

Reflections from Practical Experiences of Managing Participatory Media Platforms for Development

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ABSTRACT

The design of participatory media platforms can have many variations in terms of whether or not anonymous communication is allowed, what moderation policies are in use, the conversation model that is supported, etc. We use six case-studies of voice-based ICT4D participatory media platforms running in India to outline a typology of design axes that can be used to characterize these platforms. Such typologies can be useful for ICT4D practitioners to conceptualize suitable designs for their platforms in different contexts, and to reconfigure the platforms in case design changes are required. We also use this typology to discuss the design constraints and flexibilities allowed by Internet based social media platforms.

CCS CONCEPTS

• Human-centered computing • Applied computing • Information systems

KEYWORDS

Participatory media, design, anonymity, safety, learning, IVR (Interactive Voice Response) systems, media effects

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1 Introduction

Participatory media is a form of media in which users actively participate to contribute and manage content, such as on blogs, wikis, and social media platforms like Facebook and Twitter. We present in this paper a collection of case studies of six ICT4D programmes running in India, which use voice-based participatory media technology, especially meant for less-literate and non-Internet based users [1, 2, 3, 4]. These programmes aim to achieve development outcomes related to health and nutrition behavior change [5, 6], securing labour rights in industrial work [7], improving social accountability in local governance [2, 8], greater awareness of sexual and reproductive health and rights [9, 10], and building community and solidarity among people with physical disabilities especially visual impairment [11, 12]. We analyze these case-studies to build a framework of a set of design axes along which the six programmes are different from one another in terms of how they use the participatory media technology. This includes axes such as the need for anonymity in some programmes, different kinds of content moderation policies, varying relevance of offline training and outreach methods, etc. We also use this framework to analyze the suitability of using online social media platforms for similar development interventions.

There are two key contributions we make in this paper. First, we show how the same technology such as the one discussed in this paper, should not be treated as an unchangeable artifact that can be used in only one particular way. Rather, different configurations of the technology features and its usage norms can create very different uses. Since ICT4D programmes aim to achieve a particular set of outcomes, development practitioners should keep this malleability of technology in mind, and use the affordances allowed by it as a design opportunity to discover an appropriate fit of the technology variant that can best meet their ICT4D programme objectives. Second, our proposed design axes provide a useful framework to characterize participatory media platforms, and describe how their design can be steered through different technology configurations to create and sustain communities of users in different ICT4D programme contexts. These design axes are generic and can be applied to characterize online groups on Internet-based participatory media platforms as well. We next describe related work in participatory media, then introduce case-

studies of the six ICT4D programmes, and use them to develop design axes to characterize participatory media.

2 Related Work

Participatory media can lead to social development through several pathways, such as empowerment of users to report events that might otherwise go unreported on editorially-controlled media [1, 2, 13, 14], build improved understanding of a topic when it is contextualized through participation by other users [15, 16, 17], and arrive at a consensus on contentious issues through discussion and debate [18]. Both modern Internet-based social media platforms, as well as older analog variants like community radio, have documented such impact pathways [19]. Voice-based platforms using IVR (Interactive Voice Response) systems have of late been actively used as well, as a means to approximate both the interactivity of digital social media systems, as well as the use of voice as a lowest common denominator medium that is accessible to less-literate users through ordinary phones not requiring the Internet. Several platforms running over many years have demonstrated the relevance of such systems for question-answering in agriculture [3], grievance redressal in government schemes [2, 8], social and behavior change communication [8, 9, 10], and hyperlocal news and citizen journalism [1, 2]. Our case-studies touch upon many such applications.

Justifications for the impact pathways for participatory media platforms are grounded in several theories about media. Media plays a crucial role in democracies to impose checks and balances on stakeholders vested with decision making powers [20, 21]. Participatory media brings this ability to ordinary people to demand accountability in governance [13, 14], by publicly presenting evidence and asking questions from the administrators. Media also effects voting behavior, as suggested by theories about agenda setting and framing [22], and has been generalized to behavior-change in health, gender, and other development topics as well [23]. These effects are accelerated through participatory media when messages contributed by other users add greater context to assimilate the learning [1, 15], especially when users are similar to one another. When diverse user groups contribute messages on participatory media platforms, it further brings new and diverse viewpoints and experiences which provide greater completeness in learning [1, 16].

With all these benefits of participatory media, diverse viewpoints can also cause conflict when users are exposed to viewpoints with which they disagree [24, 25]. Participatory media platforms can therefore lead to significant development impact but need to be managed well. We next describe case-studies of the different participatory media ICT4D programmes, and how their design characteristics and management policies shape their impact pathways.

2 ICT4D Case Studies

Our choice of case-studies is obtained through several participatory media platforms run by the social enterprise Gram

Vaani in India, using its Mobile Vaani (MV) technology for IVR systems [1]. This technology allows users to give a missed-call to the MV servers; the calls are returned automatically so that the usage is free of cost to the callers, and allows them to listen to audio messages recorded by others, or record their own message which after a moderation process can be made available for listening to other users. Each platform can be accessed through its own unique phone number and hosts its own content, thereby enabling different ICT4D programmes to use the same underlying technology but customize it for their specific objectives. We next describe several such programmes which are using this technology, and are based upon the impact pathways discussed in the previous section.

2.1 Mobile Vaani Clubs

These are a collection of about twenty district-level platforms operating in rural central India, with an objective to provide a hyperlocal news sharing space that is free of influence by corporate or state or local power holders so that especially voices of marginalized groups can find their way to the platforms [1]. The platforms are also used actively to draw attention of state authorities to unresolved grievances of citizens on government schemes and services, and campaigns to discuss policies and current affairs through which the views and experiences of rural and low-income citizens can be brought forward to policy debates [8]. All the platforms are supported by a large base of volunteers from the local communities, who popularize the platforms and engage with the local authorities to help resolve problems of their communities [26]. Each district has its own platform which is called an MV club, and has its own name and identity. Most clubs also run their own local programmes of particular relevance to their geography, such as on agriculture advisory or career counseling or health awareness, depending upon the specific information needs of their users. User demographics obtained through IVR surveys showed that clubs are mostly male dominated with a tilt of usage towards younger men of the ages of 20 – 40. The clubs have been running successfully for almost seven years.

2.2 JEEViKA Mobile Vaani

This is a platform running in several blocks of the Nalanda district in the state of Bihar, in partnership with the Bihar Rural Livelihood Programme called JEEViKA which operates women SHGs (Self Help Groups) across the state [5]. The platform has a goal to create awareness and behavior change among the SHG households on health and nutrition practices for pregnant mothers and small children. The SHGs are coordinated through an elaborate organizational structure of a cadre of JEEViKA community mobilizers, village level organizations, and cluster federations, which manage the financial book-keeping and mentor the members on various livelihood and income generating activities. This organizational structure is leveraged to promote awareness about the JEEViKA Mobile Vaani IVR platform so that women on their own time can call, listen, and engage in discussions related to the health and nutrition topics. The platform is mostly female dominated, and is especially used by younger SHG members, or daughters of older SHG members, which can be explained through

a well-documented age-bias in technology use by women [27]. The platform has been operational for two and a half years.

2.3 Kahi Ankahi Baatein

This is a platform run with leadership from the feminist oriented organizations, CREA and Tarshi, with a goal to improve awareness about SRHR (Sexual and Reproductive Health and Rights) among adolescent boys and girls [9]. A popular feature on the platform is a question-answering programme on which young callers ask questions about masturbation, menstruation, contraceptives, love affairs, and sexual insecurity. A few selected questions are answered each week by an SRHR specialist, through an underlying framing of sexual independence and a non-judgmental approach, to impress upon young minds an agenda of gender equality, a right over their own bodies, importance of consent, and a scientific understanding of sexual processes to counter myths and misconceptions [28]. A unique feature of this platform is the absence of an offline connect through volunteers or mobilizers, done specifically so that the usage can remain anonymous, and also so that girls and young boys can be safe from parental pressure in conservative societies where interactions with social workers might be considered objectionable and viewed as attempts to break traditional social norms [29]. The initial traction was built through broadcasts on a network of community radio stations [30], and the platform has since then sustained itself through word-of-mouth publicity. It has been operational for almost five years, gets calls from across the country (in Hindi), and has an even split between male and female users.

2.4 TTCU Kural

TTCU is an all-women trade union active in several districts in the state of Tamil Nadu, especially among workers in textile spinning mills, and represents the workers to resolve grievances related to poor working conditions in factories [31]. The IVR platform facilitates TTCU to collect grievances from their base of members and beyond, and to make the workers aware of their rights and recourse to action in case of violations especially related to sexual harassment, amenities like drinking water and sanitation facilities in factories, unfair dismissal from work, and wage payment issues. TTCU has also responded to domestic problems like alcoholism and domestic violence, building an image for itself as an advocate for women rights in general. The platform was initially popularized by TTCU's field staff and volunteer network, but has now entrenched itself among a large userbase who use it as a helpline to report problems and seek assistance. The usage is mostly female dominated and the platform has been running since almost two years now.

2.5 Saajha Manch

This is a platform running in the National Capital Region of Delhi, focused on awareness about labour rights in industrial work especially in the garments and automobile industry [7]. Unlike TTCU Kural, Saajha Manch is not anchored to any trade union, and relies on a volunteer model similar to the MV clubs. This is because trade unions in the capital have weakened over many decades. A

prominent reason is increased contractualization of the workforce in short-term employment contracts which leads to a high degree of mobility of the workers who are therefore not able to attach themselves to any one union [32]. The state governments have also tended to side with employers and use force to foil collective bargaining efforts, leading to low success rates for unions [33]. Saajha Manch therefore has directly built a network of volunteers from among the workers themselves, and runs several features related to educating workers on processes to seek redressal. It also connects the workers to a growing network of lawyers and activists who can assist them in filling out forms or filing cases in the labour courts. The platform has been running since two years now, and is mostly male dominated largely due to the nature of the industries in the capital region.

2.6 Namma Vaani and Hamari Vaani

These are platforms in Kannada and Hindi respectively, for physically disabled people to share information with one another [11]. They are run in partnership with the non-profit organization Enable India which facilitates employment and policy advocacy for physically disabled people. The platforms are publicized through workshops by Enable India's nationwide network of partner organizations. A significant component of content on the platform is related to peer-to-peer knowledge sharing where the users help answer questions for one another, recommend job openings, and provide encouragement and solidarity [34]. The Namma Vaani platform has been operational for four years, and the Hamari Vaani platform since almost two years.

3 Design Reflections

We use the six case-studies listed above to present a framework of several design axes that differentiate the platforms from one another. The underlying technology in all of them is the same, but configured or managed differently for each platform which gives each of them a distinct character, with interesting pros and cons to the choices. Our methodology for arriving at these design axes was through a series of internal discussions among the team members who have been managing these platforms. Since all the platforms have been in deployment for a long time, they have been actively discussed in common meetings and most team members are aware of all the platforms. All the authors of the paper belong to the social enterprise Gram Vaani, and the research methodology therefore is really an internal exercise of reflection through team discussions about the diverse use-cases in which the technology has been used, to glean learning and insights from this collective experience. These conclusions are also supported through interviews and conversations with users and partner, conducted during data collection exercises at different periods of time for different platforms. This is detailed in the Appendix.

A limitation of our analysis is that it is not grounded in any specific theories of technology use, and the team discussions were also not formally documented for subsequent content analysis to arrive at the different design axes. These axes however do represent an internal logic that has evolved through many projects, beyond

the ones listed, and has served to be especially useful at Gram Vaani when conceptualizing new projects. Some of these axes have also been recognized in other literature about the affordances of social media platforms and how users navigate them [75, 83]. We are therefore confident that the rich deployment experience we present here will provide valuable insights to ICT4D researchers and practitioners.

3.1 Axis: Group-specific Platform Segregation

Development interventions are typically aimed at specific demographic segments, and in our context it leads to the question of whether a segregated participatory media platform should be set up for a group, or an existing platform should be expanded to include the group. An example is when interventions are meant specifically for women, such as to create awareness on health and nutrition (HN) practices. The underlying theory of change, based on field research, is that most household decisions about food choices are taken by women, and therefore it is imperative to reach women with the right messaging to influence them and also empower them for better decision making [35]. A low cost approach in our case would be to leverage Mobile Vaani clubs which are already established in many districts, and find ways to expand their usage to female users. The alternative would be to create a new platform exclusively for women users, publicize it, and use it for the singular purpose of HN awareness and behavior change.

We tried both approaches [5]. In two blocks running MV clubs, we ran HN content prominently and tried several pathways to expand the club listenership to women. Our volunteers approached female health workers and attended Village Health and Nutrition Day events to reach the target demography. We appealed to men users to invite their women counterparts to the platform as well. We ran workshops in schools, to reach women via messages carried by their children. We changed our content moderation policy to feature content from women users more prominently. However we were barely able to move the fraction of women users: IVR surveys revealed a steady percentage of about 25-30% women users on the clubs both before and after these efforts, and hardly any content contributions made by them. We in fact saw some engagement by male users on the HN content, talking about their responsibility as husbands and fathers, which may also be a viable change pathway although different from the main envisioned pathway of change through female engagement.

On the alternative method of setting up an exclusively women platform, by riding on the JEEViKA organizational structure of SHGs, we were able to build a strong traction among women and saw active participation by them in campaigns and discussions on various topics including HN, family planning, livelihood, women employment, etc. IVR surveys interestingly revealed that about 25% users were men, from among husbands and youth from the SHG households as well as JEEViKA's field staff, but they only heard the content on a regular basis without making any contributions. This experience of a few men using a primarily women's platform was surprisingly identical to that with the MV clubs where we tried to on-board women on to a predominantly

male platform: In both cases, the platforms seemed to have built an identity as being meant for a particular group, other groups would listen but did not participate by way of contributing content. This observation was also validated by several interviews with users, such as the experience of a male listener about a women's platform:

"I hear JEEViKA Mobile Vaani, I got to know about it from my wife. It is easy to record but generally only women record content on it, so I don't." – Male, age 40, Nalanda, Bihar.

It leads us to believe that participatory media platforms tend to get associated with some dominant groups who contribute content. Since this is the content which then gets featured on the platforms, other groups stop feeling comfortable in participating. This results in a negative feedback loop and crystallizes the one-sided identity for the platform. In the context of rural north India where gender identity is quite prevalent, this suggests that separate platforms should be set up for women. Male engagement with content may still be useful to influence men to be more supportive of better HN practices (for example), but this engagement should be sought either on separate platforms, or it may emerge naturally on women platforms when men also listen to the content but do not actively contribute on it. These observations can further be related to two aspects. First, echo chambers are known to arise due to a confirmation bias where users prefer to hear views similar to theirs [36, 37]. In our case, a similar confirmation bias seems to be operating related to group identity. Second, segregated platforms may also provide safety for the users to speak freely and seek support, as known from the concept of safe spaces in offline communities for recovering alcoholics [86].

In the face of strong social inequities like on gender, even concerted efforts to maintain the identity of a platform as gender neutral is not easy. This was our experience with platforms like Kahi Ankahi Baatein, Namma Vaani, and Hamari Vaani, where the platforms were neutral to start with and even now have a balanced listenership as reported by IVR surveys, but over 90% of the content contributions are made by boys and men. Such inequities in participation have also been documented in other voice-based discussion forum platforms [67, 84], and is confirmed by a team member who has had a long association with Kahi Ankahi Baatein:

"Female participation on Kahi Ankahi Baatein is low partly because of their limited access to phones, and also because it is difficult for girls and women to openly talk about sexuality. The boundaries created by society have always asked women to behave like good women, and KAB's goal is to change this perception of sexuality as a taboo topic, but it will take time and is not easy at all" – Content manager, Kahi Ankahi Baatein.

Similar group based inequity was noticed on the MV clubs during their earlier years when they got dominated by activists, and upper class and caste users [1, 26, 50]. These users were more skilled to adopt technology and appropriated it for their use, to the extent of even curtailing access for other groups. It took significant effort by the Mobile Vaani team in building a more representative cadre of volunteers from across caste and class lines, along with editorial control of content, to remove the bias.

This success with having used deliberate methods like heavy-handed content moderation to ensure equitable operation on class

and caste lines, contrasted with the failure of using similar methods to have platforms operate equitably on gender lines, highlights the complexity in the design and management of ICT4D interventions. Diversity is known to be normatively useful for effective learning in participatory media environments [15], but in some cases like with gender in the rural North-Indian context, it might be more prudent to maintain gender-based segregation on the platforms.

3.2 Axis: Anonymity

We mentioned earlier of how the absence of any offline connect in Kahi Ankahi Baatein (KAB) helps build confidence among its users about being anonymous on KAB, and leads to active participation on many taboo topics. The experience on Saajha Manch is similar, albeit through a pseudonymous means to create a safe space on the platform to discuss violations of working conditions. Workers are in a vulnerable position when they report problems about their workplace on public platforms because they could be easily dismissed from work if they are discovered raising complaints. Many factories in fact disallow workers from bringing their phones through which they could take pictures or coordinate tool-downs [38]. The Saajha Manch team therefore evolved a policy for volunteers to report through pseudonyms so that their identity is not revealed when their audio reports are published on the platform. In some cases, voice modulation is also done, or parts of the audio are edited out to ensure safety. This is in contrast to platforms like Facebook where typically real-person identities are used, making workers vulnerable to being tracked down. This was explained by the Saajha Manch volunteers:

“Saajha Manch allows us to remain faceless. When we press button 3 to record our messages on the IVR, and then button 5 to forward it to company and government officials, our phone number does not come up. In the absence of unions, we do not feel safe to come out in the open for fear of losing our jobs and Saajha Manch helps us to become faceless rebels. We cannot use Facebook because our photo comes up and we can be targeted in the future” – Statements by Saajha Manch volunteers in group meetings, Gurgaon.

TTCU's experience with collection of grievances is similar. They did not receive as many grievances through their network of volunteers as they do now through the IVR. TTCU evolved a policy to not publish grievances on the IVR platform. The women workers are therefore confident that they can convey their problems to TTCU through an invisible means, they need not risk being seen speaking to a TTCU volunteer or their names becoming known on the IVR. The grievances in fact are re-recorded by the TTCU team without revealing the name of the complainant and published on the IVR, to put pressure on the factory about complaints having been received against them.

“What they cannot openly say for fear of losing their jobs, they say here. These are first hand reports of what goes on inside the factories. And they reflect everyday abuse and hardship.” – President, TTCU [31].

It seems therefore that for platforms where disclosure of user identity can be unsafe, anonymous or pseudonymous means or other identity concealment methods should be used. In the MV

clubs, by comparison, the norm is to make non-anonymous complaints because these often tend to be grievances related to government schemes and services to which the people are rightfully entitled and any backlash is unlikely. The offline connect via volunteers also gives confidence to the people that the platforms are run by people known to them directly or via other friends, and this empowers them further to raise their voices without any fear of personal safety concerns [26]. Furthermore, many years of field presence and success in improving the delivery of government schemes and services has built credibility for the MV clubs among the local communities [1], as conveyed by a user from the Madhubani district in Bihar:

“For many years, ration shops would not give us complete provisions and they would ignore our complaints. When we got to know about Mobile Vaani, it gave us the courage to take this further. Their reporters recorded my interview and forwarded it to the officials. They dealt with the senior officials directly and supported our cause. This is why we trust Mobile Vaani because we know that their reporters will stay with us and support us in case anything happens” – Female user, age 40, from a Mahadalit (one of the lowest castes) community in Madhubani in Bihar.

In conclusion, the extent or form of anonymity is an important design decision for participatory media platforms.

3.3 Axis: Learning Through Participatory Media

The basic functionality provided by the MV technology to allow users to listen and record audio content, is used to create participatory content formats for learning.

One such format is question-answering. Kahi Ankahi Baatein and Saajha Manch both run a question-answering feature, wherein users can record questions, and these questions are then answered either by using some audio snippets recorded earlier for similar questions, or by putting them up to an expert. Namma Vaani and Hamari Vaani have instead pioneered a peer-to-peer based question answering mechanism, wherein the users themselves help answer questions put up by other users. Both methods have their pros and cons: expert-based answers are expected to be more authoritative, while peer-based answers may be more contextually relevant and easily actionable, as also documented in other studies [39]. The common element in both these methods however is that the questions and answers are published on the IVR platforms so that all the users can benefit from the information. Since the questions emerge from the users themselves, they tend to be of real concern and reflect felt needs, thereby illustrating the importance of a participatory medium for knowledge sharing as compared to a top-down setup where knowledge banks or databases are built and queried. The contextual relevance of participatory media is confirmed by a Gram Vaani staff:

“Agriculture depends heavily on the local context: The soil, climate, amount of water, type of pesticide, etc changes from area to area and this is why the government has set up KVKs (Krishi Vigyan Kendras) in each district. Farmers acknowledge that the information provided by their local KVKs is more useful than random information they get on the Internet, but they are not always able to attend the KVK camps. Questions received on

Mobile Vaani and answered by the local KVK scientists is able to bridge this gap.” – Community manager of the MV clubs.

Another format for learning is discussion oriented, to engage users as active participants on a given topic rather than as passive recipients of information. In JEEViKA Mobile Vaani, audio dramas are developed by the project team as a series of short 3-4 minute episodes in an education-entertainment format. Much like a soap opera, the series typically involve a story set in a similar context as the target users, narrated in a dramatized format, but framed to convey some underlying development messages to the listeners. Anchored to each episode, a few questions are then put up to the users about their views on the protagonists in the drama series, any similar experiences which they would like to share with other listeners, questions and dilemmas thrown up by the story, etc. Users then respond to these questions and contribute interesting thoughts that both contextualize the story even more strongly and add to its completeness by drawing upon diverse experiences of the users [40], leading to effective learning through discussion and engagement.

A similar discussion format is also used in the MV clubs for learning on policies and current affairs, but instead of intensive efforts to produce a drama series, a simple narrative is used to describe the policy or event, followed by questions put up to the users [41]. Offline interviews are also conducted by the volunteers using these questions to bring more detail to the topic by talking to different stakeholders.

Participatory media platforms can therefore be used to create different kinds of participation through different content formats, which can impact the efficacy of learning outcomes. It is an open question though about which content format is best suited for which purpose. Typically, expert-based question-answering has been used for topics like agriculture or labour laws where specific actions need to be recommended to the users for specific issues, drama-centered discussions are used for topics related to social norms like early marriage or domestic violence or gender issues for which discussions are otherwise hard to organize through in-person workshops, and direct narrative based discussions are used for fast moving and debatable topics which are already active in the mass media. In practice, budgets and project timelines also play a significant role in decision making about content formats. A rich area for future research is to compare in a controlled manner the relative efficacy to use different formats for learning different topics.

3.4 Axis: Mobilization Pathways

ICT4D programmes often need to run offline interventions to drive usage of their technology. A common reason is when the intended users are limited in their skills to use the technology [42]. In most of the case-studies barring Saajha Manch and Kahi Ankahi Baatein, the target users did not have much prior experience with IVR systems. In fact, special digital literacy modules had to be created for JEEViKA Mobile Vaani to even teach women basic operations like dialing numbers on mobile phones [5]. In such cases, offline mechanisms are practically a necessity to train users and demonstrate to them how the system works. Remotely guiding

users through audio messages played on automated phone calls, or even personalized manual calls, are known to not be as effective [70]. Even to deal with skepticism that giving a missed-call and picking up the returned call will not result in any charges on their mobile phone bills, can require personal assurance. Such challenges were expressed by JEEViKA community mobilizers:

“JEEViKA Mobile Vaani has improved the situation a lot. At least 3 women from our group have learned how to dial phone numbers. Many women now even remember their own phone numbers. However it is not easy to teach them. Telling them just once is not enough. We first have to teach them how to use the system, what can they hear on it, how to change the content, how to record... we have to remind them again and again” – JEEViKA community mobilizer (female).

This need for offline training can also have implications on the choice of content formats. Often when initiating platforms for users not adept with technology, most content needs to be developed externally since good quality content is not contributed by the users themselves. Interviews of users conducted by the volunteers and offline teams are used to supplement this externally developed content with community voices to give the platforms a more participatory media feel. It is only after an improved capability of the users to use the technology, especially to record content, be it to ask questions or participate in discussions, that the platforms became truly participatory [5].

Another reason to use offline mechanisms is simply to build an outreach to the intended users, who in the absence of any other media channels need to be told about the system through in-person meet-ups [1, 26]. For example, in the geographies of operation of the MV clubs, TV penetration is less than 25%, and newspaper and radio penetration is even lower, ruling out the possibility of using these media to build an outreach for the IVR platforms. Effective strategies are therefore needed to build offline mechanisms that are low-cost and can scale-up fast. This is not without its own complexities though. Being able to leverage existing offline structures like the JEEViKA SHGs was instrumental to reach women in a targeted manner, but also needed a government partnership which can be hard to obtain. The MV clubs by contrast developed a cadre of volunteers from the local communities, but it took several years of careful work to develop incentive structures for the volunteers to remain excited about their work with the clubs. More than financial incentives, the volunteers were motivated for reasons like aspirations for their own professional development by working for the clubs, a desire to make socially meaningful contributions to their communities, and enjoying solidarity with their peer volunteers to pursue common goals [26].

“I always wanted to connect with the people and raise their concerns. Mobile Vaani gave me a lot information and helped me build my skills as a reporter. I was able to interview many leaders when they came to Jamui, including the Chief Minister of Bihar, the Sugarcane minister, and the Member of Parliament here. Due to all this, I was able to network with government officials and managed to build a community library, water tank, and bring drinking water pipes to my villages. I am a teacher and I am also able to use Mobile Vaani to guide my students. I will stay with

Mobile Vaani always because it helps me raise community voices.
– Male volunteer, age 35, Jamui in Bihar.

The MV clubs have been operating with minimal supervision and monitoring since many years now.

Saajha Manch however presented new challenges to offline mobilization to build an outreach among industrial workers. These workers are extremely busy, having to work long shifts at least six days a week, leaving only a few options when they can be approached: Either during the morning hours when they are rushing to work the project teams stand on the streets and distribute pamphlets, or on Sundays to meet them in residential areas when they sit at tea shops or other market places [43]. Additionally, the Saajha Manch volunteers being workers themselves are cautious of not being seen as engaging in any significant mobilization activities, for fear of the news traveling to their employers who could dismiss them from work [38]. Additionally, being migrants from different parts of the country, the urban worker colonies in which they reside tend to have much less community bonding than in rural areas [44].

As a workaround to offline mobilization, several initiatives have experimented with viral means to create outreach. The Polly platform morphed voice recordings by the callers to make them sound funny and then allowed the callers to forward the recordings to their friends, thereby adding new users [68]. The Learn2Earn platform gave mobile-money credit as a financial incentive to users to invite their friends to the platform [69]. These experiments demonstrated rapid uptake but were limited in the demographic of users who participated, since the IVR features were complex and only younger people were able to use them effectively. We have run similar experiments on the MV clubs. Features to forward content to other users are actively used, but do not translate to these new users as becoming active users themselves unless the interactions are repeated. Financial incentives were also given through mobile-money credit for successful referrals but this was misused by many users [1].

The discovery of appropriate mobilization pathways is therefore a complex problem, be it offline or through technology based virality mechanisms, to align incentives for the users and intermediaries, improve targeting to reach the intended userbase, and build mechanisms for capacity building of users. We want to add that as digitization improves and more users come online, similar questions will arise with discovering suitable online mobilization pathways and understand how they interact with other design elements.

3.5 Axis: Content Moderation

Recent events about hate speech and fake news on Internet-based social media platforms [45, 46], and algorithmic biases in content ranking in news feeds [47], has brought significant attention to content moderation methods. Audio content on the MV IVR is moderated through a web-based content management system which allows a team of content moderators to review the content recorded by users, and accept or reject it from publication [1]. The moderators can also download and edit the content to improve its audio quality, add transcripts and tags to the content,

and control its ranking on the IVR. All the platforms discussed in this paper have evolved their own content moderation policies.

Content moderation serves an important role of signaling to the users about what is permitted or not, and thereby shapes the usage norms of participatory media platforms [48]. We believe that these norms are critical to prevent misuse. The MV clubs, for example, have been operational since more than seven years but have not had any incidents of hate speech or fake news. What is more interesting though is that on average only 0.5% of rejected contributions on the club platforms are rejected due to objectionable content, showing that users hardly even attempt to misuse the platforms. The bulk of rejections happen due to unpreparedness in recording well-articulated content, for which offline training or manual phone calls are made (time permitting) to guide the users to record better content.

Misuse does occur in several other ways, such as a case when a female volunteer experienced cyber bullying, and copyright violations such as recording of news reports verbatim from articles published in newspapers. Sometimes these recordings are not caught by the moderators and get published on the IVR, but are taken down after some users or volunteers report the mistake. In one exceptional case, threatening recordings were made by a user against the moderators who had rejected some of his contributions, and the MV team took stern action and filed a police report against this behavior. In general however, hate speech or angry voices against other users have been extremely rare, and even discussions on contentious topics have taken place in a measured tone of respect and decency. This leads us to believe that in contrast to Internet-based social media platforms that allow unmoderated posting and resort to subsequent algorithmic policing and community reporting methods, the MV clubs have prevented misuse by establishing a precedent of respectful use of the platforms from the very beginning. The volunteers and users are passionate about preserving this ethos and vociferously protest if objectionable content sometimes slips by the moderators. Misuse is rare even in Saajha Manch and Kahi Ankahi Baatein which allow anonymous postings, and strengthens our belief that usage norms and loyalty towards the platform are critical factors for responsible use even when flexible affordances are allowed by the platforms [76].

Volunteers in the MV clubs have also demanded direct control over the moderation process:

“We do not understand the moderation process very well because it happens in Ranchi. We do not like it when the moderators sometimes say our names and places incorrectly, or publish the wrong news that somebody may have recorded after just seeing it on Whatsapp. This happens because the moderators do not know the geography very well. We would like them to consult us and want to have our own control over the moderation of items for our respective clubs.” – Statements by MV club volunteers during a training workshop in Bihar.

We recently released a distributed moderation setup so that they can moderate the content of their clubs on their own, try to arrive at a consensus on contentious content, and only refer content to the moderators if they cannot resolve it locally.

The MV clubs have followed a liberal moderation policy in general to allow as many voices as possible, and filter based chiefly on concerns about audio quality and the tone of the message. According to the theory of learning on participatory media, the club volunteers seek to bring completeness in coverage of topics under discussion on the platform by proactively soliciting contributions from diverse stakeholders to build a more comprehensive coverage. Ideological adherence to a particular viewpoint has been consciously avoided, and even polarizing topics like the demonetization event of November 2016 [49] or the use of Aadhaar (unique identification system) for welfare schemes despite numerous issues [50], have been discussed openly on the platforms. For example, MV volunteers say:

“Mobile Vaani encourages users to record their own views. In the recent campaign on the use of Aadhaar biometrics for food rations, we got many different stories which helped us understand both its advantages and disadvantages. People also shared how to resolve these problems and since then we have helped many people to get their Aadhaar details corrected, and also complained about several ration shop owners who denied ration to people when their biometrics failed.” – Male volunteer, age 50, Madhubani in Bihar.

Platforms like Saajha Manch and Kahi Ankahi Baatein have evolved a more agenda-driven editorial policy, grounded in pro-worker and feminist framings respectively. They rarely receive messages with other framings and illustrate that once usage norms are established for participatory media platforms, they are subsequently hard to break. This also highlights that careful management of editorial policies is needed especially during the initial stages of a platform to establish appropriate precedents [1, 50].

In addition to acceptance and rejection, ranking of content on the IVRs is another task of content moderation. Most platforms follow simple rules to rank content based on their quality, and prioritize content which is more detailed and informative, brings a new viewpoint, and the audio recording quality is good [1]. Inputs about content quality can also be sourced from the community, as seen in experiments on community radio [70] and other voice-based forums [71]. Careful list construction is also done for discussions, so that the collection of content in a list of items about the discussion topic is diverse and touches upon different aspects, rather than have multiple similar items in the list. We are also building an algorithm which can generate such lists automatically to guarantee interesting properties like short-term diversity and long-term fairness on a given topic [51].

Content moderation policies can thus build different usage norms on different participatory media platforms, and need to be designed carefully based on the specific development objectives that a platform intends to fulfil. This also raises a question about whether these objectives match what the target users want from the programme, and leads us to the next design axis about the positioning of the platform.

3.6 Axis: Positioning

Several frameworks are prevalent in the development sector to conceptualize the design and objectives of development

programmes. The rights-based perspective asks if people are being denied some basic rights, such as access to services which are meant to be universal, and advocates to formulate development programmes which can ensure that such rights are met [52]. The capabilities-approach examines whether people have the resources to utilize opportunities for their development, and considers the lack of such resources as a curtailment of freedom [53]. The needs-based approach is less normative than the earlier two approaches, and examines what felt needs of people are unmet, for which suitable interventions can be designed [54]. The aspirations-based approach similarly understands the aspirations of people and what factors impede them from realizing these aspirations, then suggests to design interventions that can help people overcome these impediments and meet their aspirations [55].

Saajha Manch and TTCU Kural seem to be clearly grounded in a rights-based perspective, both in terms of how the users perceive the platforms and also how the project teams define the programme objectives. Namma Vaani and Hamari Vaani appear to strongly support an aspirational perspective –platform usage by visually impaired people to find jobs and grow in their career, is similar to narratives about the use of computers by physically disabled people [77]. The MV clubs provide a range of services centered within different framings, such as a rights-based perspective to ensure grievance redressal in the delivery of government schemes, but a needs-based perspective on providing hyperlocal news which is not available otherwise, and an aspirations-based perspective through features like career counseling for youth. JEEViKA Mobile Vaani has a top-down agenda centered in an overarching capabilities-approach to remove impediments for rural poor families to lead healthy lives, but like the MV clubs it also encompasses other framings, such as a needs-based positioning to guide mothers with awareness about better nutritious practices for themselves and their children, and a rights-based positioning to address inequitable gender norms and weaknesses in the delivery of government services related to mother and child nutrition.

How is the design of a participatory media platform affected by its development oriented framing? Internal conversations among our team brought several insights. Being less normative and top-down, a needs-based and an aspirations-based framing are generally easier to build user traction since needs and aspirations are recognized by the target users and thereby they are able to directly see the benefit from the platforms. Both Namma Vaani and Hamari Vaani showed some of the fastest growth rates among all the platforms. The experience with hyperlocal news and career counseling on the MV clubs has been similar, these were easier to explain to the users and led to rapid uptake since users could directly see a benefit. Even JEEViKA Mobile Vaani was similarly quicker to catch-on in families where somebody was pregnant or had small children, than among other women users, showing that self-selection due to felt needs or aspirations can facilitate quick adoption [5].

A rights-based positioning such as with Saajha Manch or TTCU Kural was slower to build, partly in these cases because of challenges with mobilization but partly also because demonstrating their value takes longer. Successful impact stories are invaluable to

build credibility of the platforms and to convince users of how the platforms can empower them, especially in a historical context where rights of marginalized groups have been extensively violated.

The rights-based approach of Kahi Ankahi Baatein is interesting in this light, because it does not commit to bringing any change for the users, rather it is even perceived as a fun and entertaining space to listen to anecdotes and curiosities of other adolescents. However, the framing of the content is done cleverly, much like with education-entertainment programmes, to convey an underlying message and produce media effects in a fun manner [10]. TTCU Kural has developed a similar comedy feature of a quirky advocate who fights cases in the labour court.

This experience suggests that practitioners can be strategic in the positioning they define for participatory media platforms. During initial stages, to build quick traction, they can run content features on topics that the target users need or aspire for, even if these features do not directly align with the development goals of the intervention. Features that are harder to operationalize, like securing grievance redressal, can be initiated slowly, or in a lighter manner such as through entertainment. Such a graded progression may also help with slowly building the technology usage capability of the users, as discussed earlier, to start with simple content formats that do not require extensive participation from users to contribute content. A caveat however is that some features may appeal more to certain user segments than others, and therefore a careful consideration and monitoring of the user demographics should be done to ensure that going somewhat off-domain in the content features does not end up being too wasteful by involving non-target user groups.

The MV clubs partly due to their long existence have adopted such a strategy. When the initial usage only for grievance redressal was diversified to entertainment and discussions on social norms, users appreciated the change and the userbase grew rapidly. Later when hyperlocal news was introduced as a regular feature, it led to a high churn in content, and users started calling multiple times a day to get the latest news. Grievance redressal sustained itself as a constant element, and features for career counseling and agriculture advisory helped build outreach to specific user-segments like college youth and farmers respectively.

It is interesting to note that this strategy to pull diverse audience into building a liking for content features that they may not have been interested to begin with, worked well on IVR platforms because the IVR provided limited navigation and search abilities for the callers to choose to listen to content of their own liking. All callers got to listen to the same content as what was chosen by the project team. As digitization deepens and more users come online, their ability to choose topics increases, both across different apps and content within an app, which makes it harder to influence users to engage on new topics. A similar phenomenon has been documented with television viewing practices when cable channels were introduced: Engagement of users with news and political shows was higher when their choice was limited, and reduced with the arrival of cable TV [72].

4 Discussion

We have described so far a framework of six design axes that can be used to understand the differences between various participatory media platforms presented in this paper. A summary table is presented in the Appendix. We next discuss two applications of this framework.

4.1 Suitability of Online Social Media Platforms

Social media platforms like Facebook, Twitter, Reddit, and Whatsapp provide tools similar to the MV IVR system to set up online communities where users can participate to create and share content. As more and more users come online in developing regions and join these platforms, they may present a viable alternative to run participatory media interventions for development [57, 58]. We therefore try to understand if the analysis framework we have presented can be applied to them to understand their suitability for different kinds of interventions.

Social media platforms seem to differ mostly on their support for anonymity, moderation, and mobilization. We first discuss anonymity. The typical usage for all the four online social media platforms listed above is for users to maintain a single identity, which is often their real identity, and join different groups or communities through that same identity. This will clearly hinder their participation in groups like Kahi Ankahi Baatein or Saajha Manch where users do not want to reveal their true identity, and hence they would need to create alternate identities to participate in these groups. Maintaining multiple identities is possible on social media platforms, such as via throwaway accounts [79] or the use of intermediaries to anonymize posts [80], but this comes with greater complexity or the need for user expertise. Whatsapp additionally provides anonymity beyond the first group of users to whom a sender would have shared a message, since forwarded messages are untraceable to the source, but it still requires senders to trust their immediate neighbours. An alternative to create safe spaces is through group-specific segregation which is supported on common social media platforms. Closed Facebook groups where people can express themselves freely, have been documented for breast cancer [78] and feminism [85], for instance, and draws its tradition from the concept of safe spaces in offline communities for recovering alcoholics [86].

Coming to moderation, different approaches exist on different social media platforms, Reddit coming the closest to MV in terms of its moderation capabilities [59, 82]. Other platforms are either unmoderated, or allow very coarse moderation like to disallow postings by all non-admin users. It is therefore unlikely that the shaping of usage norms through moderation policies as was done on different MV platforms, can be easily replicated here.

Perhaps the main advantage that online social media platforms bring is that they are popular destinations visited regularly by many users, and therefore multiple mobilization methods can be used to publicize new communities to the users. Common methods include paid advertising targeted at the intended user groups, postings in other groups that the target users are likely to visit, and diffusion into the social network neighbourhood via a seed set of target users. An explicit need for user training is also minimized because many

users are likely to have been participating on the same platform for other reasons, and would be familiar with the technological features. Offline mobilization cannot however be avoided for users who are not on these social media platforms as yet, for reasons like the digital divide, unaffordability of the Internet and Internet-accessible devices, or other reasons for non-use like no significant perceived value from participation [42].

We conclude therefore that online social media platforms can be used for participatory media based ICT4D interventions in cases where anonymity is not a concern or can be easily managed, moderation can be absent or coarsely defined, and the target users are already using the social media platforms.

We however believe that out of these three factors, the moderation capability of a participatory media platform is particularly important. This is because even if a platform meets all other requirements, objectionable content or violation of the usage norms can vitiate the environment on the platform. This can impact the ideal conditions under which users are comfortable to participate on the platform, and thereby affect the desired outcomes from their participation. Elsewhere we have described these ideal conditions under which outcomes such as learning and agency come about on participatory media platforms [56]: Users should find the content to be relevant, they should trust the editorial moderation processes, it should be possible to express different viewpoints freely, and multiple stakeholders should engage on the platforms. Habermas' theory of communicative action was used to explain why such ideal speech conditions are necessary to lead to the desired outcomes. Learning and agency can be compromised if distasteful conflicts occur on the platforms and users react by disengaging or silencing themselves [73, 74].

4.3 Steering ICT4D Interventions

We have shown through case-studies that the same MV IVR technology was used in different ways in different programmes, by changing its usage patterns. This malleability of technology, or the affordances it allows to define different types of instantiations, is not unique to the participatory media technology we have discussed in the paper [60]. This poses both an opportunity as well as a challenge for ICT4D practitioners. On the one hand, it implies that a technology designed once can be reused in many ways, on the other hand it means that each context may demand a re-configuration which may not be obvious and will need to be discovered possibly through experimentation.

Throughout our work in the development space, we have however noticed that practitioners often miss to embrace this malleability of technology and the complexity needed to steer it. They sometimes forget that technology deployed in a certain context may not work as a silver bullet for change in another context [61] and may not lead to predictable outcomes without active management [50]. Sadly, governments and companies, assisted by corporate owned media, often try to hide this complexity and present technology as a magical change agent in itself [62]. David Harvey argues further that capitalism in fact needs to fetishize technology as bringing change to ensure capitalism's own perpetuity through a continuous process of

replacing labour with technology, and then more technology [63]. Many voices in the ICTD community, and including this paper itself, argue that to bring change assisted by technology needs humans at the very least to actively steer the design and management of the technology so that it leads to the intended outcomes [50, 64].

Methods like user-centered design, co-design, and participatory design [65], have been suggested to conceptualize the design of ICT4D interventions. Action research methodologies have been suggested to further evolve the interventions in partnership with the users [66]. The framework we have defined of design axes for participatory media platforms can be used within these methods to describe the interventions and changes undertaken in its design as it evolves. The design axes essentially present a design space to development practitioners within which they can steer technology based participatory media programmes to discover a configuration that provides the ideal conditions for users to participate and for the intervention to achieve its goals.

5 Conclusions

We described six case-studies of ICT4D programmes that leverage voice-based participatory media for development outcomes. We used these case-studies to build a typology of design axes to characterize participatory media platforms. The wide range of variations in which participatory media platforms can be set up, present an opportunity for ICT4D practitioners to discover appropriate configurations suited to different contexts. We also used the proposed typology to demonstrate design constraints in some popular online social media platforms, and suggest that ICT4D practitioners should carefully review their choice of platforms based on the affordances allowed by the platforms.

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APPENDIX

A Data Collection

Due to differing project budgets and donor priorities, each of the six case-studies followed their own methods and timelines for research and data collection. The MV clubs and JEEViKA Mobile Vaani are the best-documented out of the six projects. Data for the other projects was obtained through periodic project reports and user interactions of the Gram Vaani staff. Consent was sought for all data collected from the users, to use for research and evaluation purposes. We next describe the data collection and analysis methods for the projects.

MV clubs: A mixed-methods approach was used to gain insights about the operation of the MV clubs, with data collected over a five-year period from 2011 to 2016. Qualitative data was obtained through a story-based, dialogic, participatory monitoring and evaluation technique known as the Most Significant Change (MSC) technique. These stories were collected from 98 MV club users from among those who attended monthly club meetings, sampled from different locations visited frequently by one of the authors of the paper. Quantitative data included a study of daily call volumes of different clubs, a topic analysis of content production, and bi-annually administered IVR-based demography surveys. The quantitative data was used to provide context to the user stories about different phases in the evolution of the MV clubs. Additionally, semi-structured interviews were conducted with 11 Gram Vaani employees engaged in managing the clubs, to gain a nuanced understanding of the club processes. The story narratives and interviews were consensually audio recorded and ranged from 30 minutes to over 4 hours. This data along with data from observation notes was translated to English and then transcribed. The data was then iteratively analyzed using the six-phase thematic analysis approach [81], and Atlas.ti was used to conduct open and axial coding of the data. This data led to several publications about the MV clubs [1, 25, 56].

From 2017 onward, additional qualitative data was collected through volunteers workshops conducted roughly on a quarterly basis, as part of regular MV operations. These workshops were of 1.5 to 2.5 days in duration, and involved at least 2-3 hours of open brain-storming and FGDs between the volunteers and Gram Vaani community manager.

JEEViKA Mobile Vaani: Qualitative methods of focus-group discussions (FGDs) and in-depth interviews were used to collect data from key stakeholders to understand mobilization pathways, likeability of the content, and seek recommendations for programme improvement. The data was collected over a period of 18 months during 2017-2019, through quarterly field visits. All intervention blocks (six blocks in the district of Nalanda) were covered for data collection. In each visit, approximately 10 FGDs were conducted with 8-10 community members in each FGD. A total of 52 FGDs were conducted during the 18-month period. Out of these, 36 FGDs were conducted with women callers of JEEViKA Mobile Vaani, and the remaining 16 FGDs were conducted with men from the same communities. The FGD participants were selected based on their availability in the intervention areas during the research visits. Care was taken that the participants in each FGD were similar to one another in terms of gender and caste. Interactions with older women were conducted separately. Some women who did not actively participate in the FGDs, were contacted separately for one-on-one interactions. In-depth interviews were also conducted with JEEViKA block officials, community mobilizers, teachers, religious leaders, Panchayat (local government body) members, and community health workers, to improve programme implementation. A total of 34 interviews were conducted with these stakeholders. Written notes were taken for all the FGDs and interviews, and barring a few exceptions all the interactions were also audio recorded, with consent of the participants. This resulted in over 50 hours of audio recordings of FGDs and 33 hours of audio recordings of interviews, which were translated to English and transcribed. This data led to a publication [5].

Saajha Manch: Qualitative data was collected during a two-year period in 2017-2019 through 8 FGDs with Saajha Manch volunteers, as part of regular volunteer workshops. 31 volunteers formed part of these FGDs over the years.

TTCU Kural: Data was collected through interactions with the Gram Vaani team members directly involved in the project.

Kahi Ankahi Baatein, Namma Vaani, and Hamari Vaani: Data was collected through interactions with the partners CREA and Enable India, and reports and publications written by them about the projects.

B Mapping of Platforms to Design Axes

Due to differing project budgets and donor priorities, each of the six case-studies followed their own methods and timelines for research and data collection. The MV clubs and JEEViKA Mobile Vaani are the best-documented out of the six projects. Data for the other projects was obtained through periodic project reports and user interactions of the Gram Vaani staff. Consent was sought for all data collected from the users, to use for research and evaluation purposes. We next describe the data collection and analysis methods for the projects.

| | Mobile Vaani clubs | JEEViKA Mobile Vaani | Kahi Ankahi Baatein | TTCU Kural | Saajha Manch | Namma Vaani & Hamari Vaani |
|---|--|--|--|---|---|---|
| #1: Group-specific platform segregation | Open but dominated by men & male youth | Segregated for women & young girls | Segregated for adolescents, youth, young married couples | Segregated for women in blue-collar industrial work | Segregated for blue-collar industrial workers, but dominated by men | Segregated for people with disabilities |
| #2: Anonymity | Non-anonymous | Non-anonymous | Anonymous | Anonymous grievances | Pseudonymous | Non-anonymous |
| #3: Learning through participatory media | Narratives, discussion campaigns | Dramas, discussion campaigns | Expert Q&A | Dramas, narratives | Expert Q&A, narratives, reflections, discussion campaigns | Peer Q&A |
| #4: Mobilization pathways | Offline through volunteers | Offline through women SHGs | Radio publicity, word-of-mouth | Offline through trade union members | Offline through volunteers | Offline through partner network |
| #5: Content moderation | Filter on tone & quality, aim for completeness | Filter on tone & quality, aim for completeness | Filter on tone, quality, & feminist agenda | Filter on tone, quality, & rights-based agenda | Filter on tone, quality, & rights-based agenda | Filter on tone & quality |
| #6: Positioning | Varying, based on different features | Enhance capabilities – health awareness, health services | Rights-based but projected as entertaining and educational | Rights-based | Rights-based | Needs and aspirations |