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

Abstract

We define *community mobilization* as offline activities typically required in ICTD initiatives to train users and drive adoption for a sustained usage of the ICTs within the community. It forms an important but under-discussed component of ICTD initiatives. In this paper, we present the case-study of a voice-based community media platform in rural central India, which experimented with multiple community mobilization strategies over a period of five years. Taking a longitudinal view, we analyze different phases of community mobilization and draw out insights related to how technology platforms can get appropriated by specific actors to drive their own agenda, 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 method to develop a framework which can check whether or not the incentives of various stakeholders are aligned with each other, can be readily applied by other ICTD initiatives to evaluate their own community mobilization strategies.

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

Introduction

Community media platforms aim to enable communities to create and share their own media based on their specific needs and context, which is believed to lead to community empowerment along four broad pathways (Rodríguez, 2001; Carpentier, et al., 2003; Pavarala and Malik, 2007; Author et al., 2016). First, participatory content production gives the community media platforms a contextual character that enables people to understand the

messages more easily, and act upon them. Second, as marginalized groups along caste, class and gender lines find representation on these platforms, they become empowered to raise their voices against local power structures. Third, they promote good governance and accountability by facilitating multi-stakeholder dialogues on their platforms. Fourth, they help in building cohesive communities by providing community members with a forum to articulate shared cultural identities and discuss topics of mutual interest. While such impact pathways of development 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 towards the adoption of the platforms as *community mobilization*, and in this paper we explain in detail the community mobilization processes pioneered in the setting up of a mobile phone based voice-driven community media service in rural central India. Our findings and framework for analysis is generic and can be useful for ICTD initiatives which are looking to embed themselves in the community for sustained usage.

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 to empower poor and marginalized communities to create their own local media (Author et al., 2016). Technologically, MV operates using Interactive Voice Response (IVR) systems which avoid the need for users to have a data connection or smartphones. Users can simply place a "missed call" to the MV phone number, and the IVR server cuts the call and calls them back. The platform therefore remains cost-free for the users. Using phone key-presses for navigation, users can then record voice messages they want to share, and 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 monthly unique

users who contribute 400-500 messages each day. Users actively engage on topics including local news, agriculture, health, career counselling, 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 moderators who listen to all user contributions and determine whether to publish/ reject/ edit the contributions.

The states of Bihar, Jharkhand and Madhya Pradesh, that form MV's main areas of operation, are among the most poverty-stricken and low literate states in India (Planning Commission, 2011). They also suffer from inequality proliferated by socio cultural norms such as patriarchy and caste structures, political dynamics, large scale corruption, misgovernance and left-wing extremism. The population is predominantly rural and remote, and lacks 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 utilized to publicize MV among the target users, a direct inter-personal community awareness approach was the only alternative to inform people about MV, and required innovation to do this at scale and at 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. Towards this, MV developed a low-cost federated community structure model of local volunteer clubs which were trained by the MV team to conduct community events, leverage their community understanding to create relevant use-cases, and demonstrate impact, to publicize, explain, and evangelize the growth of MV. In this paper, we describe these processes for technology adoption and provide important insights for ICTD initiatives to similarly be able to embed themselves in the community for sustained usage.

Our analysis is structured along two fronts. First, we outline multiple iterations of MV's community mobilization strategy over 5 years, and to explain our observations we use ANT (Actor Network Theory - Callon, 1986; Latour, 1993; Law and Hassard, 1999) combined with Olson's (1965) theory of groups and incentives. We collect data from MV users in form of stories using the Most Significant Change technique (Dart and 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 actants. Second, we relate our observations with other theories of technology and development, including the theories of technology appropriation (Orlikowski, 2000; Lievrouw, 2006; Avgerou, 2010; Bar, et al., 2007), communitization (Marsden, et al., 2008), technology amplification (Agre, 2002; Toyama, 2011, 2015), and community participation (Arnstein, 1969). Our contribution is to bring these different theories together in one case study, which helps outline their respective strengths and relevant applicability.

To help precisely situate our work in the context of other research on the use of mobile phones for development, or mobile communication in developing regions of the Global South, we want to emphasize that several bodies of research in this domain have studied mobile phones as a generic technology invention which has seen mass adoption and appropriation (Donner, 2007; Sey, 2011), but our research is grounded more 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 next, followed by a description of the two periods of formative growth and stabilization, interleaved with an analysis of each respective period, and conclude with a discussion on key learnings.

Related Work

We divide our discussion about related work into two sections. First we give an introduction to 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 various 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 and 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 interaction with each other, which was a significant dynamic that shaped MV's growth. ANT conceptualizes technologies, people and institutions as interrelated nodes embedded in constantly changing socio-technical networks and assumes no difference between human and non-human elements, labelling both as actors/actants. We detail some standard ANT terminologies used in our study in Table 1 shared within the supplementary information for this paper. Over different phases of MV's growth, we find that MV viewed its volunteers differently, initially as mediators who gave their own meaning to the platform, but later as intermediaries who were more consistent in their engagement with the platform.

While an analysis through ANT helps us list out different actants and document their actions, it is limited in its ability to explain the reasons behind these actions. To overcome this limitation, we use Olson's (1965) concept of incentives. This helps us explain the motivations and dissatisfactions of various actants which at times led to network formation and at other times led to network fragmentation. Table 2 within the supplementary information for this paper lists a few such incentives including monetary, social, solidarity,

and purposive incentives. We found that a synergistic mix of all these incentives finally helped achieve the black-box 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 a fragmentation of the network.

Olson (1965:63), James (1951) and, Simmel (1950:92) also outline effective grouping structures that can evoke these incentives to maximize outputs from individual participants. They argue that large groups can lead to a loss of ownership among members due to some members indulging in a *free rider* behavior, and therefore small groups, or *federations* of small groups, can be more effective in meeting collective goals. These theories of group structures again help us explain the reasons behind the eventual success of MV's federated structure of local groups of volunteers, which could not 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 who promote their agenda over that of the truly marginalized groups (Arnstein, 1969). Building on this concept, the theories of technology appropriation (Orlikowski, 2000; Bar, et al., 2007) argue that as technologies function within a social system, the existing power structures exert control over its appropriation process. Hence, appropriation should be viewed from a social perspective where political dynamics influence who uses the technology and in what way (Lievrouw, 2006; Avgerou, 2010; Díaz Andrade, et al., 2012).

Such an appropriation has been noticed in the ICTD context as well. For example, Veeraraghavan (2013) studied the Management Information System (MIS) put in place for better monitoring and greater transparency in the employment guarantee scheme in India, and found that rather than promoting transparency the technology was exploited by lower administrative officials who developed new forms of corruption, and higher administrative

officials simply began to use it as a financial accounting tool to keep track of 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 target group of disadvantaged people, and shaped the usage of the platform as a grievance reporting forum (Mudliar, et al., 2013). These experiences align with the Amplification Theory (Agre, 2002; Toyama, 2011, 2015) which argues that technology helps amplify the intention of people using it, and therefore politically powerful people will tend to align the technology towards their direction of intent. Avgerou (2010) similarly brings attention to the social embeddedness of ICTs in various organizational settings and outlines how ICTs can lead to uneven development as conflicts of interest and power struggles among its 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 it predominantly to highlight issues on which they were working.

One suggestion to potentially counter these risks and challenges is as proposed by Marsden et al (2008) through a process of *communitization* of technology, where different actors from within the community conceptualize its uses and help in sustaining it. Additionally, in-person trainings and demonstration sessions are important to help people successfully begin to use technology platforms (Koradia, et al., 2013) and can make it easier for marginalized groups to participate. Further, when such offline activities are led by local stakeholders, people are more likely to get involved and committed towards technology adoption as reported by Madon et al (2009) who studied digital inclusion projects in developing countries where vigorous grassroots campaigning around telecentre projects was used to mobilize 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 about the activities of telecentres.

Several ICTD initiatives have followed similar principles, although their published literature has not detailed their community mobilization processes. Some of these initiatives which also use IVR systems include Avaaj Otalo which enables small scale farmers in Gujarat to access timely and relevant agricultural advice (Patel, et al., 2010), CGNet Swara which promotes citizen driven accountability and governance in tribal regions of Chhatisgarh (Mudliar, et al., 2013; Marathe et al., 2015), 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 the community mobilization strategies of MV. Data was collected from 2011 until 2016 through participant observations by two of the authors who are members of the GV team, in-depth interviews with five other members of the organization, and significant change stories from close to a hundred MV users. These stories were collected using a participatory method known as the Most Significant Change technique (Dart and Davies, 2003) that enables individual members of key stakeholder groups to share their experiences of being associated with the platform and the changes they realized in their lives as a result of their participation on the platform. In this method, stories are read aloud during Focused Group Discussions (FGDs) among different community members, and the participants then deliberate on the outcomes mentioned in the stories to systematically voice their ideas and develop consensus about the outcomes they value the most. These MV users were men and women within the age range of 15-60 years. Among them, majority were

affiliated to lower caste and tribal categories and belonged to an economically poor background.

Longitudinal Analysis

GV started with the goals to build a broad community media platform that can solve developmental problems by creating relevant information flows – such as knowledge sharing within local communities, connecting them with other stakeholders and do this in a financially sustainable manner that allows for rapid scaling. These objectives guided the changes in MV's content and community mobilization strategies, for example, to strive for the platform to be broad-based and relevant to diverse community groups rather than remain of interest to a small niche, or build a *black-box* of a model that can be replicated in a standardized manner, or nurture ground-up processes that can help communities acquire an ownership of the platform.

Chasing these goals, constant iterations happened in MV's community mobilization strategies and this lent itself naturally to a longitudinal approach for analysis of the different strategies put in place at different periods of time. We identified four phases each of which was distinct from the others in terms of the actants involved and their interactions with each other. Figure 1 shows the periods of the four phases.

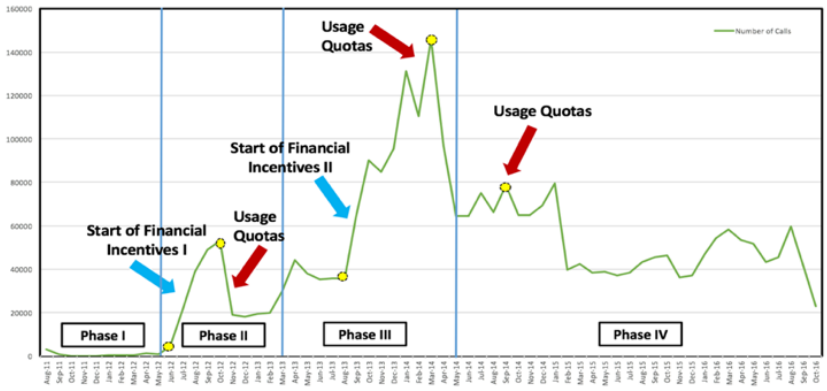

Figure 1 – Monthly call volumes on MV

The actants in each of these phases formed a complex of internalities like GV's organizational structure, staffing, and incentive policy, juxtaposed with externalities like socio-cultural norms, varying motivations of users, and the agenda of partner civil society organizations. The interplay of these actants directly influenced the activity (call volumes) and stability in each phase. For our analysis, we club the first two phases as part of the formative period, and club the third and fourth phases as part of the stabilization period. The two periods and their corresponding observations and analysis are presented next.

Formative Years: Learning 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 the Ranchi district of Jharkhand, as an experiment to build an alternate community media platform on IVR that did not require licenses otherwise needed to operate FM-based broadcast community radio stations (Koradia, et al., 2012). The intention was to build such a platform for rural and low-income populations, and GV therefore began to collaborate with rights-based civil society organizations (CSOs) to advocate for MV usage among their community groups in rural areas of Ranchi. Three functionaries from these CSOs became excited with the novelty of the technology, and became the very first set of community mobilizers who began to reach out to community groups to advocate for usage of the platform. They carried out these activities voluntarily along with their regular work, and while GV did not impose any agenda towards which the platform should be used, the community mobilizers saw a direct connection between their work with the CSOs and how they could use MV towards that.

Since the mobilizers were passionate about rights-based issues and were deeply involved in helping community members resolve problems they faced with government welfare schemes, they began to propagate the use of MV as a grievance redressal helpline for

schemes like the Employment Guarantee Act and the distribution of subsidized food grains to the poor. They encouraged users to record their grievances on MV, and also used the platform to make government officials listen to some of these grievances to impose pressure for resolution of the problems (Chakraborty et al., 2017).

The community members very soon began to view the platform as a solution to their woes, and the community mobilizers too began to measure the success of their mobilization activities based on the volume of grievances collected. However, since many grievances could not be followed-upon because of limited bandwidth of the CSOs, in our field visits and interviews we began to notice significant dissatisfaction among the communities towards 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 redressal helpline was a quick and easy way to encourage people to call, given the extremely poor state of delivery of welfare schemes in Jharkhand, but this also set unrealistic expectations from the platform in the minds of the participating users. GV tried to correct the expectations by conducting trainings for the community mobilizers to not position the platform as a grievance redressal helpline and rather as a broad community media platform, but could not succeed in making a transition while working with the CSOs' functionaries.

Call volumes and user retention during this phase remained low and did not record any dramatic increases in participation. In September 2011 the service also had to be temporarily suspended due to some technology limitations and GV's inability to finance the costs of operating a toll-free number. The platform was reinitiated in January 2012 using a loan to finance the experiment.

Phase II: Emergent virality

With the re-initiation of the platform in early 2012, this time to avoid the problems faced in the previous phase, GV recruited ten volunteer mobilizers with diverse backgrounds and not formally associated with any of the CSOs. The intention was that recruiting

mobilizers directly from among the target community members would help make the platform more grounded in broader community needs and bring diversity. Training workshops were conducted for the mobilizers to orient them on the overall perspective of community media and encourage them to raise different topics for discussion on the platform. Consistent mobilization activities helped bring users on to the platform again and the usage increased.

However, the large spurt in participation happened at the time of a school teachers' strike in the state of Jharkhand, when teachers and activists from across the state used the platform for coordination and sharing of updates on the strike that ran for several months. The protest emerged against the Jharkhand State policy to only employ contractual teachers (locally known as para teachers) without any 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 more and more teachers began to use the platform to protest and network with scattered groups of para teachers across the state. The platform facilitated easy and quick communication which led to the para teachers' messages reaching out to different stakeholder groups (such as students, parents, government officials etc.) and initiated a series of reactions and exchange of perspectives (Author, et al., 2016). Most messages were contributed from locations where MV's trained mobilizers were not present, and indicated that a viral uptake of the platform had indeed occurred. In a similar way, a number of other collective action initiatives as part of the Right to Food, local governance, forced land-displacement, employment guarantee and other campaigns also used the platform extensively at that time.

MV faced another cash crunch towards the fourth quarter of 2012 and had to impose usage quotas by opening the system for only a few hours during the mornings and evenings to reduce the toll-free call costs.

While such episodes of emergent virality helped expand the base of the platform, the nature of the content still largely remained activism oriented, clearly because activists and protestors formed the bulk of the userbase. The direct community mobilization efforts seemed to not have contributed significantly to neither diversifying the topics discussed on the platform nor being able to on-board users in a predictable and controlled manner. GV was trying to raise an equity investment to grow the platform, and an inability to present a controllable and predictable operational plan to acquire and retain users was a sign of the MV model not being ready for scaling as yet.

Analysis

In the first phase, the CSO functionaries clearly emerged as the most influential actants. Along with the significant social capital and political power they enjoyed within the communities due to their work, the *social incentives* (Table 2) of being associated with a novel technology platform added to their social status. GV had little control over their activities, and thus suiting their self-interest (Callon, 1986; Avgerou, 2010), they appropriated the platform as a grievance redressal helpline. However, their inability to manage users' expectations of grievance resolution led to users losing 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* (Table 1). However, these intermediaries were overtaken by the activists and para-teachers who appropriated the platform for their protests, indicating that they acted more as *mediators* (Table 1). ANT states the difference between intermediaries and mediators as the former having predictable outputs and operating according to a set of guidelines, while the latter having the ability to distort the meanings of the material they carry (Cresswell, et al., 2010). The mediators fueled by *solidarity* and *purposive* incentives (Table 2) were outside of 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 very few intermediaries and many mediators, which often leads to unpredictable outputs (McLean and Hassard, 2004; Cresswell, et al., 2010).

While ANT helped in documenting the actants and their actions within these phases, it was not sufficient to explain their motivations. Hence, we relied on Olson's theory of incentives to qualify our observations. We were also able to relate to our observations with the theories of community participation (Arnstein, 1969) and technology appropriation (Orlikowski, 2000; Bar, et al., 2007) that when the MV platform was left entirely in the hands of the users, it was appropriated by powerful actants (CSO functionaries in Phase I and community activists in Phase II) who shaped its use to suit their specific needs (Lievrouw, 2006; Avgerou, 2010). The amplification theory points to the same direction, that powerful actants are able to boost their agenda by being quicker at recognizing the potential of the technology to do so (Toyama, 2015).

Stabilization Period: Learning on Group Dynamics

Phase III: Flat volunteer structures

With the availability of new funds in March 2013, GV set out to find ways to impose more control on how the platform got to be used. The first step was to impose greater editorial control on content publication by giving less exposure to grievance and activism related content, and more to social and livelihood based themes such as agriculture, gender empowerment, and cultural activities. With new users joining the platform rapidly who did not have any prior conditioning to an activist oriented perception, the content mix began to get highly diversified and the percentages of grievances fell from 55 percent in 2012 to 18 percent by 2015.

The second effort was to strengthen the *intermediary* role of the community mobilizers by spending more time in training them, and recruiting new volunteers across a larger geographical spread from diverse community groups such as farmers, health workers,

and social workers. GV therefore appointed a full time staff of three community managers to recruit and train community mobilizers. These mobilizers were trained to conduct workshops with village groups to familiarize them with the concept of community media, to interview people on various contemporary topics of relevance to the community, and on a best effort basis to also convey grievances to government officials. Figure 2 shows the organizational structure put in place in this phase. At peak, around 120 volunteers were a part of the MV network in this phase.

Figure 2 - Three Tier Community Mobilization Structure

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 to a maximum of USD 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 to 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 MV userbase expanded significantly during this phase. Costs also proportionately increased, but were not followed with a similar increase in revenue and therefore quotas had to again be imposed on call volumes to keep them at a level that was financially sustainable for GV.

The large number of volunteers however 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 percent of the referred users calling in to MV, saw significant corruption leading to a drop in recall to hardly 5 percent (Author, 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 livelihood.

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.

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 malpractices 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.

It was very clear to the GV team by now 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 to be fixed.

Phase IV: Hyper-local order

In May 2014, GV evolved a federated model to counter these challenges. It 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 as volunteer clubs, and given their own unique identity with a unique phone number and IVR channel. The clubs largely carried local content and connected into the wider statewide channel that carried aggregate content pulled in from different clubs. Thus, as portrayed in Figure 3, micro subsystems of MV emerged that were independent yet connected to the larger network and managed in a standardized manner.

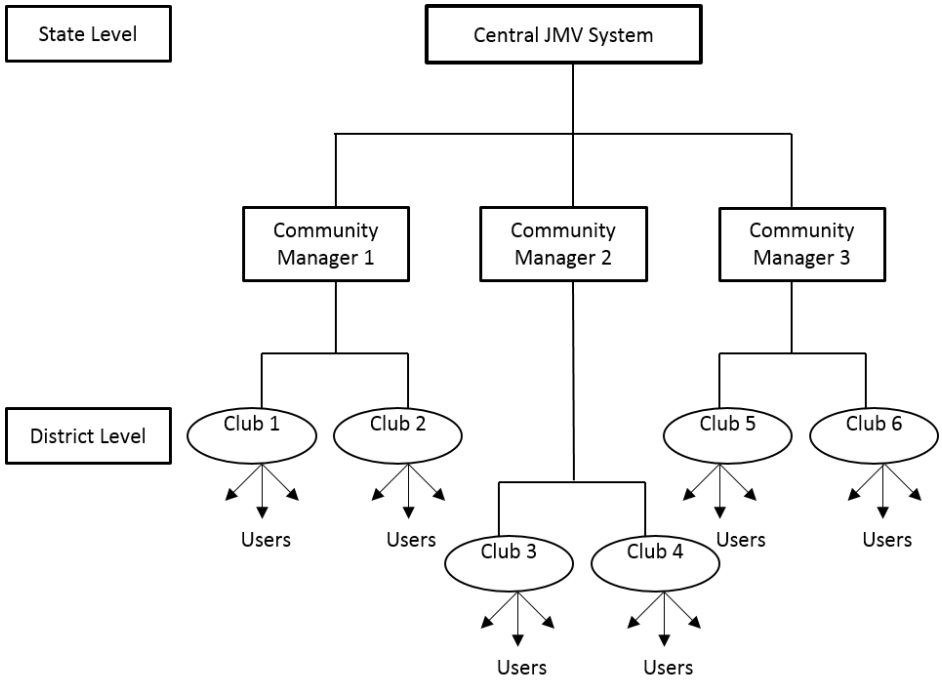

Figure 3 – Representation of district level clubs

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

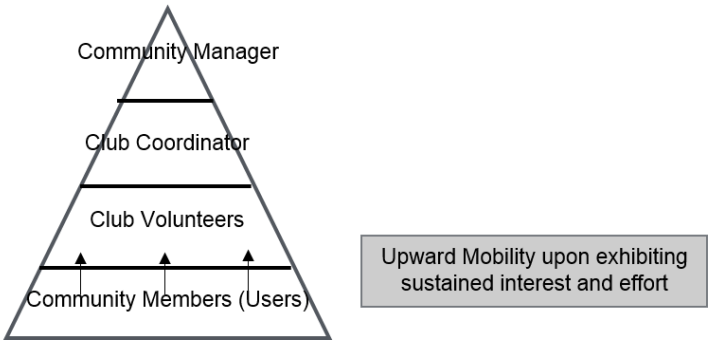

Figure 4 – Four tier club structure

This new structure facilitated an efficient management and monitoring of the clubs. The separate phone numbers for each club helped 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 by the volunteers which had occasionally led to disputes earlier. The financial incentive had three components – a group incentive pegged to overall call volumes in the club and divided equally among the volunteers of the club, an individual incentive based on the number and quality of content contributed by a volunteer, and 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 functioning of the clubs to take 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 any increase in staff and volunteer costs, the new model became easier to manage and straightforward to replicate.

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

By 2016, six community managers were looking after approximately 25 clubs that cumulatively had ~ 300 volunteers across the three states of Jharkhand, Bihar, and Madhya Pradesh. In the next section we present an analysis of the club model and why this mix of a federated structure with group based incentives and accountability has possibly discovered the elusive *blackbox* for scaling and replication of MV (Table 1). 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 starting with the local clubs model, GV studied the cost per user acquisition[1] in each club as a metric to evaluate club performance. Figure 5 shows the distribution of the cost, which clearly is quite heterogeneous.

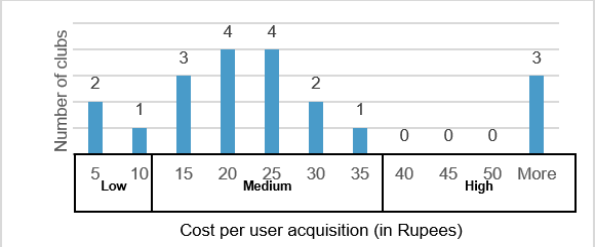

Figure 5 – Cost per user acquisition in Indian Rupees

Analysis of the clubs to explain this variation brought out a key insight about the importance of the socio-economic background of the volunteers. Volunteers of clubs with low user acquisition costs typically had a stable source of income, due to which their motivation to engage with MV was not influenced by the financial incentives alone, but with getting an opportunity to work towards community development and their own professional skill building. They also had the required 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

[1] 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 users in a club.

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 for community mobilization activities in a consistent manner. With more measurable indicators now used to calculate the financial incentives, their average stipend amounts reduced from the previous phase, and they often expressed discontentment about the financial incentives being too small with the new policy.

The clubs with the highest user acquisition costs were the ones that were entirely managed by women volunteers. Women volunteers in their stories attributed their inability to mobilize large groups of people due to the patriarchal, socio cultural barriers and prejudices that prevented them from stepping out of their houses alone and talking to unknown men. Hence, they worked very hard to on-board 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 due to 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 as they feared for their life and hence took refuge in a silence.

This clearly posed an irony that communities which could benefit most from community media platforms, such as women users, or those in Naxal areas, or groups marginalized by caste or class, were more expensive to reach and mobilize due to existing social inequities, cultural dynamics, and local politics. Being able to address this dichotomy was acknowledged by GV as being heavily influenced by the source of funds (Author, et al., 2016), whether it was an investment which tended to look at low-hanging fruits and gravitated towards easier-to-mobilize users, or grants which tended to shift focus towards less

empowered user groups. Balancing between the two, in 2016 GV developed a "model volunteer" profile that preferably recruited volunteers who had a steady source of income but also wanted to work for the social development of poor communities, and were socio-culturally open to reaching out to marginalized groups. This is the model being followed currently.

Discovery of locally relevant use-cases. An important development with the club-based localization overhaul was an emergent use of the platform for sharing hyper-local 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 appreciated significantly by the users. GV team built upon this to train the volunteers on news reporting and to connect them with local stakeholders like the government's public relations office, the police station, etc. to be able to acquire a steady source of local news.

Similarly, 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 programme in a Q&A format with the agricultural cooperative in the area. In another club with a large student population the volunteers initiated career-counselling programmes. In an industrial hub, the volunteers built a network to seek information about job openings that were recorded and played on the club.

Moreover, driven by a ubiquitous need to seek institutional accountability especially on public welfare schemes, almost all the clubs built strong processes for grievance redressal as well (Chakraborty, et al., 2017). In a few clubs, the volunteers collect grievances reported on the platform and take them up to local government officials during openhouse sessions; the officials are interviewed and their commitment is sought to resolve the grievances, which are then played in a weekly program called the *Janta Darbar* (translating to People's Court). Other clubs regularly forward grievances to government officials through the IVR platform, which too has been effective in escalating pending issues to higher government officials. Yet

another club initiative is the *Jan Shakti Abhiyan* (translates to *Power to the People Campaign*) where petitions on community level grievances are floated 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 count of signatories and transcriptions of some user experiences, and 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 users of technology who understand the local needs, and 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 percent of the content on these clubs is of a hyper-local nature tuned to the local needs, 30 percent is socially relevant programming pushed by GV on a sponsored basis for revenue, and 20 percent is entertainment and culturally significant content. Our interviews with community members have also corroborated the significance of locally relevant content and processes to support the local content generation.

Analysis

The key distinguishing aspect of these two phases from the earlier phases I and II was greater organizational control imposed by GV on how the platform got used, while allowing space for local communities to create their own use-cases. Using the ANT terminology, the volunteers who were the key actants 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* (Table 1) 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 – OPPs* (Table 1) to review the activities of the volunteers. Similarly, editorial processes to govern the content

mix added another channel of *OPPs* to help GV avoid uncontrolled appropriation of the platform as had happened in the earlier phases. These *OPPs* however were flexible enough and did not prevent the volunteers to discover and instantiate relevant use-cases, and successfully enabled a *communitization* of the platform by the volunteers in many locations (Marsden, et al., 2008).

We found ANT somewhat limiting in explaining the motivations of volunteers in Phase III and to model 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) theories on groups and incentives to understand this.

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 hard for the community managers to monitor and engage with each volunteer individually. With financial incentives not being entirely automated or easily auditable, sincere volunteers began to get dis-incentivized when they saw others getting paid equally for much less effort and it led to an unhealthy divisive dynamic among the volunteers. This in turn began to get manifested with an expression of class and caste based power effects. 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 the club coordinators held monthly meetings with the volunteers, reported on the progress for calculation of financial incentives, and sought guidance on local club activities, grievance redressal and other initiatives.

The group based *monetary incentive* component further enforced that the club collectively acknowledged and reflected upon its progress. This led to the volunteers experiencing *solidarity incentives*. Their 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 to put a check on free rider effects. Olson's vocabulary of different kinds of incentives to explain group performance has been shared in Table 2.

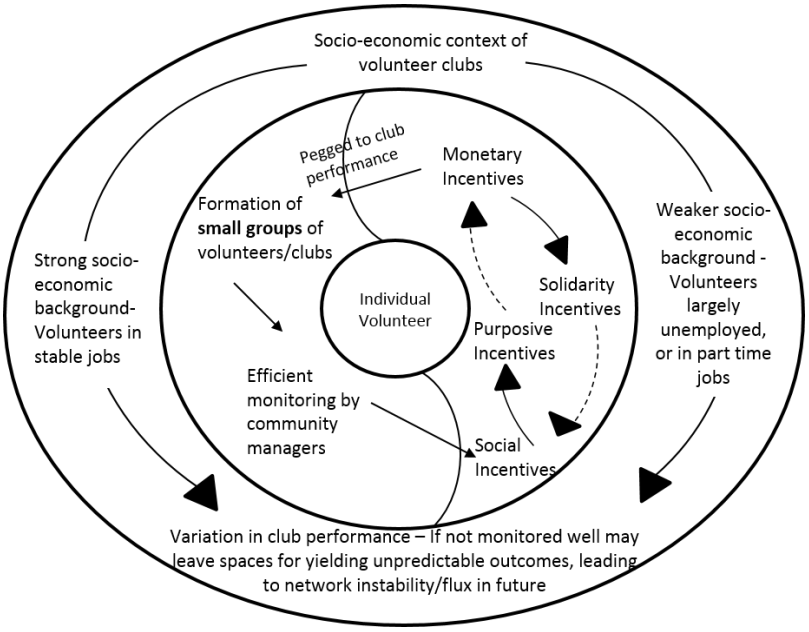

Figure 6 - Representation of micro and macro ecosystem for Phase IV

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. This 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 which GV had been searching for (Hanseth, et al., 1996; Braa and Hedberg, 2002; Cresswell, et al., 2010). The *black-box* was readily replicated across 25 clubs in 2016, and helped GV retain overall organizational control on the volunteers yet gave them the flexibility to customize local operations according to the context.

The mixed incentive model explained above can be related to other literature on hybrid markets that combine social and monetary incentives (Ashraf, et al., 2014; Singh, et al., 2015). These studies have shown that hybrid markets behave more like monetary markets as they skew the priorities of volunteers towards performing the incentivized tasks at the cost of other crucial tasks. Disputes that surfaced in phase III when volunteers began to attach a lot of importance to monetary incentives, can possibly be attributed to this insight. However, the group incentive model in phase IV was able to challenge 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 both monetary and social incentives with each other is an important insight which should be tested further by other ICTD initiatives.

Overarching Lessons for ICTD Initiatives

There are several learnings that can be obtained from MV's community mobilization history. First, we find that without a strategy to purposively impose organizational control on technology based network platforms, the platforms can get easily appropriated by local stakeholders who are more technologically savvy or socially powerful than other users (Lievrouw, 2006; Avgerou, 2010; Toyama, 2015). Imposing organizational control however comes at the cost of localization and flexibility, and the second learning we find is that such network platforms require strategies to embed them within local communities so that their use can be shaped based on local needs (Marsden et al., 2008). This embedment interestingly requires a similar set of technologically advanced or socially powerful people who are capable of appropriating the platform for their own agenda, but if checks and balances are built as standardized processes it can prevent undesirable appropriation, and instead enable people to shape the use of the platform in contextually relevant ways for their communities. The third learning consequently is through 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 feed into each other to build stable structures (Olson, 1965).

Further, the final community mobilization model of local clubs provided GV with the long sought after *black-box* that 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 tightly converged with the overall organizational goals, demonstrated a significant degree of irreversibility, i.e. the network's inability to go back to previous unstable iterations, and reflects the final model as having reached a stable state. Other studies (Hanseth, et al., 1996; Braa and Hedberg, 2002; Cresswell, et al., 2010) have also shown that if network-building processes are localized, flexible and bottom up, networks thus created possess greater chances of being stable and replicable.

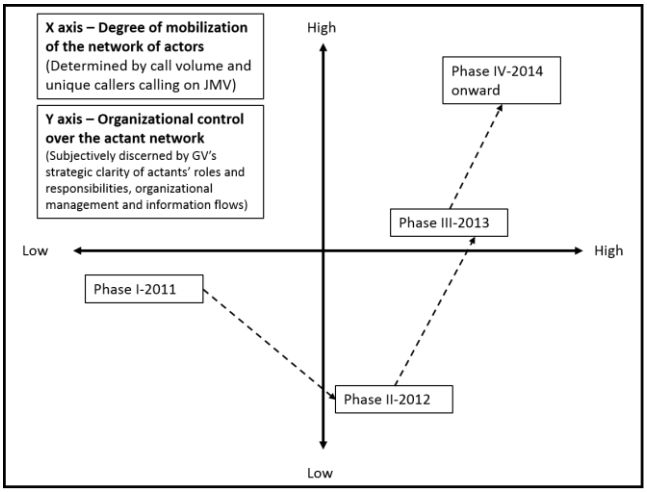

Figure 7 – MV community mobilization journey across phases

Figure 7 adapts Law and Callon's (1992) network analysis model to capture the MV community mobilization journey over different phases. The x-axis represents the degree of mobilization of the community that uses MV, and 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 actants as shown in Figure 6, are useful examples of frameworks that can be used by other ICTD initiatives to analyze their work. This can help them guard against undesirable technology appropriation, encourage them to understand the incentives of different actants, identify low-cost resources to embed technologies within communities, and strive towards building *black boxes* that can be easily replicated for scaling and yet allow customization and an alignment of incentives of different stakeholders.

Conclusions

Through a longitudinal analysis of different community mobilization strategies put in place by a voice-based community media network, we drew insights that can be useful for ICTD practitioners looking to embed innovations and ICTs within communities. We showed that an absence of organizational control can lead to technology platforms getting appropriated in undesirable ways that may restrict their applicability. Imposing organizational control can however limit communities from discovering and using the platform in ways that are relevant for them. We showed that federated group structures created through community representation and having a mix of monetary and social incentives, can not only enable this flexibility, but these structures are also robust and sustainable to ensure continued usage 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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