

Article

An Analysis of Community Mobilization Strategies of a Voice-based Community Media Platform in Rural India

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Abstract

We define community mobilization as offline activities typically required in ICTD initiatives to train users and drive adoption for the sustained use of ICTs within the community. Community mobilization forms an important but under-discussed component of ICTD initiatives. In this article, we present a case study of a voice-based community media platform in rural central India and the experiments it has undergone with multiple community mobilization strategies over a period of five years. We analyze different phases of community mobilization and draw insights related to how technology platforms can be appropriated by specific actors to drive their own agendas, how organizational control can be imposed to prevent undesirable appropriation, yet give communities the flexibility to use the platform according to their needs, and how group structures and hybrid financial-social incentives can be created to build sustainable networks that can be replicated and scaled in a standardized manner. We use the Actor-Network Theory, along with Olson's Theory of Groups and Incentives to explain our observations. Our methods can be generalized and applied by other ICTD initiatives to evaluate their own community mobilization strategies.

Keywords: community mobilization, technology appropriation, incentives, IVR, mobile phones

Community media platforms aim to enable communities to create and share their own media based on their specific needs and contexts, which is believed to lead to community empowerment along four broad pathways (Carpentier, Lie, & Servaes, 2003; Moitra, Das, Vaani, Kumar, & Seth, 2016; Pavarala & Malik, 2007; Rodríguez, 2001). First, participatory content production gives the community media platforms a contextual character that enables people to understand the messages more easily and act on them. Second, as marginalized groups along caste, class, and gender lines find representation on these platforms, these groups become empowered to raise their voices against local power structures. Third, community media platforms promote good governance and accountability by facilitating multistakeholder dialogues. Fourth, these platforms help build cohesive communities by providing community members with a forum in which to articulate shared cultural identities and discuss topics of mutual interest. While such pathways of bringing about developmental impact through community media have been demonstrated by many initiatives, research into the processes of driving adoption of community media platforms among rural and low-literate populations has received much less attention. We term these offline processes of training and guiding users toward the adoption of the platforms as *community mobilization*, and in this article we explain in detail the community mobilization processes

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pioneered in the establishment of a mobile phone-based voice-driven community media service in rural central India. Our findings and framework for analysis are generic and can be useful for ICTD (information and communication technology for development) initiatives, which are intended to be embedded within their user communities for sustained use.

The voice-based community media platform we are researching is called Mobile Vaani (MV) and was established in India by the social enterprise Gram Vaani (GV), with a goal of empowering poor and marginalized communities to create their own local media (Moitra et al., 2016). Technologically, MV operates using Interactive Voice Response (IVR) systems, which obviate the need for users to have a data connection or smartphone. Users can simply place a “missed call” to the MV phone number, and the IVR server disconnects their call and calls them back. The platform therefore remains cost-free for the users. Using phone key-presses to navigate, users can then record voice messages they want to share and they can listen to messages left by others, making the platform suitable for use as an interactive discussion forum, even among low-literacy users. MV started operating at a small scale in 2011 and since then has grown to cover more than 25 districts across the three states of Bihar, Jharkhand, and Madhya Pradesh in India, servicing over 10,000 calls per day from 100,000 unique users monthly, who contribute 400–500 messages daily. Users actively engage on topics such as local news, agriculture, health, career counseling, job postings, discussions on gender empowerment and social norms, and even cultural events and folk songs. All content on the platform is moderated by a team of content reviewers (called content moderators), who listen to all user contributions and determine whether to publish, reject, or edit the contributions.

India’s states of Bihar, Jharkhand, and Madhya Pradesh, which comprise MV’s main areas of operation, are among the most poverty-stricken and low-literate states (Planning Commission, 2011). Citizens there also suffer from inequality ingrained through sociocultural norms such as patriarchy and caste structures, political dynamics, large-scale corruption, misgovernance, and left-wing extremism. The population is predominantly rural and remote, lacking easy access to conventional media platforms such as TV, radio, and newspapers. In such geographies, popularizing MV and driving its adoption required novel community mobilization processes for many reasons. For example, in the absence of other media platforms that could be employed to publicize MV among the target users, a direct interpersonal community awareness approach was the only alternative to inform people about MV, requiring innovation to do this at scale and at a low cost. Further, since MV users were mostly first-time users of any automated information technology service, the platform had to be demonstrated to the people and its services explained in detail to help them understand how such local media platforms could be useful for their community. Toward this, MV developed a low-cost *federated* community structure model of local volunteer clubs.¹ Club members were trained by the MV team to conduct community events, leverage their community understanding to create relevant use cases, and demonstrate impact and, further, to publicize, explain, and evangelize the growth of MV. In this article we describe these processes for technology adoption and provide important insights for ICTD initiatives to be similarly embedded in the community for sustained use.

Our analysis is structured along two fronts. First, we outline multiple iterations of MV’s community mobilization strategy over five years, and to explain our observations we use Actor-Network Theory (ANT; Callon, 1986; Latour, 1993; Law & Hassard, 1999) combined with Olson’s (1965) Theory of Groups and Incentives. We collect data from MV users in the form of stories, using the most significant change technique (Dart & Davies, 2003) and in-depth interviews with the MV team. A key contribution we make is to show that ANT alone is not enough to explain our observations, and Olson’s theory is needed to outline the motivations driving actions of the actors. Second, we relate our observations to other theories of technology and development, including the theories of Technology Appropriation (Avgerou, 2010; Bar, Weber, & Pisani, 2007; Lievrouw, 2006; Orlikowski, 2000), Communitization (Marsden, Maunder, & Parker, 2008), Technology Amplification (Agre, 2002; Toyama, 2015), and Community Participation (Arnstein, 1969). Our contribution is to bring these different theories together in one case study, which highlights their respective strengths and relevant applicability.

1. Federated group structure: *A statewide collection of MV volunteers divided into a number of districtwide small groups known as “clubs,” or “volunteer clubs.” Each of these clubs provide their volunteers with the autonomy to carry out activities specific to their community’s needs while contributing to the collective goals of MV.*

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To situate our work precisely in the context of other research on mobile phone use for development or in the context of mobile communication in developing regions of the Global South, we note that several bodies of research in this domain have studied mobile phones as a generic technology invention that has seen mass adoption and appropriation (Donner, 2007; Sey, 2011); however, our research is grounded specifically in the processes developed to purposively drive technology adoption of Mobile Vaani as a specific example of a mobile-based development initiative. Hence, we engage more deeply with literature on community mobilization and other technology-based development initiatives, especially those implemented in developing countries.

We begin with a discussion of related work in the next section, followed by a description of the two periods of formative growth and stabilization, interleaved with an analysis of each period. We conclude with a discussion of key learnings.

Related Work

We divide our discussion about related work into two sections. First we introduce ANT and Olson's Theory of Groups and Incentives, which we use in our analysis to explain our observations about MV's community mobilization processes. Second, we describe several theories about the interaction between society and technology, which we use in our analysis to situate the MV experience within this broader theoretical landscape.

Theoretical Frameworks

We use ANT (Callon, 1986; Latour, 1993; Law & Hassard, 1999) to study MV's community mobilization strategies because it allows the mapping of longitudinal and cross-sectional emergence of different actors and their interactions, which was a significant dynamic that shaped MV's growth. ANT conceptualizes technologies, people, and institutions as interrelated nodes embedded in constantly changing sociotechnical networks and assumes no difference between human and nonhuman elements, labelling both as actors. Over different phases of MV's growth, we find that MV viewed its volunteers differently, initially as *mediators*² who gave their own meaning to the platform, but later as *intermediaries*³ who were more consistent in their engagement with the platform.

While an analysis through ANT helps us list the actors and document their actions, ANT is limited in its ability to explain the reasons for these actions. To address this limitation, we use Olson's (1965) concept of selective incentives, which includes *monetary*,⁴ *social*,⁵ *solidarity*,⁶ and *purposive*⁷ incentives. This helps us explain the motivations and dissatisfactions of various actors, which at times led to network formation and at other times to network fragmentation. We found that a synergistic mix of these incentives helped achieve the *black box*⁸ model described in ANT for easy replication of the community media platform, but during earlier stages of MV's growth, a misalignment of these incentives led to network fragmentation.

Olson (1965), James (1951), and Simmel (1950) outline effective grouping structures that can evoke these

2. Mediators: Actors who transform, distort and modify the meaning of elements they are supposed to carry and influence the network in unpredictable ways (Latour, 1987, 2005).

3. Intermediaries: Actors who have predictable outputs on the basis of their inputs and hence form reliable ways of forming relationships among actors (Latour, 1987, 2005).

4. Monetary incentives: Tangible monetary rewards delivered privately for facilitating collective action, which in this case refers to community mobilization (Clark & Wilson, 1961; Marwell & Oliver, 1993; Olson, 1965; Wilson, 1973).

5. Social incentives: Intangible social rewards and social sanctions such as identity, social status, social pressure, social acceptance and social network of benefit (Clark & Wilson, 1961; Marwell & Oliver, 1993; Olson, 1965; Wilson, 1973).

6. Solidarity incentives: Rewards for collective participation that are socially derived and created out of the act of association (Clark & Wilson, 1961; Marwell & Oliver, 1993; Olson, 1965; Wilson, 1973).

7. Purposive incentive: Invokes the moral feeling of self-satisfaction that comes from doing the right thing, which can be interpreted as serving a cause or principle or social good (Clark & Wilson, 1961; Marwell & Oliver, 1993; Olson, 1965; Wilson, 1973).

8. Black box: A technical term for a device, system or object when it is viewed in terms of its input, output and transfer characteristics without any knowledge required of its internal workings, which are full of complexities (Latour, 1987, 2005).

incentives to maximize outputs from individual participants. They argue that large groups can lead to a loss of ownership among members because some members indulge in free-rider behavior and, therefore, small groups, or federations of small groups representing the large group, can be more effective in meeting collective goals. These theories of group structures help us explain the reasons behind the eventual success of MV's federated structure of local volunteer groups, which cannot be explained by ANT alone.

Appropriation, Amplification, and Communitization

Highlighting the heterogeneity of underprivileged community groups, the Theory of Citizen Participation claims that highly participatory processes run the risk of domination by relatively powerful community groups that promote their agendas over that of marginalized groups (Arnstein, 1969). Building on this concept, the theories of technology appropriation (Bar et al., 2007; Orlikowski, 2000) argue that, as technologies function within a social system, the existing power structures exert control over the technology appropriation process. Hence, appropriation should be viewed from a social perspective, where political dynamics influence who uses the technology and in what way (Avgerou, 2010; Lievrouw, 2006).

Such an appropriation has been noticed in the ICTD context as well. For example, Veeraraghavan (2013) studied the management information system put in place for better monitoring and greater transparency in India's employment guarantee program and found that, rather than promoting transparency, the technology was exploited by lower-level administrative officials, who developed new forms of corruption, and higher administrative officials, who used it as a financial accounting tool to track expenses. Similarly, CGNet Swara was initiated as an IVR-based citizens' media platform for the marginalized tribal communities of Chhatisgarh, but was appropriated by local Hindi-speaking activists and NGO workers, who then acted as intermediaries to represent the concerns of the original disadvantaged target group and shaped the platform as a grievance-reporting forum (Mudliar, Donner, & Thies, 2013). These experiences align with the Amplification Theory (Agre, 2002; Toyama, 2015), which argues that technology helps amplify the intention of the people using it and, therefore, politically powerful people will tend to align the technology toward their intent. Avgerou (2010) similarly brings attention to the social embeddedness of information and communication technologies (ICTs) in various organizational settings and outlines how ICTs can lead to uneven development when conflicts of interest and power struggles among ICT users enable powerful users to appropriate technology to their advantage. In our analysis, we similarly find that during the formative period of MV's growth, the platform was appropriated by local activists, who used MV predominantly to highlight issues on which they were working.

A potential approach to countering these risks and challenges as proposed by Marsden et al. (2008) is through a process of *communitization* of technology, where different actors from within the community conceptualize various uses of the technology and help in sustaining it. Additionally, in-person training and demonstration sessions are important to help people successfully use technology platforms (Koradia, Aggarwal, Seth, & Luthra, 2013) and specifically facilitate participation of marginalized groups. Further, when such offline activities are led by local stakeholders, people are more likely to get involved and commit to technology adoption, as reported by Madon, Reinhard, Roode, & Walsham (2009), who studied digital inclusion projects in developing countries where vigorous grassroots campaigning around telecenter projects mobilized communities to accept the project as their own. In another study, Rao (2008) described how local champions helped mobilize and make other community members aware of telecenters' activities.

Several ICTD initiatives have followed similar principles, although their published literature has not detailed the community mobilization processes of the initiatives. Some of these initiatives that also use IVR systems include Avaaj Otalo, which enables small-scale farmers in Gujarat to access timely and relevant agricultural advice (Patel, Chittamuru, Jain, Dave, & Parikh, 2010); CGNet Swara, which promotes citizen-driven accountability and governance in tribal regions of Chhatisgarh (Marathe, O'Neill, Pain, & Thies, 2015; Mudliar et al., 2013); and Mobile Kunji, which augments an illustrated text-based communication aid for community health workers to improve family health outcomes in the state of Bihar (Chamberlain, 2014). In our analysis, we refer to the Theory of Communitization and other community-mobilization strategies to discuss how MV's local volunteers were instrumental in embedding the platform in their communities and shape its use to address relevant local needs, while avoiding appropriation by a few.

Research Methodology

We use a qualitative approach to analyze MV's community mobilization strategies. Data were collected from 2011–2016 through participant observations by two of the authors, who are members of the Gram Vaani (GV) team, in-depth interviews with five other members of the organization, and significant change stories from 98 MV users. These stories were collected using a participatory technique known as “most significant change” (Dart & Davies, 2003), which enables individual community members to share their experiences of association with the platform and the changes in their lives they realized from their participation. In this method, stories are read aloud during focused group discussions among the community members and key stakeholder groups. The participants then deliberate on the outcomes mentioned in the stories to systematically voice their ideas and develop consensus about the outcomes they most value. These MV users were men and women aged 15–60. Among them, the majority were affiliated with lower-caste and tribal categories and came from an economically poor background.

Longitudinal Analysis

GV's original goal was to build a broad community media platform that could solve developmental problems by creating relevant information flows, including knowledge sharing within communities, connecting those communities with other stakeholders, and doing this in a financially sustainable manner that would allow for rapid scaling. These objectives guided the changes in MV's content and community mobilization strategies, for example, to strive to make the platform broad-based and relevant to diverse community groups, rather than to remain of interest to a small niche. Or they could help GV build a model black box that could be replicated in a standardized manner, or nurture ground-up processes that could help communities acquire ownership of the media platform.

While pursuing these goals, constant iterations occurred in MV's community mobilization strategies. The iteration process lent itself naturally to a longitudinal approach for analysis of the different strategies put in place by GV at different times. We identified four phases for the analysis, each of which was distinct from the others in terms of the actors involved and their interactions with each other. Figure 1 shows the periods of the four phases.

The actors in each phase formed a complex of internalities like GV's organizational structure, staffing, and incentive policy, juxtaposed against externalities like sociocultural norms, varying motivations of users, and the agenda of partner civil society organizations. The interplay of these actors directly influenced the activity (call volumes) and stability in each phase. For our analysis, we discuss the first two phases together as part of the formative period, and discuss the third and fourth phases together as part of the stabilization period. Supplementary material⁹ provides additional information about these phases. The two periods and their corresponding observations and analysis are presented next.

Formative Years: Learnings on Technology Appropriation

Phase I: Seeding

MV began its operations as a small pilot (known as Jharkhand Mobile Vaani, or JMV) in July 2011 in India's Ranchi district of Jharkhand. It was an experiment in building an alternate community media platform on IVR that did not require the licenses usually required to operate FM-based broadcast community radio stations (Koradia, Balachandran, Dadheech, Shivam, & Seth, 2012). With the intention of building such a platform for rural and low-income populations, GV collaborated with rights-based civil society organizations (CSOs) to advocate for MV use among the CSO community groups in rural areas of Ranchi. Three employees of these CSOs were excited about the novel technology. They became the first set of community mobilizers and began outreach to community groups to advocate the use of the platform. The employees carried out these activities voluntarily, along with their regular work, and while GV did not prescribe how the platform should be used, the community mobilizers saw a direct connection between their CSO work and how they could use MV to enhance the CSOs' mission as their primary source of employment.

9. <https://www.dropbox.com/s/iu11qfulncuj94/Moitra-ITID%20Supplementary%20Material.pdf?dl=0>

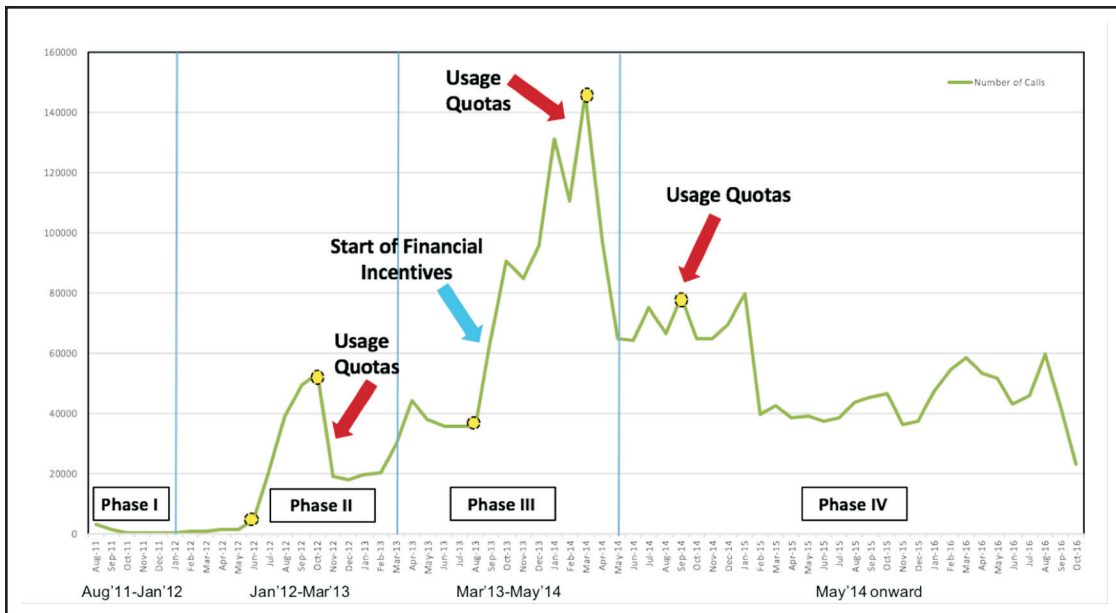


Figure 1. Monthly call volumes on MV.

Since the mobilizers were passionate about rights-based issues and deeply involved in helping community members resolve their problems with government welfare programs, the mobilizers employed MV as a grievance redress helpline for programs such as the Employment Guarantee Act and the distribution of subsidized food grains to the poor. The mobilizers encouraged users to record their grievances on MV. The platform was then used to make government officials listen to some of these grievances to apply pressure on them to resolve the problems (Chakraborty, Ahmad, & Seth, 2017).

Community members soon began to view the platform as a vehicle to air their grievances, and the community mobilizers began to measure the success of their activities based on the volume of grievances collected. However, since many grievances could not be pursued because of the CSOs' limited bandwidth, in our field visits and interviews we began to notice significant dissatisfaction among the communities toward the credibility of the platform. An early project manager with GV who attended the mobilization meetings reported that positioning the novel technology platform as a grievance redress helpline was a quick and easy way to encourage people to call, given the extremely poor state of welfare benefits' delivery in Jharkhand, but this also set unrealistic expectations of the platform in the minds of the participating users. GV staff tried to modify expectations by training community mobilizers to position the platform as a broad community media platform, not as a grievance redress helpline, but were unsuccessful in urging the CSO staffs to make the transition.

Call volumes and user retention during this phase remained low and recorded no dramatic increases in participation. In September 2011 the service had to be temporarily suspended due to some technology limitations and GV's inability to finance the toll-free number. The platform was reinitiated in January 2012, having obtained a loan to finance the experiment.

Phase II: Emerging Virality

With the relaunch of the platform in early 2012, designed to avoid the problems of the first phase, GV recruited 10 volunteer mobilizers with diverse backgrounds who were not formally associated with any of the CSOs. The intention was to recruit mobilizers directly from target community members, who would make the platform more deeply grounded in broader community needs and bring user and content diversity to the platform. Training workshops for the mobilizers familiarized them with the perspective of community media and encouraged them to raise a variety of topics for discussion on the platform. Consistent mobilization activities helped bring users back to the platform, which increased usage.

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The leap in participation happened at the time of a school teachers' strike in Jharkhand, when teachers and activists from across the state used the platform for several months to coordinate activities and share strike updates. The protest emerged against the Jharkhand state's policy to only employ contractual teachers (or parateachers) without providing a roadmap to convert the contractual appointments to permanent employment positions. A few teachers began to use the MV platform to share their views, and this soon spread virally. MV saw a large spike in the number of calls as many more teachers began to use the platform to protest and to network with scattered groups of parateachers across the state. The platform facilitated easy and quick communication, which disseminated the parateachers' messages to many stakeholder groups such as students, parents, and government officials and initiated a series of reactions and an exchange of perspectives (Moitra et al., 2016). Most messages were contributed from locations where MV's trained mobilizers were not present, indicating that a viral uptake of the platform had occurred. In a similar way several other collective action initiatives—such as the Right to Food, local governance, forced land-displacement, employment guarantee—also used the platform extensively.

While such episodes of emerging virality expanded the platform's base, the nature of the content still largely remained activism-oriented, because activists and protestors formed the bulk of the user base. The direct community mobilization efforts seem not to have contributed significantly to diversifying the topics discussed on the platform nor enabled on-boarding users in a predictable and controlled manner. GV staff tried to raise an equity investment to grow the platform, but an inability to present a controllable, predictable operational plan to acquire and retain users was a sign that the MV model was not yet ready for scaling up.

Analysis

In the first phase, the CSO functionaries clearly emerged as the most influential actors. Along with the significant social capital and political power they held within the communities due to their work, the social incentives of their association with a novel technology platform added to their social status. As GV had little control over the actors' activities, thus suiting their self-interest, the actors appropriated the platform as a grievance redress helpline (Avgerou, 2010; Callon, 1986). However, their inability to manage users' expectations of grievance resolution led the users to lose trust in the platform.

In the second phase, GV's strategy of recruiting and training mobilizers from the community led to the emergence of the first set of true intermediaries. However, the intermediaries were overtaken by the activists and parateachers, who appropriated the platform for their protests, indicating that they acted more as mediators. While both intermediaries and mediators are essentially mobilizers (who form relationships between actors), ANT differentiates between them, with intermediaries having predictable outputs and operating according to a set of guidelines, and mediators having the ability to distort the meanings of the material they carry (Cresswell, Worth & Sheikh, 2010). The mediators, fueled by solidarity and purposive incentives, were outside GV's control, and the platform was unable to move away from an activism-oriented character to a broad community media platform. Such a takeover by mediators over intermediaries is consistent with ANT's assumption: that the social world consists of few intermediaries and many mediators, which often leads to unpredictable outputs (Cresswell et al., 2010; McLean & Hassard, 2004).

While ANT helped us document the actors and their actions within these phases, ANT was not satisfactory in explaining the actors' motivations. Hence, we relied on Olson's Theory of Incentives to qualify our observations. We also related our observations to the theories of Community Participation (Arnstein, 1969) and Technology Appropriation (Bar et al., 2007; Orlikowski, 2000), such that when the MV platform was left entirely in the hands of the users, it was appropriated by powerful actors (CSO employees in Phase I; community activists in Phase II), who shaped its use to suit their needs (Avgerou, 2010; Lievrouw, 2006). The Amplification Theory points to the same direction: that powerful actors are able to advance their agenda by being faster to recognize the potential of the technology to do so (Toyama, 2015).

Stabilization Period: Learnings on Group Dynamics

Phase III: Flat Volunteer Structures

With the availability of new funds in March 2013, GV searched for ways to impose greater control over how the platform should be used. The first step was to impose greater editorial control on content publication by

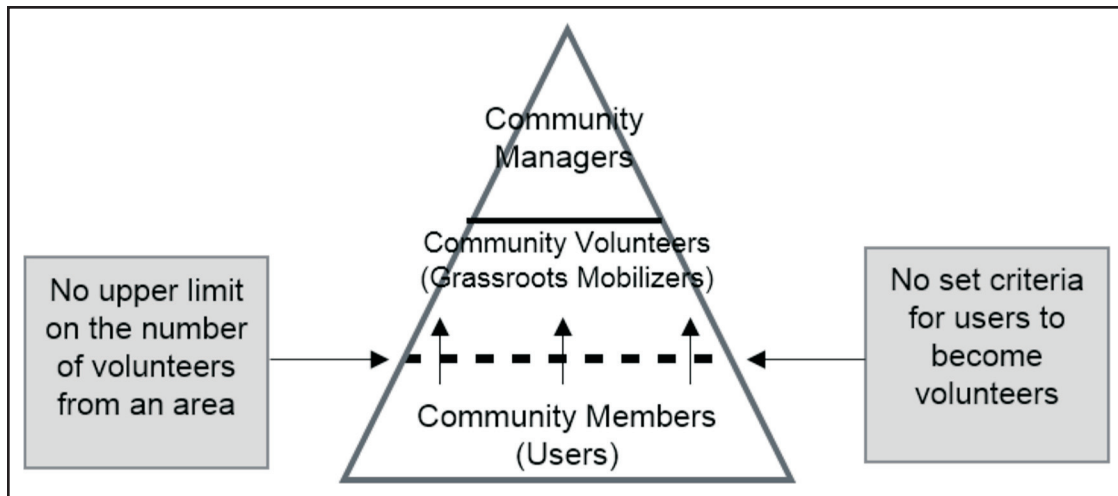


Figure 2. Three-tier community mobilization structure.

giving less exposure to grievances and activism-related content and more exposure to social and livelihood-based themes such as agriculture, gender empowerment, and cultural activities. With a rapid increase of users on the platform who had no prior conditioning to an activist-oriented perception, the content mix grew highly diversified and the percentage of grievances fell from 55% in 2012 to 18% of the total content on the platform by 2015.

The second effort was to strengthen the intermediary role of the community mobilizers by investing in more training and in recruiting new volunteers across a larger geographical area from diverse community groups such as farmers, health workers, and social workers. GV then appointed a full-time staff of three community managers to recruit and train these volunteers as community mobilizers. These mobilizers were trained to conduct workshops with village groups to familiarize them with the concept of community media, how to interview people on contemporary topics of relevance to the community, and how to best convey grievances to government officials. Figure 2 shows the organizational structure put in place in this phase. At peak, around 120 volunteers participated in the MV network.

Financial incentives for the volunteers were also formally introduced for the first time. The intention was to compensate them for out-of-pocket expenses incurred during mobilization activities. The incentives were capped at a maximum of US\$20 per volunteer per month, and calculated based on self-reporting of mobilization activities conducted by them. A system was also set up to enable volunteers to refer new users by providing phone numbers of the new users through an IVR based data entry process. This was also intended to help track new user acquisitions in a measurable way, rather than rely entirely on self-reporting by the volunteers.

The large number of volunteers became hard to manage for the community managers, and led to several malpractices and high volunteer attrition and disputes. First, the IVR-based referral process to add new users, which started with a very high recall of 25% of the referred users calling in to MV, saw significant corruption leading to a drop in recall to hardly 5% (Moitra et al., 2016). This happened because some volunteers started blindly referring new users by obtaining phone numbers of unknown people from mobile recharge shops and other local sources. The referral system was therefore discontinued, but it led to anger and resentment of honest volunteers who were making legitimate referrals, and (importantly) had begun to rely on the additional income for their livelihoods.

Second, GV's community managers were not able to handle caste- and class-based conflicts that came up in the volunteer network. Conflicts would often arise when higher caste volunteers snubbed volunteers from marginalized groups by making claims that the content contributed by them and from their areas was of a poor quality, or that not enough user acquisitions happened from their areas. This led to significant attrition of volunteers in certain pockets.

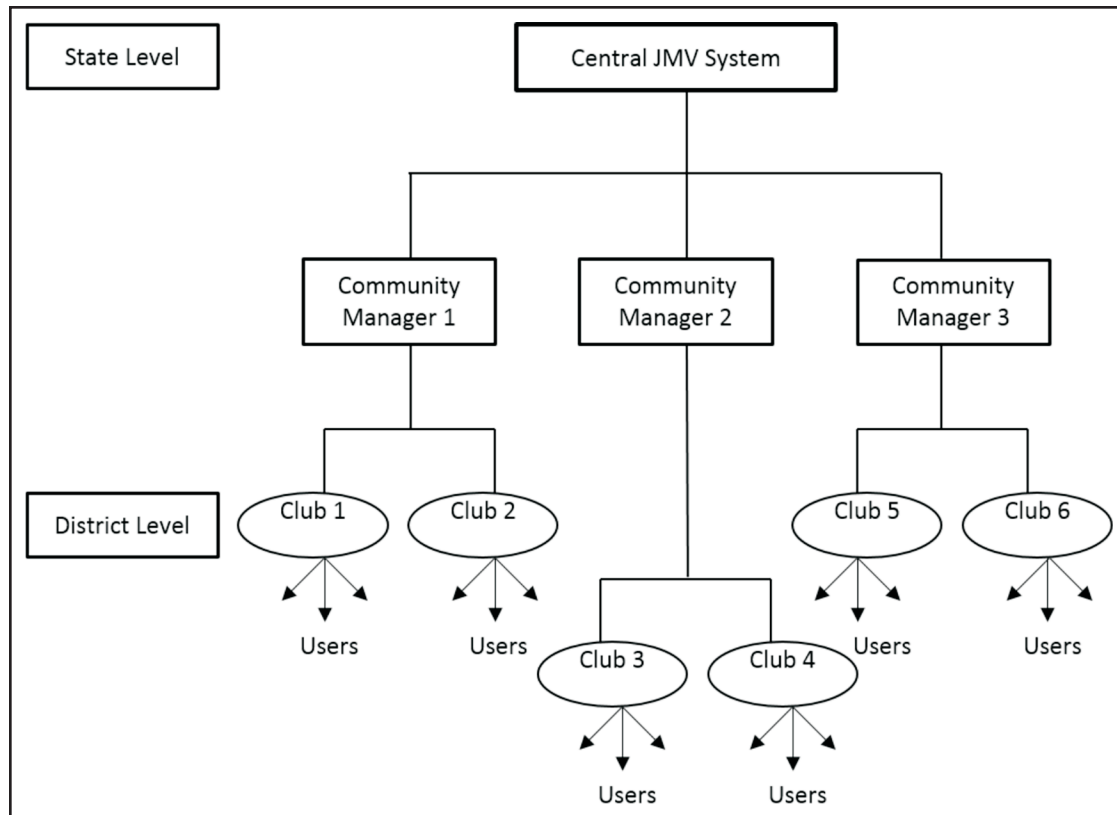


Figure 3. Representation of district level clubs.

Third, the calculation of financial incentives for the volunteers remained entirely based on self-reporting, especially after the referral policy was scrapped to track new user additions. Instances of malpractice began to get noticed by senior GV members where volunteers may not be performing well yet continued to be recommended for incentives because of a fear that letting go of some volunteers could trigger a backlash from others.

By now it was clear to the GV team that even a technology-driven pathway to development required a significant investment in human resources to supplement the technology, but managing a large team of volunteers, dispersed in remote pockets and motivated by different incentives, was a far more complex challenge than developing the technology itself! Volunteer selection criteria, internal accountability through measurable indicators, and group dynamics resilient to social conflicts were all important aspects that needed fixing.

Phase IV: Hyper-local Order

In May 2014, GV evolved a federated model to counter these challenges. GV split the state-level MV platform into multiple smaller groups, one in each district, with each group managed collectively by its volunteers. These groups were termed volunteer clubs and given a unique identity¹⁰ with a unique phone number and IVR channel. The clubs largely carried local content and connected to the wider statewide channel that carried aggregate content pulled in from different clubs. Thus, as portrayed in Figure 3, MV microsubsystems emerged that were independent yet connected to the larger network and managed in a standardized manner.

Figure 4 shows how the original three-tier organizational structure of the previous phase became a four-tier

10. Each club had a different name and phone number, indicating that it was a separate entity from the statewide MV, yet was its subpart.

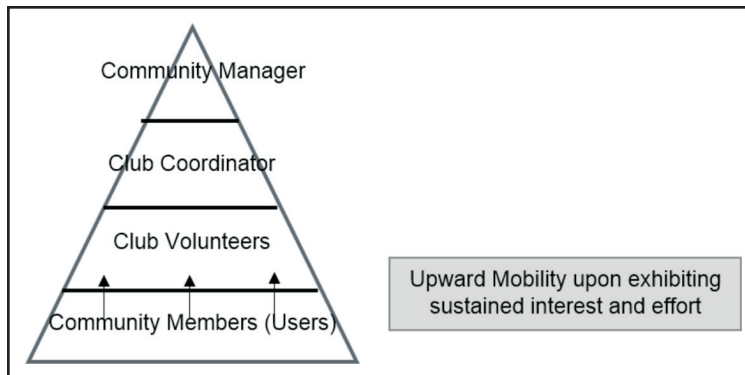


Figure 4. Four-tier club structure.

structure: Each club was led by a club coordinator elected democratically by the club volunteers, and the club coordinators in turn interfaced with the community managers to give updates and get guidance to improve their club's performance.

This new structure facilitated efficient management and monitoring of the clubs. The separate phone numbers for each club helped to accurately track the growth of new callers and regular callers from each location. This

further helped build measurable financial incentive policies, based on the quality of community mobilization done by each club, as opposed to relying on self-reported data from the volunteers, which had occasionally led to disputes earlier. The financial incentive had three components: (1) a group incentive pegged to overall call volumes in the club and divided equally among the club volunteers, (2) an individual incentive based on the number of contributions and quality of content contributed by a volunteer, and (3) a self-reported individual incentive based on the number of community workshops conducted by a volunteer. The group incentives, and an overall democratic approach to club functioning to make decisions and resolve problems locally, helped create a strong working culture and enabled the volunteers to hold each other accountable for their tasks. Disputes and volunteer attrition reduced significantly, and without an increase in staff and volunteer costs, the new model became easier to manage and straightforward to replicate.

The volunteer selection process was also made more rigorous. Interested community members had to first demonstrate a regular and committed effort for at least three months before they could graduate to the position of volunteer and join a club.

By 2016 six community managers were looking after approximately 25 clubs that cumulatively had approximately 300 volunteers across Jharkhand, Bihar, and Madhya Pradesh. In the next section we present an analysis of the club model and explain why this mix of a federated structure with group-based incentives and accountability has revealed the elusive black box for scaling and replicating MV. Before that, however, we present some details of fine tuning done in the club structure and various localized use cases that emerged over time.

Variations in club performance. In April 2015, about a year after initiating the local club model, GV studied the cost per user acquisition¹¹ in each club as a metric to evaluate club performance. Figure 5 shows the cost distribution, which is heterogeneous.

Analysis of the clubs to explain this variation brought out a key insight about the importance of the socio-economic background of the volunteers. Club volunteers with low user-acquisition costs typically had a stable source of income, so their motivation to engage with MV was not influenced by the financial incentives alone, but with getting an opportunity to work toward community development and build their professional skills. They also had the necessary time to devote to community mobilization and other voluntary activities.

On the other hand, financial incentives were a significant factor in the commitment of volunteers who belonged to clubs with moderate user-acquisition costs. These volunteers typically came from a lower economic background and had to work several part-time jobs in the absence of full-time employment opportunities in their villages. Hence, they found it difficult to spare time consistently for community mobilization activities. With more measurable indicators now used to calculate the financial incentives and their average

11. Calculated as the cost of monetary incentives given to the volunteers, salaries for field staff, expenses of training workshops, etc., amortized over the cumulative number of club users.

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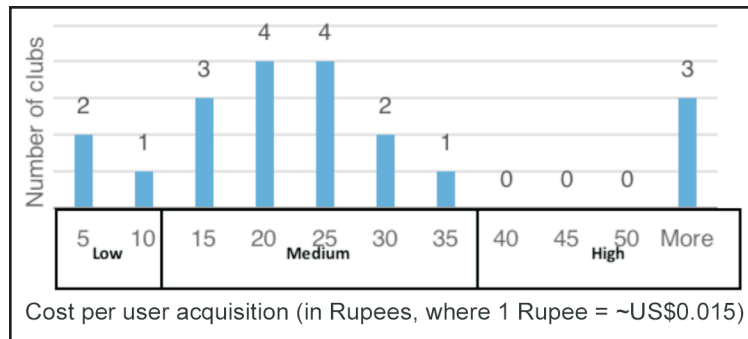


Figure 5. Cost per user acquisition in Indian rupees.

stipend amounts reduced from the previous phase, these volunteers often expressed discontent with the new policy about the size of the financial incentives.

The clubs with the highest user-acquisition costs were those that were entirely managed by women volunteers. In their stories,¹² women volunteers attributed their inability to mobilize large numbers of people to the patriarchal, sociocultural barriers and prejudices that prevented

them from stepping out of their houses alone and talking to unknown men. Hence, the women volunteers worked hard to recruit women in and around their village, but not many women had easy access to mobile phones and found it hard to participate regularly on the platform.

Additionally, MV clubs in areas influenced by left-wing extremism added another dimension to mobilization challenges. Throughout our data collection period, curfews were a common occurrence in Jharkhand because of the Naxalite insurgency (left-wing extremism; Dungdung, 2013). Our observations and verbal exchanges with community members living in these regions highlighted their unwillingness to engage with MV; they feared for their lives and, hence, took refuge in silence.

It was ironic that communities that could benefit most from community media platforms—such as women, those in Naxal areas, groups marginalized by caste or class—were more expensive to reach and mobilize due to existing social inequities, cultural dynamics, and local politics. GV acknowledged that being able to address this dichotomy was heavily influenced by the source of funds (Moitra et al., 2016): whether it was an investment (which tended to look at low-hanging fruit and gravitated toward easier-to-mobilize users) or grants (which tended to shift focus toward less-empowered user groups). Balancing the two sources of financing, GV developed a “model volunteer” profile in 2016, whose purpose was to recruit volunteers who had a steady source of income, but also wanted to work for the social development of poor communities and who were socioculturally open to reaching out to marginalized groups. This is the model currently in use.

Discovery of locally relevant use cases. An important development with the club-based localization overhaul was an emerging use of the platform for sharing hyperlocal news. In the absence of other local media, and given the almost-instantaneous publication of breaking news on the platform, this became a “killer app” and was greatly appreciated by the users. The GV team built on this to train the volunteers in reporting the news and to connect them with local stakeholders such as the government’s public relations office or the police station to establish a steady source of local news.

Likewise, depending on the dominant mix of users in each club, the clubs developed their own content programming models. In one club popular among farmers, the volunteers arranged a weekly Q&A program with the agricultural cooperative in the area. Another club, with a large student population, initiated career-counseling programs. In an industrial hub, club volunteers built a network to seek information about job openings that they recorded and played on the club.

Moreover, driven by a continuous quest to seek institutional accountability, especially regarding public welfare programs, almost all the clubs built strong processes for grievance redress (Chakraborty et al., 2017). In a few clubs, volunteers collect grievances reported on the platform and take them to local government officials during open house sessions. They interview the officials and press them for a commitment to resolve the

12. We used the most significant change technique for data collection, which enables individual community members to share their experiences of association with the platform and the changes in their lives they realized from their participation in a story format, as discussed in the methodology section.

grievances, which are then reported in a weekly program called the *Janta Darbar* (People's Court). Other clubs regularly forward grievances to government officials through the IVR platform, which has been effective in escalating pending issues before higher government officials. Yet another club initiative is the *Jan Shakti Abhiyan* (Power to the People Campaign), where petitions on community-level grievances are created on the IVR platform; users can register their endorsement for a petition by pressing a key, following which the club drafts a letter citing the number of signatories and transcriptions of some user experiences, then sends the letter to the administrative authorities for action.

These initiatives provide strong evidence of what Marsden et al. (2008) refer to as *communitization of technology*, which explains how the adoption of technology platforms by local users is aided by key advanced technology users who understand the local needs and who can suitably build relevant use cases. This communitization helped strike a balance between the organizational control imposed by GV in broadening the scope of content on the community media platform and its appropriation for specific local needs. Currently, about 50% of the clubs' content is of a hyperlocal nature attuned to the local needs, 30% is socially relevant programming pushed by GV on a sponsored basis for revenue, and 20% is entertainment and culturally significant content. Our interviews with community members have corroborated the significance of locally relevant content and processes to support local content generation.

Analysis

The key distinguishing aspect of the phases III and IV from phases I and II was the greater organizational control imposed by GV on how the platform was used, while allowing space for local communities to create their own use cases. Using ANT terminology, the volunteers who were the key actors in these phases were trained as intermediaries, to bring standardization in their communication and mobilization activities. Standard operating processes and training modules helped build *inscriptions*¹³ for the volunteers to follow. Supervision by the community managers, directly in Phase III and via the club coordinators in Phase IV, helped establish *Obligatory Points of Passage*¹⁴ (OPP) to review the volunteer activities. Similarly, editorial processes to govern the content mix added another layer of OPP to help GV avoid uncontrolled appropriation of the platform as had happened in the earlier phases. These OPP were flexible and allowed the volunteers to discover and instantiate relevant use cases and to successfully enable communitization of the platform by the volunteers in many locations (Marsden et al., 2008).

We found ANT limiting in explaining volunteers' motivations in Phase III and in modeling the role that the club structure played to bring accountability among the volunteers, avoid disputes, and ease the overall management of the community mobilization activities. We therefore use Olson's (1965) Theory of Groups and Incentives to understand volunteer motivations and other aspects listed above.

Olson has discussed the susceptibility of large groups to free-rider effects, which seems to have been the cause of several disputes in the flat volunteer structure of Phase III. The large number of volunteers made it difficult for the community managers to monitor and engage with each volunteer individually. Because financial incentives were not entirely automated or easily auditable, hard-working volunteers were disincentivized when they saw volunteers paid equally for less effort, which led to an unhealthy divisive dynamic among the volunteers. This in turn was manifested in an expression of class- and caste-based power effects (see Footnote 9 for more information). The club structure of Phase IV, however, reduced the group size to a manageable number, and the democratic setup helped make the volunteers accountable to each other. GV's community managers ensured that club coordinators held monthly meetings with the volunteers, reported on club's progress for calculation of financial incentives, and sought guidance on local club activities, grievance redress, and other initiatives.

The group-based monetary incentive component ensured that the club volunteers collectively acknowledged its progress and reflected on it. This led the volunteers to experience solidarity incentives. The

13. Inscriptions: *Also known as immutable mobiles, these are artefacts such as documents, materials, etc. that help in disseminating standardized information flows within networks with the objective of stabilizing networks (Latour, 1987, 2005).*

14. Obligatory Points of Passage: *Critical network channels often designed by primary actors to ensure communication passes through their domain (Latour, 1987, 2005).*

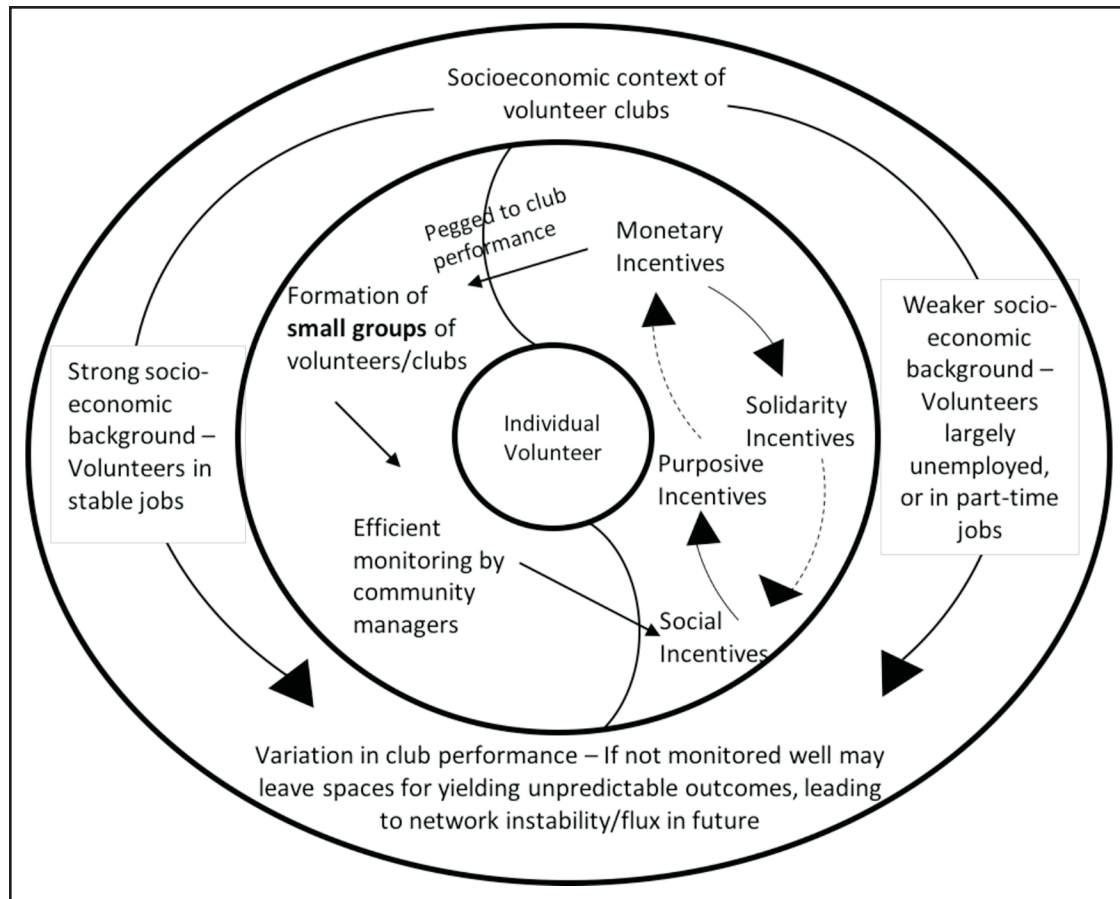


Figure 6. Representation of micro and macro ecosystems for Phase IV.

volunteers' association with MV further helped them realize social incentives from the community recognition they received, opportunities for professional development, job references, etc. The localization of clubs instilled a strong feeling of ownership, which strengthened purposive incentives realized from serving their local communities. As illustrated in Figure 6, mutual reinforcement of these incentives made the clubs stable, and the federal structure helped make management hierarchical and checked the free-rider effects. Footnotes 4, 5, 6, and 7 within the related work section share Olson's vocabulary of different kinds of incentives to explain group performance.

We also noted that organizational controls over volunteer groups and mutual accountability among themselves prevented undesirable appropriation of MV by power holders within the community, which promoted its communitization (Marsden et al., 2008) among diverse community groups and amplification of their action (Toyama, 2015).

The standard operating processes, developed through continuous fine tuning, led to the black box for community mobilization that GV had been searching for (Braa & Hedberg, 2002; Cresswell et al., 2010; Hanseth, Monteiro, & Hatling, 1996). The black box was readily replicated across 25 clubs in 2016, helping GV retain organizational control over the volunteers, yet giving the volunteers flexibility to customize local operations according to their context.

The mixed incentive model explained above can be related to other literature on hybrid markets that combine social and monetary incentives (Ashraf, Bandiera, & Jack, 2014; Singh, Negin, Otim, Orach, & Cumming, 2015). These studies have shown that hybrid markets behave more like monetary markets because they skew

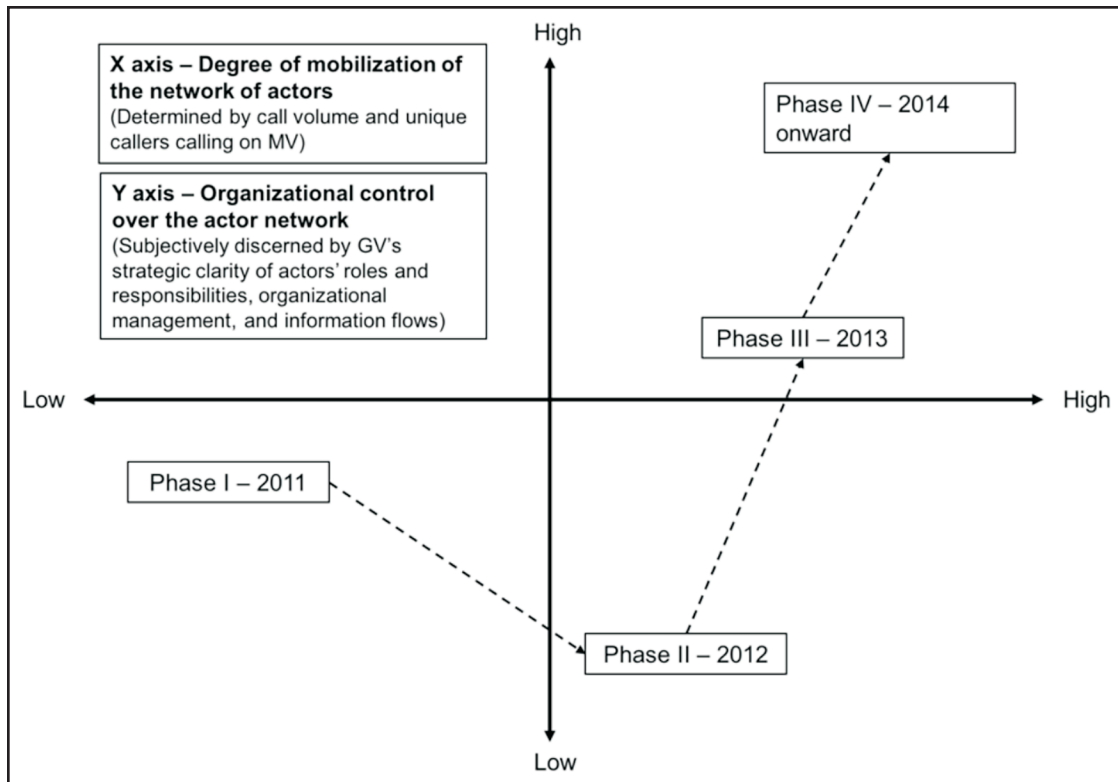


Figure 7. MV community mobilization journey across phases.

the volunteers' priorities toward performing the incentivized tasks at the expense of other crucial tasks. Disputes that surfaced in Phase III, when volunteers began to attach importance to monetary incentives, can possibly be attributed to this insight. However, the group incentive model in Phase IV challenged this notion that mixed markets behave more like monetary markets, and did not lead to dilution of the importance of social incentives. We feel that the strength of group-based incentive models in balancing monetary incentives and social incentives is an important insight that should be tested further by other ICTD initiatives.

Overarching Lessons for ICTD Initiatives

There are several lessons that can be gained from MV's community mobilization history. First, we find that without a strategy to purposely impose organizational control on technology-based network platforms, the platforms can be easily appropriated by local stakeholders who are more technologically savvy or socially powerful than other users (Avgerou, 2010; Lievrouw, 2006; Toyama, 2015). Imposing organizational control, however, comes at the cost of localization and flexibility. The second lesson we find is that such network platforms require strategies to embed them within the community so the platform use can be shaped based on local needs (Marsden et al., 2008). This embedding interestingly requires a similar set of technologically advanced or socially powerful people who can appropriate the platform for their own agenda, but when checks and balances are built into the standardized processes, those checks and balances can prevent undesirable appropriation. Instead, they enable people to shape use of the platform in contextually relevant ways for their communities. The third lesson is a consequence of the demonstration of the federated model of smaller democratic groups, where we showed that different types of incentives (monetary, social, purposive, solidarity) can be made to intertwine to build stable structures (Olson, 1965).

The final community mobilization model of local clubs provided GV with the long-sought black box that

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struck the right balance between standardization and flexibility, and between centralized organizational control and decentralized democratic setups, to enable quick replication for scaling. The federated structure of local groups—which were highly coordinated internally, while also being closely aligned with the overall organizational goals—demonstrated a significant degree of *irreversibility*, that is, the network's inability to go back to previous unstable iterations. The structure reflects the final model as having reached a stable state. Other studies (Braa & Hedberg, 2002; Cresswell et al., 2010; Hanseth et al., 1996) have also shown that if network-building processes are localized, flexible, and bottom-up, the networks thus created possess a greater chance of being stable and replicable.

Figure 7 adapts Law and Callon's (1992) network analysis model to capture the MV community mobilization journey over its four phases. The X axis represents the degree of mobilization of the community that uses MV. The Y axis represents organizational control structures over the network. The figure portrays changes in both dimensions, transitioning from a low degree of mobilization and lack of organizational control in the first phase to, eventually, a higher degree of mobilization and more organic-decentralized organizational control over the network.

The historical perspective as captured in Figure 7, combined with the mutually reinforcing incentive structure among actors as shown in Figure 6, are useful examples of frameworks that can be used by other ICTD initiatives to analyze their work. This allows them to guard against undesirable technology appropriation, understand the incentives of various actors, identify low-cost resources to embed technologies within communities, and strive toward building black boxes that can be easily replicated for scaling, yet allow for customization and alignment of different stakeholders' incentives.

Conclusion

Through a longitudinal analysis of a variety of community mobilization strategies put in place by a voice-based community media network, we draw insights that can be useful to ICTD practitioners looking to embed innovations and ICTs within communities. We showed that an absence of organizational control can lead to technology platforms being appropriated in undesirable ways that restrict their applicability. Imposing organizational control can, however, limit communities from discovering and using the platform in ways of relevance to them. We showed that federated group structures created through community representation and having a mix of monetary and social incentives can not only enable flexibility of platform use, but lead to structures that are robust and sustainable to ensure continued use and appropriate relevance of the platform for the community. We feel that analyzing other ICTD initiatives with a similar lens can lead to the formation of strong theories for community mobilization models. ■

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