relevant information.

Up to 60% of those who downloaded the app are using it on a regular basis for OSF and PFZ information, disaster alerts and weather forecasts. Around 25% fishers stated that they are also using FFMA regularly for navigating the fishing zones. Ten per cent of fishers expressed that FFMA has helped them to mark traditional fishing grounds and to store the latitude/longitude positions. Some respondents (5%) stated that they are using the application for government scheme information and to access daily news.

The overall screen view of FFMA was 1,162,933 across the three districts, of which, Nagapattinam district accounted for 411,360, or 35% of the project total screen views. This data was collected via the inbuilt Google Analytics tool within the app. When the reasons for such a high rate of adoption were further explored, it was found that 80% of the FFMA users in Nagapattinam are small-scale fishers and they don't have any other equipment/tools other than mobiles, so they rely on this technology for their fishing information

### **Benefits to the fishers**

Fishers have used FFMA services for planning their fishing trips, identifying fish shoals, navigating fishing grounds, avoiding danger zones, and also for avoiding crossing the IBL with Sri Lanka. It was observed that

### ***"I have used the app"***

I am from Nagore Pattinacherry fishing village near Nagore in Nagapattinam district. On 18 November 2016 at around 3 o'clock in the morning, myself and 3 others went fishing 35 km off the coast. Suddenly the engine cut out and we were stuck in the middle of the sea. We became anxious as there was nobody around and there were no landmarks close by to indicate to other fishers where we were. However, one of my fellow fishers told me about the FFMA GPS facility to pinpoint my boat's location. Using the app, I was able to inform my friends of our location and they were able to come and rescue us.

**Mr Murugan, fisherman, Nagore Pattinacherry**

I did not know how to use GPS prior to installing the app, but now I am well versed in it. On 9 February 2016, a friend of mine gave me the latitude and longitude points of a particular fishing zone. After reaching the point, I hauled my net for 3-5 h and caught 100 kg of seer fish. I sold my catch for Rs. 38,000 (€500). When I went to Nagapattinam during the same week, I received the information for a rocky zone from my friend who had saved it in his app and navigated to the exact location. I got 50 seer fish and sold them for Rs. 21,000 (€275). Thus, within a week I got a net profit of Rs 59,000 (€770). From then on, I have used the app to mark the places where the fish shoals are and also where the rocky areas are.

**Singaravelu Mohanraj, motorised boat owner, Poompuhar**

71% of the fisher folk who used FFMA were motorised fishers using small craft for fishing up to 50 km from the shore, 27% were mechanised boat operators, and the remaining 2% were from other sectors like government officials, non-governmental organisations and other private agencies who have been involved in fishing and fishing-related developmental interventions.

Almost all respondents using FFMA unanimously agreed that the application plays a very critical role in their lives. Data from the study shows that 39% of respondents reported to have economically benefited from using the app due to increased fish catch, reduced diesel consumption and by navigating the fishing zone directly. Around 44% of respondents expressed that their livelihood assets, such as boats and nets were kept safe due to early warning alerts. Some respondents (5%) also reported that the app saved their lives thanks to the timely information and disaster alerts on high waves and cyclones.

Out of 100 respondents, 64% stated that the FFMA information helps them reduce risks to themselves and to their livelihood assets. In terms of economic benefits, fisher folk who received PFZ information through the FFMA application benefited both directly and indirectly. Direct benefits included increases in catch as well as net income. Due to increased fish harvest, there has been a rise in the wages of the fishing crew as well. Some respondents have been using their profits to pay back bank loans taken out to purchase boat assets. The fishermen also pointed out that with the advisories, they are able to decide on how much diesel/ice to take on fishing trips.

At the same time, it is quite apparent from our interactions with the respondents that their expenditure on fishing inputs, particularly diesel, has been considerably reduced as a result of using FFMA. A major gain is that by using the PFZ, GPS and 'My Tracker' facilities of the app, fishers are decreasing their diesel consumption and reaching their fishing destinations on time. The boat drivers expressed that reaching the location of fish shoals has become less complicated, and the reduction in diesel expenditure is, in itself, a major economic gain.

### Major learnings

The project implementation team in Nagapattinam learnt a lot while implementing the project, which will be very helpful for further improving and scaling FFMA. The project has shown that

- fishers are receptive to adopt technology if it is simple, useful, cost-effective and addresses core issues;
- involving end beneficiaries as key stakeholders throughout the project – from planning, implementation and refinement of the application – is one of the keys to success;
- regular meetings organised with partners at the community and government levels help the project team to understand the performance of the application and get suggestions for improving strategies for promotion, technology design and accuracy of content;
- stakeholder consultation at the community, village and district levels, and periodical assessment with fishers through interviews, focus group discussions and case studies, helps collate the qualitative changes in risk reduction and income enhancement; and that

- connectivity at sea restricts fishers' use of the application. This will be one of the major areas for future policy advocacy and collaborative research.

Years of capacity building by MSSRF, and iteratively incorporating community feedback into the technology, have led to a wealth of learning in overcoming bottlenecks and in penetrating the community with last-mile connectivity. As a result, MSSRF has a ready package of FFMA and its implementation strategy, which can be replicated within a year, in any location.



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