

Can a Machine Learn Democracy?

Completed Research

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Abstract

E-governance has changed the functioning of public programmes in India. In most cases, one technological platform is expected to perform multiple roles such as improving administrative efficiency, as an information repository for the beneficiaries and as a system for accountability. However, technosolutionism can be incongruous to democratic principles. In this article, we highlight this by looking at some technologies, such as the Management Information System (MIS) among others, used for the implementation of the Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) in India. We illustrate how such technologies have been used to subvert legal rights of workers and critically examine whether these designs incorporate democratic values. We underscore that technological interventions, with compassionate design are potentially powerful tools for transparency, accountability, and grievance redressal. However, we argue that technology alone can neither enhance participatory democracy nor reduce socio-economic inequalities.

Keywords

Aadhaar, Democracy, Development, e-governance, ICTD, MGNREGA, Participatory Design, Social Policy.

Introduction

From the first decade of the 21st century, various rights-based legislations such as the National Food Security Act (NFSA), the Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) among others, were promulgated. These gave tangibility to the Fundamental Right to Life enshrined in the Constitution of India. Along with these legislations, India has also seen a remarkable rise in the paradigm of e-governance (“Study of E-Governance in India: A Survey” 2019) through information and communication technologies (ICTs) to implement, monitor and govern programmes. Many Indian states and ministries at the central level have created different technological platforms to identify beneficiaries, disburse cash benefits, target vulnerable groups, and monitor the efficacy of programmes. For instance, the Rajasthan state government’s Bhamasha (now known as Jan Aadhaar) initiative, the Smart Pulse Survey (Praja Sadhikara Survey) of the state of Andhra Pradesh and the Aadhaar¹ number at the national level are some such examples. In addition, most social security programmes are implemented through some scheme specific Management Information System (MIS). For cash transfer programmes, some financial platforms are also integrated with the respective MIS.

The performance of any government programme must minimally be framed based on the concept of ‘public value’ (Moore 1995). With the rapid proliferation of e-governance paradigms, Ndou’s framework (2004), provides a constructive lens for public programmes where implementation through e-governance has become the de facto mode. Broadly, there are three pillars in this framework: e-government transformation

¹Aadhaar is a 12-digit unique identity number that can be obtained by residents of India, based on their biometric and demographic data.

areas, users, and application domains. The transformation areas are further subdivided into *internal, external, and relational*. Generalising Ndou's six dimensions of a public value framework for e-government one can obtain the following conceptual categories that can be used to assess the use of ICT initiatives: 'Improved Public Services, Improved Administration, and Improved Social Value' (Twizeyimana and Andersson 2019). Additionally the work of Heeks (2002), Lyytinen and Hirschheim (1987) and Masiero (2016) are helpful to taxonomise failures of information systems (IS) and the causes for the same. However, e-governance in public service delivery cannot be separated from the social context in which it functions and must lead to 'Improved Social Value'. Failure of e-governance initiatives can be costly for developing countries in terms of drain of resources and its socio-political consequences (Masiero 2016). E-governance initiatives in India have not necessarily circumvented the existing socio-economic structural problems (Prakash et al. 2019; Sabhikhi et al. 2019). In this paper, we address the nature of shortcomings of the e-governance system of MGNREGA. Through this research we present how different stakeholders in MGNREGA (workers, civil society groups, field level and higher bureaucracy) engage and even grapple with the technological platform for their diverse needs. On the one hand, we look at how such the technological system to implement MGNREGA has been used to subvert legal rights and used as a tool to pass the baton of accountability. On the other hand, we look at how technologies have the potential to be enablers if there is political and administrative willingness. To this end, we provide insights on resolution mechanisms through our collective work on it.

MGNREGA is one of the largest public welfare programmes in the world with about 149 million active registered workers and the MIS is central to its implementation. MGNREGA is also intended to improve participatory democracy, strengthen local governance, and improve transparency and accountability. It is the first programme in India that imbibed principles of Section 4 of the Right to Information (RTI) Act (2005), i.e., proactive disclosure of information through its real-time transaction-based MIS. This was a big feather in the cap of transparency. We have over a decade of experience as action researchers of MGNREGA implementation and are closely involved with the campaign on the Right to Information in India. This presents us with a close view of assessing it. The three conceptual categories by Twizeyimana and Andersson (2019) provide a useful rubric for us to assess the programme implementation of MGNREGA through its MIS. There are some reasons to believe that the MGNREGA MIS has improved administrative efficiency and even improved service delivery on many counts. MGNREGA has contributed to improving social value in many respects (Narayanan 2020). However, in this article, we critique how the MGNREGA's technological architecture has been used -- and misused -- by the government, thereby decelerating the social value of the programme.

When a system is designed to implement a law, it is imperative that it must not only respect the law but also strengthen the goals as enshrined in the law. We underscore that technology does not exist in silos; human intermediaries are critical in its use and abuse (Chaudhuri 2019). Technology ethics are not only limited to the design but should also be evaluated from the standpoint of its deployment and usage (Seth 2020). Citizen participation in the policy making process enhances the policy outcomes because they are best equipped to understand their own context (Fung 2003). We argue that technologies alone can neither enhance participatory democracy nor reduce socio-economic inequalities unless there is a robust accountability framework.

Methodology

Research designs and methods for social sciences span the spectrum from participant observation to lab style experimental designs. Yin (2014) situates 'case studies' as an important approach when the need is to understand the "how" and "why" of some phenomena and presents research designs for the same. Sarker et al. (2018), provide important insights by outlining some distinguishing features of eight different genres of qualitative research. We draw upon these insights and situate our work as exploratory case studies combined with elements of action research. Baskerville (1999) provides a comprehensive presentation of action research in information systems and our approach builds on the seven strategies outlined in it. In particular, it builds on the data collection methods, the iterative practices and generalisability as outlined below.

Our programme team is spread across multiple states. In each state we partner with local civil society organisations (CSO). Our programme team immerses with the local community to understand the nature of bottlenecks and grievances in accessing their rights under various programmes. Based on conversations

with the programme team, our data team crawls relevant programme data from the MIS. We follow the digital trail of transactions and compare that to worker testimonies. This helps us understand the differences between online data and reality. Once we have verified this through multiple rigorous case studies, the data team uses the publicly available data to estimate the scale of the problem. Analysis of such dynamic data enables us to track the programme over time. The programme and the data teams work closely to create reports and formats that are useful for workers. At the same time, they help prepare succinct summaries of the findings for CSOs and policy makers. This is an iterative process involving continuous conversations with programme beneficiaries, field level bureaucracy and analysis of transaction-level programme data. The combination of data driven field reports and the workers' testimonies presents a more accurate picture and guides further research and action.

Our action work builds on the identified gaps in transparency and accountability. The worker-centric reports, policy briefs and data summaries in turn, help CSOs and other campaigns in highlighting the matter in the appropriate forum for redressal and further action. Our work on payment problems revealed that about one in twenty MGNREGA wage payment transactions in the country were rejected. Consequently, over Rs. 14 billion worth of labour wages remained unpaid. We then worked with some state governments in creating a framework for resolving payment problems. On other occasions we had to resort to other modes of public action including litigation in the Supreme Court (SC) of India concerning wage payment delays. Drawing from Yin (1993), we view this research as a starting point of work on e-governance architectures of other social security programmes in India.

Key Statutes of the Act and the MIS

Unlike other government schemes whose performance depends on the priorities of the government in power, MGNREGA's provisions are meant to be justiciable rights. MGNREGA provides up to 100 days of work in a year for any rural household, on demand, at minimum wage. Workers demand work, they are allocated work, and their wages are paid directly into their bank accounts through a digital payment transfer. Three main safeguards of the Act, among several others, are critical -- (a) If work is demanded and not provided by the government within 15 days of application, then the worker is eligible for an **unemployment allowance**, (b) If payment of wages is not done within 15 days of completion of work, then the worker is eligible for a **delay compensation**, and (c) Mandatory conduct of **social audits** -- a platform for any person to participate in the evaluation of the implementation of the programme. Seen together with the RTI Act and social audits, MGNREGA can be a powerful vehicle to enhance political capacities (Jenkins and Manor 2017). There has been a digitisation of all the processes in MGNREGA. These processes must work seamlessly on the real-time MIS for the worker to obtain work and wage payments. If any step in the chain is incomplete or incorrectly done, then subsequent processes cannot be completed. An MIS linked to a public programme with features of proactive disclosure of information was unheard of in India. MGNREGA was thought of as a 'laboratory for anti-corruption efforts' (Drèze and Sen 2013). While it is no mean feat that transaction-level details underlying all the complex processes of MGNREGA are available to anybody, there is a need to pause and understand how the MIS has impacted workers.

The three diverse roles that the MIS plays:

- **Administrative Efficiency:** It is controlled and used by various levels of the bureaucracy for data entry and programme implementation.
- **Transparency:** MIS acts as an information system about the various aspects of the programme - work status, demand, employment provided, payment of wages. This information is available at various levels of disaggregation -- from country level statistics to individual work and payment details. Ideally it should provide workers with the information that is important for them - like when the payment of a certain work is credited to their account or how many days of work have been registered by their household. However, this information is hard to get for the workers.
- **Monitoring:** The information system provides useful statistics for the administration to monitor the programme. It has some built-in features that allow it to track the work from its inception to wage payment - thus making it possible to identify bottlenecks. The complexity of the data dashboard is not user friendly even for the bureaucracy.

Techno-Utopianism as Against Democratic Values

The polarised camps of cyber optimists and cyber pessimists might not be useful for a practitioner to solve an immediate need but the debate provides important insights for effective system design (Guida and Crow 2009). In India, technocracy -- championed by techno-utopians -- has been wedded to social policies like MGNREGA, hollowing out choices for programme beneficiaries on grounds of administrative efficiency (Drèze 2017). Techno-utopians are proponents of introducing more technological solutions as a panacea for a diverse range of governance issues. The thought does not necessarily stem from an evil standpoint but instead from an axiomatic belief that technology inherently -- and sometimes technology alone -- is sufficient to have positive, transformative consequences.

Kentaro Toyama, a former techno-utopian presents a remarkable thesis highlighting the cult of techno-utopianism for social change in his book titled *Geek Heresy* (Toyama 2015). He posits that technology does not necessarily solve persistent socio-economic problems but instead tends to magnify the existing social norms and human (in)capacities. He writes "Technology isn't the deciding factor even in a technology project. Of course, good design trumps poor design, but beyond some level of functionality, technical design matters much less than the human elements. The right people can work around bad technology, but the wrong people will mess up even a good one."

Given the complexities involving multiple agencies with varied administrative and financial powers, the MGNREGA MIS has, on numerous occasions, become an administrative tool to subvert the Act (Aggarwal 2017; Nandy 2018). The asymmetry of power structures gets mediated through a technological system. For instance, when workers approach the computer operators at the block² regarding their wage payments, it is common for the operators to say '*humne to computer mein daal diya tha. Tumhara payment nahin aaya to main kuch nahi kar sakta.*' (I had entered all your details in the computer. I can't help you if your payment has not come.)' The computer then doubles up as a screen and a smokescreen for the administrators thereby weakening the political capacities and democratic participation of workers. We discuss three examples in which the design itself has caused subversion of the legal rights of workers.

Rationing of funds and demand

The programme has become heavily rationed and has been suffering from meagre budget allocations and truncations (Nandy and Narayanan 2020). The MIS is used as a tool to suppress work demand because the central government delays fund releases to states. While demand for work is accepted 'offline', not entering it on the MIS means that work demand does not even get registered. Therefore, workers are not allotted any work through the system. And because the work demand is not registered on the MIS, the statutory payable unemployment allowance is not even calculated. There are occasions when workers are made to work first and then demand is registered on the system. In such a scenario, no delays are reflected between work demand, work provision and payment. This is a hack to avoid payment of unemployment allowance and compensation for payment delays. In addition to this, the official aggregated data on the MIS, hides the persondays of unmet demand (Narayanan 2019).

Compensation for Delays

Section 3 of the MGNREGA says that the wages for a completed work must be paid within 15 days of its completion, failing which the workers are entitled to compensation (0.05% per day of wages earned) for each day's delay. There are two broad steps in the payment process. Stage 1 corresponds to the time taken by the blocks to generate electronic Funds Transfer Order (FTO). The FTO is subsequently processed by the central government and then wages as per the FTO are transferred directly to the workers' accounts. The time taken by the central government to release wages after receiving the FTO is called Stage 2. Stage 1 is the constituent state government's responsibility and stage 2 is the central government's responsibility. The MIS only calculates and shows stage 1 delays. Stage 2 delays are not accurately reflected on the MIS and thereby the extent of delays and the delay compensation thereof remain unaccounted. An analysis of 9 million transactions, showed that only 21 percent of the wage payments were made on time. Further, Stage 2 delays alone were, on average, 50 days (Narayanan et al. 2019). These were acknowledged by the Ministry of Finance in an internal [memorandum](#) (Department of Expenditure (Ministry of Finance) 2017). These

² Block is a sub-district level administrative unit. It is also known as a mandal in some parts of India.

matters were argued in the Supreme Court of India. The Supreme Court of India (2018) gave strong orders to the central government to pay the workers for the full extent of delay, but the delay compensation norms continue to be violated.

In the first case, the workers' legal rights were crushed at the stage of data entry. It is akin to a technocratic belief that 'unless it is in the computer, it is not true.' In the second case, calculating and paying the workers for the full extent of delay (stage 1 + stage 2) is eminently possible since the information about stage 2 delays is available. However, its presentation and access are obfuscated. What this indicates is not lack of availability of information but lack of political and administrative accountability. This also raises questions about the reliability of publicly available data.

Aadhaar and MGNREGA

A big digital technological push in MGNREGA implementation was the introduction of Aadhaar and its integration in the MIS. In MGNREGA, Aadhaar plays a role at three levels:

- **Verification of Job Cards³:** Linking the Aadhaar numbers of the workers with the MGNREGA job card.
- **Directing Payment:** Making the payment through the Aadhaar Payment Bridge System (APBS), wherein Aadhaar is the financial address of the individual.
- **Withdrawing Money:** Withdrawing money from private individuals running Customer Service Points (CSPs)/ banking kiosks or through Business Correspondents (BCs) through Aadhaar based biometric authentication. This platform is known as the Aadhaar enabled Payment System (AePS). It requires the individual to link their bank account with their Aadhaar number.

Verification of Job Cards

In 2015-16, the Government of India (GoI) initiated an exercise to establish the uniqueness of MGNREGA job cards by linking job cards with Aadhaar. The objective was to minimise leakage and eliminate 'fake' job cards or 'ghost workers.' While minimising such inclusion errors are necessary, errors of exclusion result in loss of livelihoods. According to the GoI data, the cumulative savings due to Aadhaar for the Ministry of Rural Development (MoRD) was estimated to be more than Rs 240 billion. The GoI further claimed 'based on field studies Ministry has estimated 10% savings on wages on account of deletion of duplicate, fake/ non-existent, ineligible beneficiaries' (Government of India 2020). The methodology adopted by the GoI to arrive at these estimates are unsubstantiated and not available for public scrutiny. These estimates have been repeatedly challenged and shown to be exaggerated (Venkatanarayanan 2017). Statistical jugglery aside, numerous ground reports suggest that the job cards of several active workers got deleted in the quest to demonstrate 100 percent linking of Aadhaar with MGNREGA job cards. In a study conducted in the state of Jharkhand it was found that, out of 2,907 workers, 57 percent of the job cards of genuine and willing workers were deleted (Bhaskar and Singh 2020).

Directing Payment through Aadhaar

There are at least 3 steps for an Aadhaar-based payment to be successful. First, a worker's Aadhaar number must be linked to her job card. Second, her Aadhaar must be linked to her bank account. Third, the Aadhaar number must be linked correctly with a mapper created by the National Payments Corporation of India (NPCI). Error in any of these steps results in the payment being rejected or misdirected. According to official figures, as of February 2021, in the last five years, about Rs. 48 billion worth of payments were rejected and about Rs. 11 billion worth is still pending to be paid to workers. A significant component of this is due to Aadhaar-mapping failures with NPCI. Further, in contravention of SC orders, while migrating to the APBS, consent norms were frequently violated (Dhorajiwala and Wagner 2019). The opacity of the APBS architecture has made it nearly impossible for workers to track which account their payment has been deposited in. The local administration is often unaware or not equipped to rectify errors that are often extremely technical and difficult to decode. When payments have been misdirected into the account of some

³ An identification document for a rural household required to work in MGNREGA.

other worker, the rectification is nearly impossible, pushing the already vulnerable into a deeper crisis (Dreze 2018; Narayanan et al. 2017).

Withdrawing Money Through Aadhaar

Passbooks are the only way for the poor to keep track of their finances and having them updated periodically is a basic right. However, workers who withdraw money from CSPs/BCs do not have the ability to update their passbooks there because the AePS platform does not offer that facility.

According to a 2018 study about last mile challenges, 56 percent of all those who opened accounts at CSPs/BCs were not issued passbooks (LibTech India 2020). While a considerable proportion in the state Andhra Pradesh got receipts for withdrawals at CSP/BC, over 80 percent in the states of Jharkhand and Rajasthan did not get receipts. Issues of network connectivity, faulty printers and overcrowding were the key reasons for denial of receipts. Moreover, about 40% of CSP/BC users faced biometric authentication failure at least once in their last 5 transactions. As per the Pragya Kendra Assessment Study (2018), 45% of the respondents said that they were overcharged for AePS withdrawals. Further, 42% of the CSP owners reported that users had to revisit for withdrawing owing to biometric authentication failures.

These numbers fail to capture the full extent of hardships that workers face. Exclusions due to biometric authentication failures to get the entitlements can have severe implications such as starvation and death. The nature of exclusions arising in four different welfare programmes, including MGNREGA, are explained in Khera (2017). In response to an RTI query on the methodology used to quantify savings due to Aadhaar in MGNREGA, the response from the MoRD was 'Savings are in terms of increasing the efficiency and reducing the delay in payments etc.' (Sabhikhi 2017). Such an opaque response serves to undermine democratic accountability at the altar of techno-utopianism.

The twin purposes of fairness and efficiency need not be aligned (O'Neil 2016). Democratic values and constitutional rights are anchored on principles of fairness and justice while technology tends to have a bias towards administrative efficiency. While technocracy gives primacy towards inclusion errors and leakage, democratic values dictate that we should give primacy towards exclusion errors.

The politics of information and design alternatives

There are at least four stages of information -- information production, presentation, access, and use. While the MGNREGA workers and the government are jointly participating in the production of information, the workers have no say in its presentation, access, and use. This adversely impacts workers. In discussions with field level bureaucrats, we found that they check at least 5 different reports to find why a wage payment has failed. Further, there is no data dictionary indicating what different fields in multiple reports mean and how they are populated. No feedback regarding the MIS is ever solicited. As for the workers, the MIS has become the sole repository of many pieces of information. From their perspective, there are 4 questions that are vital to them:

1) What are my wages? 2) Have the wages been paid? 3) Which account would they be credited to? 4) Can I access wages whenever I need them after they are credited?

At least the first three can be resolved based on information from the MIS, but one must parse through several complex reports for the details. It raises fundamental questions concerning the design, the friendliness of the MIS and its commitment to transparency and participatory democracy. A highly technical centralised architecture has meant that registration and redressal of grievances have become even more difficult. The centrally controlled MIS only allows input of information and no flexibility to the states to make customisations. These instances remind us that technology is not value neutral (Kranzberg 1986).

Given this scenario, we share some examples of how sound design principles can enable responsible outcomes. Participatory design methods should be used to ensure that the information relevant to workers is available in ways that are accessible to them. A worker-facing interface must have information disaggregated at individual levels, must be available in local languages and must have some offline functionality. Technology can enable proactive disclosure. However, additional steps need to be taken to ensure that the information reaches the intended person at the right time (Dhorajiwala et al. 2019). For

example, workers should be given printed wage slips, with appropriate details and dates, and must have passbooks to keep their accounts updated. While introducing any new technological intervention, existing systems must be available as alternatives. The process of technical migration must be well planned with strong grievance redressal mechanisms and done in consultation with all the stakeholders (Dhorajiwala 2020).

A noteworthy initiative that evolved through participatory design is the '[Jan Soochna Portal](#)', a web portal of the government of the state of Rajasthan for the beneficiaries of public services. This portal gives information for over 124 public schemes that in turn helps people hold their gram panchayats⁴ (village councils) accountable. This portal is accessible over the web as well as through kiosks located in every panchayat although the functioning of kiosks has been patchy.

On some occasions, it may not be possible to constantly seek public participation to incorporate features in the system. In such cases some core non-negotiable principles of worker-centric design must guide the system architecture. For example, the compensation for delays in wage payments and unemployment allowance should be calculated and paid automatically. Workers should be given multiple and convenient options to raise work demand - where they must be given a dated receipt for the same.

While centralisation has severely undermined political processes, we present a scenario of an enabling environment due to it. This is from the drought prone area of Penukonda mandal of Anantapur district in the state of Andhra Pradesh. Prior to MGNREGA, many Dalit⁵ workers in this region were dependent on upper caste landlords for employment as agricultural labourers. As workers started MGNREGA work, the landlords put pressure on them to discontinue MGNREGA work and instead work for them. A centralised payment architecture helped the Dalit workers and the local officials stem the pressure from landlords. For this region, our experience suggests that had all the decisions been in the hands of the panchayat officials, the upper caste hegemony of landlords would persist. This corroborates an ethnographic study of another Dalit village in Andhra Pradesh, but the process and outcomes are different in a tribal village in (Veeraraghavan 2017). As a word of caution, these outcomes of centralisation are specific to a type of village in a high modernist administrative apparatus of Andhra Pradesh and is not representative of the country. In fact, blanket centralisation without accounting for local realities has proved destructive. For instance, in recent years, the nature of works sanctioned in MGNREGA has been dictated by higher level bureaucracy and so in many places some assets have been created that are not useful for the people (Dutta 2016; Nandy 2019). This dilutes the spirit of community participation and circumvents the 73rd Constitutional amendment. In addition, affirmative action principles to employ people from marginalised sections as field-level bureaucrats can improve democratic engagement (De 2006).

A robust grievance redressal architecture for a programme can serve as a useful yardstick to measure programme performance. For MGNREGA, in most states, several grievance collection facilities such as helpline toll-free numbers, presenting grievance letters to administrative functionaries, registration of grievances on web portals etc. are available. However, on both counts, i.e., collection and redressal of grievances, there are many gaps. This is an area where there is enormous potential to harness technology meaningfully. Given district-wise linguistic variation even within a state, toll-free numbers for each district can be alleviating. Moreover, grievance collection needs to be decentralised to the village level with provision of a dated receipt. These can be collated and automatically escalated in a time bound manner using technology. Routine oversight through social audits and a continuous feedback system with workers through public announcements and voice messages can also be powerful. As another example, the registration for work can happen only in an administrative office. Instead, decentralising this at the work site can have positive consequences. Application Programming Interfaces (APIs) of the MIS must be publicly available so that anybody can assess how the aggregate statistics are computed.

There is a need to avoid being trigger-happy about what technology to deploy for a given policy or situation, but instead focus on what values we need to keep in mind while thinking about a policy or designing technology. Our engagement has spawned important research questions such as mechanisms of funds devolution for the programme, the differential aspects of centre-state financial sanctioning, the patterns of

⁴ A gram panchayat/ panchayat is a geographical administrative unit which is a cluster of villages. It is also village council which consists of elected representatives.

⁵ A term used for a person belonging to an oppressed caste group in India. Officially categorised as a Schedule Caste in the Indian Constitution.

demand registration and fulfilment for the programme, nature of assets created, among others. Moreover, it has helped us frame further questions at the intersection of law and information systems for other government programmes under the umbrella of Direct Benefits Transfer (DBT).

Discussion

On a brutally hot summer afternoon, one of the authors of this article, had a long conversation with Anita Devi, an illiterate Adivasi⁶ woman, around 50 years old, in a village in Palamu district, Jharkhand. We discussed a range of topics from the role of government to statistics, and democracy. In continued conversation, we posed to Anita Devi, what felt like a complicated question on information and access: ‘Can a machine learn democracy?’ She responded with casual elegance, saying ‘A computer does not have a mind of its own. A computer is after all made and run by humans. If we genuinely want it to imbibe principles of democracy then we can teach it, isn’t it?’ In this regard, it is instructive to recall the phrase ‘code is law’ popularised by the Harvard Law professor, Lawrence Lessig (Lessig 1999). Code, as in software, and code, as in law, can both be instruments of social control. To quote him: ‘We can build, or architect, or code cyberspace to protect values that we believe are fundamental. Or we can build, or architect, or code cyberspace to allow those values to disappear. There is no middle ground. Code is never found; it is only ever made, and only ever made by us.’

Devi's insightful response speaks volumes about the need for compassionate information systems, designed to enable participatory democracy. The choice is clear. On the one hand there is using technology for administrative opacity, perpetuating falsehoods, and political unwillingness and on the other is to use technology that imbibes principles of democratic values. Ideally, goals of technology implementation must imbibe the following non-negotiable principles: equity, participation, social efficiency, quality of service, accountability, transparency, sustainability, solidarity, public ethos, and transferability. Social efficiency would account for the social and political goals of efficiency and is a broader desired outcome than just cost efficiency (McDonald and Ruiters 2012). Every government's online and internet policies must be rights-based. It underscores that people's online rights must be in synchrony with the offline rights that people have (Ben-Hassine n.d.). The MGNREGA MIS, among other technological initiatives by the government, must be held accountable to this. There is an urgent need for a strong governance framework surrounding all digital interventions for public services and such a framework must be developed through wide public consultations. In conclusion, we would like to add that perhaps not all problems have their solutions in a new or improved technology, and as those who are proponents of 'technology for development', we have the responsibility to be mindful about it.

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⁶ Adivasi is a person belonging to an indigenous tribe in India.

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