Case Study

Gram Vaani: the "voice of the village"

Mobile Vaani is a network of voice-based community media platforms developed by Indian social enterprise Gram Vaani ("voice of the village" in Hindi) that enables two-way communication on issues that are critical in emergencies. While not developed specifically for humanitarian use, Mobile Vaani has been deployed to support communities affected by flooding and the COVID-19 pandemic.[1] Partner organisations use the platform to share content and engage in dialogue with rural communities on topics like health and nutrition, farming practices and gender-based violence (GBV).

Mobile Vaani works on basic phones, using voice services to overcome literacy and digital skills barriers. Users access and share audio information through IVR, which requires the use of only three number keys. A "missed call"/automated call-back system makes the service free of charge to users. Partner staff and community volunteers can use a separate Mobile Vaani app to create content in local languages and share it with users through their mobile phones.

The platform itself is language-agnostic, sharing and receiving audio content from communities and partner organisations in the languages relevant to them. The IVR interface uses the language determined by the partner for any given location. Gram Vaani estimates that only around 15% of the content is developed by their own team.

The Mobile Vaani Network, operating as hyperlocal instances in over 120 districts, has serviced more than 1 million users in around 20 states and 12 languages. Some are dominant national languages, like Tamil, while others are more marginalised, like Desiya, which has an estimated 230,000 speakers.

Partners have also been licensed to deploy the platform in Afghanistan, Ethiopia, Namibia, Pakistan and South Africa.

1 Wang, H., Seth, A., Johri, M., Kalra, E. and Singhal, A. (2021). "Communication infrastructure and community mobilization: The case of Gram Vaani's COVID-19 response network for the marginalized in India". Journal of Development Communication, Vol 32(2).

Aims and intended users

Mobile Vaani aims to challenge inequalities related to wealth, gender and caste, so its core audience is marginalised segments of society. It creates digital spaces for community-led learning and discussion in communities where technology is not always accessible. Mobile Vaani programmes operate in fields ranging from gender equality and financial inclusion to health, governance, livelihoods and labour rights.

> "If you're talking about information being power, that power is not available to a very large segment of the population because information is not really democratized in the true sense. Information is available to a certain elite, people who are digitally literate, people who have access to these channels and content available in [powerful] languages. [...] It is a combination of not just content availability in multiple languages, but also the technology interfaces."
>
> **– Vijay Sai Pratap, Co-Founder, Gram Vaani**

Gram Vaani combines qualitative data on user experience collected by volunteers with Mobile Vaani platform data (such as reactions, listening time and likes) to build a formidable evidence base. It allows programmes to be responsive to what people find relevant, directing them to provide more content and engagement opportunities on what matters to communities.

> "These are communities where we wouldn't be able to understand their requirements or help them access content or understand their needs without a platform like this."
>
> **– Mobile Vaani partner, India**

Accessibility for marginalised language speakers

> "[With audio] people can engage, express themselves, ask questions. [...] Nobody is left out, literate or nonliterate."
>
> **– Deepak Kumar, Senior Programme Manager, Gram Vaani**

Mobile Vaani is voice-based to engage literate and non-literate users alike in the languages in which they are comfortable communicating. The basic phone-compatible IVR system, combined with automated call-backs at no cost to the user, reduce costs. Digital literacy constraints are addressed through simplified menu navigation and parallel in-person capacity building:

- Pre-recorded audio content plays in a series, with new content first, and users press 1, 3 or 5 to skip, like or record a response
- Community volunteers promote the platform, support new users and run in-person workshops to ensure there is feedback from diverse voices on the content and platform.

When the platform is used to support a new programme, it is piloted and introduced in phases in consultation with diverse and marginalised groups to promote inclusive conversations. Community volunteers discuss issues like data privacy, diversity and inclusion, and support communities to agree to the principles by which they will engage.

An Android app and web app interface offer other entry points to content for smartphone users. A case management application enables moderators to direct users' questions or complaints to the relevant field volunteers.

It is important to acknowledge that the "voice-first" approach excludes those with hearing impairments.[2]

2 Gram Vaani. (n.d.). "Helping look beyond disabilities: Namma Vaani".

Use and potential of language technology

The vocal user interface and content are in user languages, which means no translation is required. A team of moderators who speak these languages review community input and match it to platform topics. However, Gram Vaani uses natural language processing (NLP) for efficiency, for automated transcription of user questions and comments and to identify existing matching content to respond. This is currently only available in Hindi, due to the error rate for the other platform languages. Even in Hindi, Gram Vaani estimates only 70% accuracy, but moderators correct errors to ensure appropriate content is shared in response. Significant differences between Hindi dialects are an additional challenge.

Since Mobile Vaani collects large volumes of voice data in marginalised languages, Gram Vaani sees potential to expand the use of NLP to other Indian languages. Platform data could be used to train a language model capable of matching user questions to content in the same language. This would both increase the effectiveness of Mobile Vaani and help to expand digital services in marginalised Indian languages more broadly.

Integration of digital technology in programming

Because Mobile Vaani's intended users often face challenges related to communication infrastructure, digital literacy and access to mobile devices, and some community members will be unused to making their views known in a public conversation, the IVR model relies on parallel real-time interaction, typically face to face.

Gram Vaani considers this an essential component of increasing digital inclusion for segments of society that face structural exclusion. Organisations that have deployed Mobile Vaani programmes recognised the benefits, but also the challenges, of this approach.

Community-level support is both essential and sometimes challenging to engage highly marginalised users

A nonprofit loan service used Mobile Vaani to support financial literacy training in local languages with marginalised rural communities in Uttar Pradesh and Madhya Pradesh. People initially did not trust banking services and women especially were wary of making online loan repayments. Face-to-face support with making digital payments, how to correct a mistake or make a complaint, was key to building users' confidence. Now, 80% of borrowers are women, and loan conditions are better tailored to the realities of local livelihoods thanks to community feedback. However, the programme was unable to deploy in five of the planned eight states because of difficulties finding local partners prepared to invest so extensively in digital literacy coaching.

Challenges, solutions and ways forward

Since 2009, Gram Vaani has collected data on what works for this type of digital intervention. They have found that diverse content drives engagement: a range of topics, diverse formats and opportunities to participate. For example, one programme took the themes and storylines of an educational TV drama to remote Indian communities, engaging hundreds of thousands of listeners around gender equality.[3]

They have also found that, rather than mobilising a single campaign, it is better to sustain a communication channel over time so that people get used to it. Once habits are established, people are more likely to trust it and turn to it in the future. If a channel is dormant, people can lose interest. This is a challenge when expanding to new audiences and languages – Gram Vaani covers the cost and maintains the content of the platform in Hindi in between projects where it has a permanent presence. Adding more languages would multiply these costs.

Key informants flagged two related challenges. A longer period of engagement is necessary to gather sufficient voice data for future machine learning development in marginalised languages. Yet, informants felt that donors prioritise shorter projects over more foundational, bottom-up approaches.

What's next

The team is increasingly leveraging language technology capabilities, such as the Indian government's Bhashini machine translation platform for Indian languages. As the outputs continue to improve, they can build community-focused applications for issues such as financial literacy and social protection, with improved content discovery, automated Q&A and content moderation.

Gram Vaani continues to contribute to the development and improvement of language technology for Indian languages by sharing voice datasets provided by communities and using the Mobile Vaani platform to test, validate and provide feedback on new language models.

Gram Vaani is keen to create a clearer distinction between their community-based digital public infrastructure and goods (such as the Mobile Vaani model) and technology for the provision of specific services. They feel that in the climate crisis, for example, community-based approaches are more effective at fostering learning, capacity building, cooperation and decentralised decision-making.

The team is working with a collective of organisations to develop a platform, Commoning for Resilience and Equality (CoRE) as a digital public good. This will use AI-assisted, participatory methods to support communities pursuing rain-fed agriculture to build climate resilience through improved natural resource management.

3 See also: Wang, H. and Singhal, A. (May 2017). Unfurling the VOICEBOOK of Main Kuch Bhi KarSakti Hoon: Real-Time Audience Engagement, Rising Fandom, and Spurring of Prosocial Actions.

GSMA

This case study is part of wider research done by the GSMA and CLEAR Global about the state of inclusion and exclusion for marginalised language speakers in digital humanitarian services.

→ Read the full report here.

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