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Leaving nobody behind: the *Samagra* programme in Madhya Pradesh as a response to data integration and silo-delivery problems in anti-poverty programmes.

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Abstract

If it is ‘to leave nobody behind’ in pursuit of the Sustainable Development Goals (SDGs), then a state requires a comprehensive and continuously updated database of individuals and households within its jurisdiction. Consolidation of this data can also assist in overcoming silo-based fragmentation in state delivery of anti-poverty programmes and services. We explore the feasibility of establishing such a database through an extended case study of *Samagra* (meaning ‘all comprehensive’) in the Indian state of Madhya Pradesh. *Samagra* was developed to facilitate integrated monitoring and management of all major government-to-people (G2P) cash transfers in the state, and (more radically) to support a paradigm shift from a demand-led to an entitlement-based approach to benefit delivery. *Samagra* is a unified population monitoring system based on continuous recording of household level demographic events, linked both to operational records of participation in diverse G2P programmes and to financial accounts provided by designated financial institutions operating within a five-kilometre radius of each household. The paper offers a practitioner’s account of *Samagra*’s introduction, including implementation challenges, policy outcomes and issues meriting further research and discussion.

1. Introduction

‘Leave nobody behind’ is a cross-cutting theme of the Sustainable Development Goals (SDGs), based on the concept of progressive universalism that prioritises actions for the poorest and most marginalised, seeking to achieve social justice through equality of access to opportunities and high-quality services (Bhatkal et al., 2015; Stuart and Samman, 2017; United Nations, 2015). It also resonates with the global expansion in the scale and diversity of direct benefit transfers (DBTs) as a policy instrument to advance social protection in many developing economies (Lazzolino, 2018), building on evidence of a positive correlation between DBTs and various indicators of wellbeing (Hagen-Zanker et al., 2016)¹. However, the proliferation of DBT programmes

¹ODI (2016) reviewed 130 low- and middle-income countries implementing at least one non-contributory unconditional cash transfer (UCT) programme and 63 countries globally with at least one conditional cash transfer (CCT) programme. This revealed a positive correlation between DBTs and a reduction in monetary poverty, school attendance, health service usage, dietary diversity, economic autonomy, reduced child labour and women’s decision-making power. However, DBTs were not correlated with learning outcomes, the height and weight of children, working adults or gender-based emotional abuse.

with overlapping, fragmented and ‘silo-based’ delivery is also a potential source of unfairness and inefficiency, resulting in some households receiving multiple benefits while others receive none (Agranoff, 2005; Morse, 2013; Stewart, 2014; Uusikylä, 2013; Wegrich, 2019). To avoid such problems, it seems almost self-evident that public sector bodies need collaborative and integrated systems for sharing the poverty status and eligibility of individuals and households across different programmes (Clegg, 1990, in Agranoff, 2005, p20 ; Hazy et al., 2011).

The ability of the state to establish the identity of all its citizens itself an indicator of its capacity to leave nobody behind (Anderson, 2015; Carr-Hill, 2017; DI, 2016). But the establishment of a universal system for individual citizen identity (such as *Aadhaar* in India) is only one step towards building a comprehensive poverty monitoring system, since it does not address how transfers and their effects are affected by household composition. Whether anti-poverty transfers are allocated using universal categories, income or proxy indicators of poverty, some reckoning is required with how multiple interventions interact with each other and with resource allocation at the family and household level. The system for identification of those eligible for support must also be combined with a mechanism for transferring financial benefits to them, hence the need for financial inclusion (Alexandre, 2011; Barua et al., 2016; Radcliffe and Voorhies, 2012).

Addressing these issues entails contending with the capability of the state to deliver consistent and joined-up services across vast populations, and how to go about enhancing such capability (Andrews et al., 2017). Given the widely observed limitations of attempts to replicate successful models from one context to another, it is particularly interesting and important to document endogenous or home-grown examples of successful state capability enhancement. To this end, this paper aims to document and to stimulate wider discussion of the case of *Samagra* in Madhya Pradesh, India since its establishment in 2012. Section 2 sets *Samagra* in historical and geographical context and highlights the problems that it sought to address. Section 3 describes its purpose, design characteristics, scope and growth. Section 4 considers how far it has been successful in addressing problems of fragmentation, poor targeting and inefficiency, and reviews the main factors driving and impeding its establishment. Section 5 concludes with a discussion of key findings, policy implications, unanswered questions and scope for further research.

This article draws heavily on the first-hand experience of the lead author as a policy actor in the state government of Madhya Pradesh at the heart of the process of setting up *Samagra*, alongside officially commissioned studies of *Samagra* (Bhatnagar and Gupta, 2013; Menon et al., 2018; PWC, 2016). While recognising that this perspective may throw a relatively positive light on *Samagra*, our hope is that it will also widen and deepen discussion of it as a case study. There is scope for further research into evolving user perspectives on *Samagra* (including analysis of public media reporting), both during the main period of implementation of reforms after 2012, and more recently as it has become institutionalised.

2. The context for establishing *Samagra* in Madhya Pradesh

Madhya Pradesh (MP) is the second largest state in India, by area, with approximately 72.6 million residents (Census, 2011) residing in villages and working in agriculture (Bhatnagar and Gupta, 2013, p3). Despite its size, the state has the third lowest gross domestic product (ibid) in the country, the fourth lowest human development index (0.594) (Radboud, 2017), and the highest population of scheduled tribes of any Indian state, constituting 21.1% of the population (MoTA, 2011). Social protection (SP) is the largest state sector in MP, in terms of number of beneficiaries, institutions, human resources and geographical reach (PWC, 2016). The government is committed to improving its quality and reach, including among people living below the official poverty line, the elderly, unmarried/dependent women, widows, and labourers. To this end, it has over 200 SP schemes, with an estimated budget of Rs.5,000 crore (£560 million²) (ibid).

India's SP governance system has traditionally been demand-driven and welfare-oriented, aiming to provide basic needs for survival across health, nutrition, sanitation, livelihoods and education. Critics suggest that while reducing poverty in absolute terms this system is not sustainable, leads to aid dependency, and leaves out the most vulnerable (Barrientos, 2005; Devereux and Sabates-Wheeler, 2004; Kabeer, 2010; Sabates-Wheeler, 2013). The many different SP schemes have had different rules, administrative processes and delivery points, leaving eligible beneficiaries struggling to understand their entitlement. Enrolment has been further reduced by complicated and uncertain application procedures for each scheme, including lengthy processes for establishing identity and eligibility through the submission of documents relating to caste, labour category, below poverty level (BPL) status, disability, marital status or spousal death. Long delays arise while the entitlement is confirmed and the payments are processed by cash or cheque. For example, a student would need to understand the rules and eligibility criteria for thirty different scholarship schemes run by different government departments, identify those that he/she is entitled to apply for, obtain the necessary paperwork and attend the correct office to verify his/her documentation. These problems are experienced most acutely by the vulnerable and underprivileged, who are least able to navigate the procedural complexities, and afford the time and cost arising from repeated visits to government offices.

The potential for a rights-based SP agenda to contribute to more holistic development has been officially recognised since Independence in 1947, including through adoption of the Universal Declaration of Human Rights in 1948 (e.g. Abdulai et al., 2019; Breitreuz et al., 2017; Esquivel, 2017; Sabates-Wheeler et al., 2019; UN, 1948). An important milestone towards a rights-based approach to SP in Madhya Pradesh was the passing of Resolution 37 in the Legislative Assembly in 2010 (Menon et al., 2018). This led to a detailed review of the current SP provision and its limitations. Government departments worked in silos, collecting, processing and storing data in a fragmented way that weakened its overall understanding of the socio-economic status of the state's inhabitants. Lack of information management capability and political commitment were compounded by fear of the risks and potentially high costs of data integration. The data that did exist often referred only to named beneficiaries of each scheme with no or cursory data on the remaining population. While expenditure

² Based on £/rupee exchange rate as at 01/07/2016, the date of the PWC article. A crore denotes 10 million.

was booked, there was seldom proof of the actual benefit transfer received. For planning purposes, this led to statistical misrepresentation, skewed estimates of the population's socioeconomic profile and poorly informed poverty alleviation strategies.

A lack of coordination between government departments also resulted in overlapping benefit eligibility criteria, with no standardisation of rates or rules, and multiple agencies providing similar benefits. At the same time, due to the manual and decentralised nature of welfare implementation, each scheme had a different application form, service delivery point and process for sanction and disbursal of the benefit, often requiring attendance at more than one government office for each benefit and repeated verification of personal details and eligibility. This led to unnecessary confusion and beneficiaries either not receiving their full entitlement or, conversely, collecting duplicate benefits from multiple departments. An example of this relates to life insurance schemes provided by a number of government agencies for low income workers. As the majority of informal, low-paid workers profess a multiplicity of occupations due to seasonal and livelihood factors, a single worker could be on the benefit lists of several departments -female construction workers being listed under both the Department of Women and Child Development and the Labour Department, for example, while the life insurance premium for the same worker could be paid by up to five different departments. If a claim arose, due to the death of the worker, the family member would still only be eligible to claim against one of the five policies and often, due to a lack of knowledge and literacy, no claim was made at all, because the successor was unaware of the insurance cover in the first place. This meant large sums of money were being paid by the government to the Life Insurance Corporation of India, but only 1% of beneficiaries were receiving the claim benefits (average industry rate is 12-15%).

A second barrier to the coordination of benefit schemes in MP was the lack of a single unique identifier for each citizen. The *Aadhaar* personal identification number was rolled out across India from 2009 (Bhatia and Bhabha, 2017), connecting biometric data with an individual's name, address, date of birth, gender and photograph. However, obtaining the *Aadhaar* remained legally voluntary, and although widely taken up (particularly by recipients of G2P transfers) it did not cover all citizens. Many benefit schemes were also governed by household eligibility, rather than personal circumstances - educational scholarships, BPL transfers, pensions and food rations, for example. These factors meant that each benefit scheme had created their own individual identifier codes for beneficiaries linked to their familial circumstances, inhibiting the sharing of data across agencies.

The disbursement of a complex range of welfare provision in a country where only 40% of the population had a bank account in 2013 was a further barrier to effective integration and consolidation of social protection (Bhatnagar and Gupta, 2013, page xvii). Three-quarters of the population of MP were living in villages and in 2010, and one third needed to commute more than 20km to make a transaction with a regulated financial institution (ibid, p3).The majority of benefit payments were being processed as cash or cheque, with no online tracking of the application progress available to either government officials or claimants, and no central record of disbursements across the wide suite of schemes.

Lastly, there was no effective monitoring or evaluation of the performance of different benefits schemes, either individually within departments or across the full range of government SP provision. As beneficiary data was recorded, processed and stored in myriad ways, it was not accessible to other government departments or the general public. This lack of transparency limited the potential for accountability measures to be put in place. It also meant that the government was unable to analyse the impact of each individual benefit or how the combination of benefits on offer interacted with each other to promote or limit holistic wellbeing in the population.

3. Characteristics of *Samagra*

Purpose and design

In light of the commitment by the MP government to move from a reactive, residual welfare model to a proactive and entitlement-based model where “social protection [is] addressed as a basic human right which applies to every citizen of the state [in] every aspect of life” (Menon et al., 2018), it was clear that significant changes needed to be made to the strategic and structural foundations of SP in the state. In 2012, in her role as Additional Chief Secretary of Rural Development and Panchayat Department and as Development Commissioner for Madhya Pradesh, Aruna Sharma convened a top-down study of the SP landscape in the state. Four senior government secretaries were chosen - responsible for health, education, social justice and multifarious schemes -and given one month to lead a team in the analysis of the full breadth of benefit schemes available across their departments. The team grouped together benefits with similar objectives and eligibility criteria and recommended which should be merged, and how this could be achieved. The scale of the task was immense, with 63 schemes across 15 different departments for women alone.

At the same time, other state government officials were mobilised to design an appropriate methodology for citizen financial inclusion. This reflected a strong belief within the MP government that a move to digital bank transfers (DBT) for benefit payments would greatly improve the efficiency and effectiveness of SP for beneficiaries. This belief was also shared by the central India government, principally because the prevailing system required a large transfer of funds from the central treasury into departmental holding accounts, where it was parked until required. A move towards a real-time transfer of payments direct to beneficiaries would allow funds to remain in the treasury coffers for longer. Central government was keen to find a local administration willing to take the lead in trialling a DBT process. MP offered themselves as a test case, and chose the MGNREGA³ programme as the first programme for the move to a DBT platform, as it was deemed the most complex to digitise, disbursing funds to thousands of people every day through a multitude of standard and cooperatives banks and post offices, many of which were not digital at that time. If the new financial inclusion model could operate successfully for this programme, then this would strengthen prospects for integration of simpler benefit payments too.

³ MGNREGA - Mahatma Gandhi National Rural Employment Guarantee Act providing a guarantee of 100 days of state employment per annum.

Equipped with strong evidence of benefit duplication, a meeting was called between the investigating team, the chief minister, cabinet and senior government officials to discuss the importance of SP rationalisation. Given the breadth of departments involved in the analysis and the significance of their findings, the meeting unanimously agreed to the establishment of the *Samagra Samajik Suraksha Mission*—known simply as *Samagra* – to pursue the simplification, convergence and digitisation of the SP system in MP. A senior-level official known for progressive thinking and strong management was appointed to ensure the four departmental teams worked collaboratively on the consolidation and rationalisation of duplicate schemes. This was a first small but important step to ensure all concerned parties remained positive and focused during state-wide implementation.

The next stage was to consider how the benefit system would move from demand-led to entitlement-led, and ensure that all those eligible for support received it. This involved two main activities: first, to link capture and verification of individuals’ personal information to their household status and eligibility data; second, to transfer the relevant benefits to the correct individual in a safe and efficient manner, once their eligibility had been established. The only widely used personal identity verification mechanism at the time was the *Aadhaar* number, but this was limited to personal details and not linked to household data. Given that many benefits were linked to household eligibility criteria this offered little opportunity for developing an all-encompassing database that could assess and action SP provision for all.

A year before the commencement of *Samagra*, in 2011, the national household census had been completed. At a similar time, a socioeconomic caste census had also been undertaken. The team decided that these data offered the best opportunity for building an integrated online common household database covering the entire state population and linking both individual and household data at minimal cost. A quick additional household survey was conducted to fill any gaps found and update the data currently available, and all these data were digitised in a period of two months at a cost of Rs.53 crore (£6.4 million⁴). Finally, a team from the government-run National Informatic Centre worked closely with the *Samagra* group to build a comprehensive database able to collate all personal and household data and generate unique household numbers and individual numbers for each household member. The use of a government agency to design the software was advantageous, because it was low cost, and already had offices in every district, enabling it to deal quickly with IT modifications and problems during and after the build.

In parallel with data rationalisation and establishment of the IT infrastructure other staff in the government worked with the State Level Banker’s Committee on the issue of financial inclusion – a process named *Samruddhi* (meaning ‘prosperity’). This programme aimed to build a sustainable model for bring banking services closer to citizens, especially in unbanked rural areas of MP (Bhatnagar and Gupta, 2013). The first stage was to map all current financial institutions including urban and rural banks, post offices and co-operative banks, giving each a five kilometre (km) catchment area. All residents living within a five km catchment zone of a financial establishment would be allocated a bank account, while settlements outside of

⁴ Conversions in this paper are based on the middle market exchange rate of Rs. 82.4069/£1 on 1st March 2013 as this is the approximate date when the stated activities occurred.

any catchment zone was shaded and classed as a 'shadow area'. Out of 53,000 villages across the state 14,000 fell in a shadow area, requiring an additional 3,200 financial institutions to be built. The government approached the state banking corporations and offered them Rs.1 million (£12,135) for the construction of each simple banking facility in these areas, each with a cash chest and a room in which to conduct financial transactions. The banks would then pay rent on the branch building once opened, and a business correspondent from the State Bank of India would be provided with an office to oversee the banking processes and lend credibility to the new establishment. From the perspective of the bank corporations, who wished to increase their customer base, the mapping exercise and government construction funds, provided them with an easy way to locate villages where no other banks existed and, given that a bank account would automatically be opened for all citizens in the catchment area to facilitate DBTs, they also had a guaranteed clientele upon branch opening.

The financial mapping exercise had also included rural post offices, from which many citizens collected their SP payments in cash. These were, in general, not yet linked to the state digital banking infrastructure (CBS), and although payments were supposed to only take one to two days to reach beneficiaries, in practice those remitted to a post office could take up to 20 days. It was estimated that the process of post office incorporation into the CBS platform would require one year. To facilitate the inclusion of all current banking institutions into the new DBT scheme, the state government agreed to this extended transfer timeframe. However, the positive energy behind the drive for financial inclusion meant most branches were digitised ahead of schedule.

Once the *Samagra* database and the banking infrastructure were both in place the first trial of DBT payments was conducted, involving the payment of all existing MGNREGA beneficiaries via their current database, but through the newly created bank accounts. The trial was deemed successful, opening the way for the migration of other benefit schemes to *Samagra* and payment by DBT. Due to the size and scope of the combined *Samagra* and *Samruddhi* missions, each step of the process was trialled with a limited set of data. Initially, only current departmental beneficiary lists were incorporated into *Samagra*, and their payments moved to DBT, retaining the demand-led nature of the SP system. Once established, the full entitlement-led version would be set in motion.

The first step required for the full movement of data to *Samagra* was to transfer into the new database all the personal information gleaned from the household census and socioeconomic survey. BPL status and individual banking details were also added, and all these data columns were then frozen. The next step involved building a bridge between the existing departmental beneficiary lists and the *Samagra* database. Starting with pensions, the eligibility information was physically loaded into the new system. The data had to be matched with the census and survey data already present. As expected, this required significant cleaning and the removal of duplicate records. For example, the same individual appearing in two households, or an individual with two records spelt differently. In some cases, rectifying identity anomalies required fact checking visits from district staff. The removal of duplicates and ineligible claimants resulted in five to eight thousand people per political constituency no longer receiving a pension payment. Though this was a small number in absolute

terms it, unsurprisingly, caused complaints and raised political concerns. However, public transparency about eligibility criteria meant those removed from the records had little recourse.

Scholarships were the next scheme to be moved over to *Samagra* and DBT. The negative political feelings that had followed the transfer of pension payments turned around when the value of budgetary savings arising from removal of duplicates under the new system were calculated. This revealed that many students were being recruited at multiple institutions at the same time, meaning many colleges and schools were claiming a scholarship payment for the same student, though they were only physically attending one establishment. This process had previously gone unnoticed because each educational institution held a separate physical claim file. The removal of duplicate scholarship payments resulted in a saving of Rs.400 crore (£48.5 million). This came as a surprise to most in the government, and raised concerns that, if revealed, the scale of savings would fuel public criticism of government corruption. However, the Chief Minister adopted a proactive stance with a strong political statement reassuring the public of the government's transparency, emphasising how innovative streamlining of the SP system would ensure mistakes on this scale could not be repeated.

The financial savings that occurred following incorporation of scholarship payments into *Samagra* acted as a catalyst for other government departments, who had initially been reluctant to open their data to inspection, to support the new scheme. This impetus arose from the realisation that their own data probably contained similar errors that, when corrected, could lead to significant budget savings. For this reason, the food security public distribution system (PDS) and health department schemes were also soon moved on to *Samagra*. For each scheme introduced, decisions on eligibility continued to occur at the district or block level, with the same authorising agent using an electronic signature to action the immediate release of funds to beneficiaries.

Given the extent of personal information stored on *Samagra* and the number of different departments that were using the system, regulated access to data and data privacy were important considerations. *Samagra* was developed with a multi-level security infrastructure whereby each government department has access to, and editing rights for, only the data relevant to their schemes. The first 20-25 columns containing essential personal information - such as household name, number, caste, BPL - could only be edited by a designated official at either the local, self-government (urban) or panchayat (rural) level. At the sub-district block level, only five data changes could be notified by individuals and amended on the database – birth, death, removal/addition of female household member due to marriage, family splits and migration – and changed by an official using a security code. All other data columns could be seen and edited only by the relevant department using their security access information alongside the beneficiary's identification number and name. Personal information and bank account details were hidden and all data encrypted. The only information that remained in the public domain, in line with national government policy, was the name of beneficiaries for each SP scheme.

Scope and growth

The scope and growth of *Samagra* was impressive; between December 2012 and March 2013, Rs.7,000 crore (£849.4 million) was transferred to current beneficiaries through the new DBT system. In the following year,

the government started to move the system over to an entitlement-led model to ensure all those eligible for each benefit scheme received their financial support irrespective of whether they claimed it or not. The shift to entitlement-based SP was inaugurated through the disability group of benefits. Through the household-level surveys it had become apparent that many disabled citizens were hidden in families and were not able to access SP effectively in the current demand-led system. There were also a number of disability-targeted benefit schemes run by different departments which overlapped but had previously remained siloed in their administration, with no way to know whether beneficiaries had received assistance from multiple schemes or been left out altogether. From 2013 onwards, all currently claimed benefits were listed in *Samagra*, alongside personal, household and eligibility data. This meant that the appropriate financial disbursements could be made to all disabled residents, irrespective of whether they claimed them. It also allowed the government to assess other ways that equality could be improved for this group of the population.

An example of how *Samagra* permitted better analysis concerns implementation of the government law stating that four percent of all employment should be filled by the disabled. Until 2013, this had never been achieved and many well qualified, disabled citizens were left out of the employment sector. As *Samagra* now held details of educational attainment, alongside disability records and SP eligibility data, it was possible for the Secretary of Social Justice to analyse and monitor the situation and to work with employers to encourage better disability employment initiatives. Better access to adapted housing, particularly in urban areas, was also catalysed through *Samagra* when it became apparent from the data that households containing disabled family members were being offered the same standard and configuration of housing as those with no specific physical needs. Additionally, based on *Samagra* data, the MP Chief Minister decided that all people with learning disabilities should receive appropriate financial benefits, irrespective of their household income level, as this group of people were historically neglected. Expansion of personal bank accounts linked to their entitlement data, meant payments could be made direct to the eligible individual regardless of whether they were aware of their entitlement or able to apply for it. Duplicate schemes, were also merged to reduce confusion over which benefits to apply for, and preparation of inappropriate applications for multiple benefits by the same person.

By 2019, more than 99% of individuals and their households in MP were listed on *Samagra*, a database of nearly 72 million citizens; and, since 2013, all benefit schemes have been rationalised and administered using *Samagra* and DBT through an entitlement-based model of SP. This constitutes annual DBT payments in MP of Rs.18,000 crore (£2.2 billion) and, despite an increase in citizens' access to transfers through the entitlement model of disbursement, the rationalisation of benefit schemes has led to saving of approximately 14% of the state's annual SP budget, mainly within the scholarship and pension schemes. Eight other Indian states, including Telangana, Tamil Nadu, Rajasthan and Tamasha, have sought to replicate *Samagra*, along with the National Scholarship Portal and *Ayshman Bharat* health scheme.

4. An appraisal: evidence of progress and drivers behind it

Establishment of the *Samagra* household database alongside the *Samruddhi* financial inclusion process was a significant step towards addressing the structural and policy barriers to providing a more inclusive, efficient and equitable SP service to the citizens of Madhya Pradesh. In their evaluation of *Samagra*, Unicef states that the creation of an online common household database, incorporating socioeconomic eligibility criteria has “made significant strides in improving the efficiency and effectiveness of the delivery of selected welfare schemes” and they are “encouraged by the early success of *Samagra* as a single unifying social registry system”(Menon et al., 2018). Price Waterhouse Cooper also praised the initiative as having “brought about manifold improvements in the way [the] system was running”, making “it possible to upgrade the conventional demand-driven and reactive approach to [an] entitlement based proactive approach” (PWC, 2016). The Unicef and PWC evaluation documentation elaborate a number of technological and sustainability achievements demonstrated by *Samagra*, alongside positive changes in state capacity and citizen wellbeing indicators.

First, *Samagra* demonstrates the benefits of interoperability, facilitating web services that integrate seamlessly with complex data and functionality. The security of the database, both at system and sub-system level shows it is possible enhance, ease of access and analytic capabilities across the dataset, while encrypting sensitive personal data and restricting access of government employees using password protected editing permissions. The successful creation of well integrated front and back end functionality aids informed decision-making and avoids repetitive verification. The automation of back-end processes, originally done by hand, also improves efficiency through timely and precise delivery of disbursements to the population. For example, “for the release of pensions to close to 35 lakh (3.5million)] beneficiaries in the state, as many as 6,000 bills were required to be generated, however, after implementation of *Samagra* only 10 bills are generated through the Chief Executive Officers of the *Janpads* through the Treasury. This has led to achieving significant efficiency through reduction of human effort in documentation and cross-verification at each stage and also contributed to reduction in duplication and corruption directly”(Menon et al., 2018, p16-17).

Second, the use of in-house software design and development reduced the cost of database construction and increased the efficiency and timely nature of both the creation and subsequent adaptation of the system, as the *Samagra* mission grew in scope. Government-level IT development also enhanced the replicability, scalability and sustainability of the database through the “creation of an online, self-learning and integrated platform that can be used by any department of the state or central government for [the] implementation of [benefit] schemes[s] effectively”, and “rapid application development for automating any beneficiary/family based schemes in state without any further investment in hardware/software/time etc.”(PWC, 2016, p12).

Third, the introduction of *Samagra* and DBTs led to cost savings in human resources due to the removal of duplicate benefit schemes administrated by separate departments. A single, centralised repository of individuals and linked households also increases the inclusivity, efficiency and effectiveness of targeting and the utilisation of budgets for eligible citizens, while aiding identification of fraudulent claims. Benefits can be tracked throughout the life cycle of an individual, and those not claiming a benefit for which they are eligible

can be identified and added to the given scheme's beneficiary list automatically. Transparency in the system, centralised control over the wide landscape of SP provision, real-time delivery of payments and digitisation of information for beneficiaries all enhance the ability of the government to provide a robust, entitlement-based service and accountability to the citizenry of the state. *Samagra* can also act as an integrated portal for social audit, informing state planning, providing useful data on issues such as school enrolment and skills gaps, leading to the streamlining or adaption of existing government policy and SP schemes and the creation of new, tailored initiatives to enhance livelihood opportunities.

From a citizen's perspective, a proactive, entitlement-based model of governance, backed up by digital transparency concerning benefit scheme availability and eligibility criteria, and DBTs to individual bank accounts, offers clarity and peace of mind over receipt of appropriately verified support. Complex and confusing application procedures can be streamlined, including form submission and verification processes. The extension of local banking facilities has also improved opportunities for the use of other financial services, promoting savings and enhancing resilience to shocks (Maripally and Bridwell, 2017; PWC, 2016, p14).

Despite the overall success of *Samagra*, challenges remain to realising the vision of a fully inclusive and equitable SP system that leaves no-one behind. In addition, critical questions concerning data privacy and state surveillance, are as pertinent to the establishment of *Samagra* as they are to the *Aadhaar* individual identity scheme.

Research by Unicef suggests that there is an urban bias in the current implementation and use of *Samagra* due, most likely, to the web-based gateway to the database. Guaranteed, robust internet connection in many rural areas is unavailable and, given that the *Samagra* portal can only be reached via a computer browser, and data uploaded when a secure internet connection has been made, beneficiaries are often left waiting in line for hours to update basic information at their local Panchayat office. Literacy rates, technical knowledge and awareness of the *Samagra* database are also lower in remote locations and marginalised rural communities.

At least four further measures are needed to address these issues. First, the creation of an offline version of the portal, combined with local data storage capabilities, would allow data to be created and updated without the need for continuous internet access. Data could then be uploaded when internet connectivity becomes available. Second, the *Samagra* platform also needs to be restructured to remove redundant data, and back-end IT infrastructure rules can be reprogrammed to permit cleaner, more streamlined navigation to data within the portal. Third, additional human resources (technical and administrative) are needed to address data entry backlogs and to promote efficiency, particularly at the sub-district level and within schools, where a significant amount of *Samagra* data is created and updated (Menon et al., 2018, p19). Fourth, India has one of the cheapest and most far-reaching mobile internet services globally, with "a very large percentage of rural folk and underprivileged urban residents use[ing] 'smart' phones with Internet connectivity" (ibid, p21). Hence, scope remains improve client access to *Samagra* through a mobile phone interface, including through expansion of local language comprehension capabilities. Access difficulties arising from disability, sickness and lack of transportation are particularly acute for the elderly, and receipt of pension payments, formerly paid

out as cash in-hand (Menon et al., 2018, p13). Smart phone technology, mobile-based banking and payment apps can all contribute to reducing the need for elderly, disabled or sick citizens to travel to their local financial institution. Facilitating security mechanisms in mobile environments are, however, challenging, and the appropriate utilisation of available security tools is critical to ensure the safety of personal data.⁵

Omissions in the household census data, the BPL surveys and delays in the production of death certificates have also resulted in households missing out on their entitlements. “After the launch of *Samagra*, the quantum of ration items [under the PDS] were to be distributed to each household on the basis of the numbers in their family as registered under *Samagra*. But not every member in the family was included in *Samagra* as they did not have an *Aadhaar* card or a voter card, or any other necessary proof of identity documents during the survey...for them to get a *Samagra* ID” (ibid). During their research, Unicef identified many families experiencing problems with “enrolling themselves for a *Samagra* ID due to non-availability of minimum required documents” (ibid). Households not included in the BPL survey had also been denied eligibility for a pension and some widows highlighted how delays in the release of a spousal death certificate had delayed their access to a widow’s pension. Lastly, temporary or permanent migration and family separation, post-marriage, have all been reported to cause issues for those entitled to scholarships, pensions or essential commodities under the PDS. For example, “when one family gets divided into two families, the member having the headship and hence the ration card is able to get the ration items while the other separated family members remain excluded from the benefits” (ibid, p14).

Recommendations to improve the inclusivity and administrative efficiency of the database include government-initiated, automatic *Samagra* identification generation. There is a need to “fill the technological gap between verification, uploading and digitising [of] data to disbursement [as] the first process is still largely analogue and thus cumbersome and bureaucratic” (ibid, p18). The inclusion of *Aadhaar* identification numbers into *Samagra* is a positive step, given the unique biometric basis of identification it offers, and verification of identify through *Aadhaar* should eliminate some of the data errors currently found in the system, such as duplications and the management of individual movements between households. However, to do this *Aadhaar* needs to be set as the primary data validation key, or the field that uniquely identifies an entry in the database. The challenge here is that the primary key cannot be left empty and, as *Aadhaar* registration remains optional, currently only 80-90% of *Samagra* individual records include an *Aadhaar* number.

In order to move towards inclusive development and financial access for all citizens, as promoted in the Sustainable Development Goals (SDG 1.3 and 10.2), the *Samagra* database must leave no one out. This requires the constant creation and updating of individual and household records. A full state census only occurs once each decade so there is need for more timely integration of population change. There are currently two key trigger points for the updating of *Samagra* data - birth and death. Specific benefits have been

⁵ Since the study some of these issue have been reduced, including through introduction of an off-line version that can be uploaded at the moment of connectivity. Awareness of *Samagra* even in remote places has also increased, with availability of data in the local dialect (Hindi) facilitating easier monitoring and updating.

linked to these life events to encourage people to inform the government promptly. When a birth is entered into *Samagra*, the health department instantly releases monies to cover an institutional delivery and, if the mother or father are construction workers, they also receive sixty days employment compensation from the labour department. The payment of life insurance is linked to the notification of death by a family member on *Samagra*, again encouraging proper notification to the government authorities. Though these incentives promote timely notification of some population changes, not all citizens are either aware of, or take up, the incentives on offer. Other household changes are also not so easily tracked, such as marriages, which are only automatically entered into *Samagra* if the family take advantage of the government marriage scheme, and family splits which cause particular difficulties in how to administer food rations. Addressing these challenges requires continuous efforts to ensure local government staff undertakes monthly cross-checks. Improved connectivity advances, such a mobile access to *Samagra*, and increased citizen education on the benefits of inclusion in *Samagra*, should with time also improve the extent to which the database can be maintained as a live register of the population.

A final and critically important issue for *Samagra* relates to privacy and data security. The *Aadhaar* identification scheme has already come under scrutiny for being “the largest biometric database in the world without a corresponding codification of data protection provision”, raising serious concerns about “the scope for surveillance and control generated by the massive expansion of potential government access to personal data without the necessary legal or accountability framework” (Bhatia and Bhabha, 2017, p75). Evidence has shown tensions between public support for the efficiency that national ID schemes can bring and anxiety concerning the potential misuse of personal data (Lyon, 2009). In the UK, for example, plans for an integrated ID card were defeated over worries about ‘data creep’ and the privacy risk implications that the integration of different databases might have (Beynon-Davies, 2006; Davies, 2005). In India, it appears that for the time being, the potential for entitlement-based, inclusive and properly targeted SP through the *Samagra* platform linked to the ease of verification that the *Samagra* personal and household ID numbers bring, far exceeds any concerns over state surveillance or personal privacy. The technological review conducted by PWC also voiced no security concerns, pointing to a host of server and client side validation and security mechanisms that had been kept in mind during the development of the portal (PWC, 2016, p11). The Unicef evaluation went one step further by calling for further departmental database integration, a more relational *Samagra* platform, able to track project patterns and budget allocations in real time, and looser coupling⁶ with other databases inside and outside of Madhya Pradesh. These improvements were deemed necessary to improve SP targeting and save significant time and resources by allowing dynamic analysis of fully integrated data, but they also point towards further centralisation of control over data. Hence while *Samagra* is still a relatively new system, and early indications of its impact are positive, it remains to be seen whether perceived benefits are offset by rising concerns about data privacy and potential data abuse.

⁶ “Loose coupling implies integration between web applications with little or no customised code, with minimal human intervention, and with provision for dynamic integration” (Unicef, 2018, p20).

5. Conclusions

Samagra was introduced in 2012 to address problems of fragmentation, poor targeting and inefficiency in the social protection system of Madhya Pradesh. It was also deemed a key component in the transformation of government social protection policy from a demand-driven and welfare-oriented model to one based on entitlements, automatically disbursed, as a constitutional right (Sharma, 2019). It has already significantly improved the inclusivity, efficiency and cost-effectiveness of the state's SP infrastructure by providing a single, unified social registry system incorporating both personal identification and household eligibility with verification capabilities through a well-designed, secure internet platform. The use of in-house IT designers helped to contain costs, and has enhanced the replicability, scalability and sustainability system, encouraging other Indian states to emulate the *Samagra* model.

The consolidation and streamlining of numerous and overlapping benefit schemes in Madhya Pradesh led to significant budgetary savings through removal of duplicate claims and a reduction in required personnel across multifarious government departments. A single, centralised repository of individuals, linked to their household eligibility criteria, also increased the inclusivity, efficiency and effectiveness of targeting, allowing eligible citizens to receive all the benefits they are entitled to without the need for multiple application and verification processes. In this way, the government has been able to direct their SP budget towards eligible citizens while reducing cases of duplicate or fraudulent claims, resulting in large savings, particularly with regard to the scholarship and pension programmes. From a citizen's perspective, *Samagra* has removed much of the complexity involved in ascertaining eligibility status, and reduced the time and confusion involved in the application process. SP information is more widely available through the portal, and beneficiaries receive their entitlement automatically, as long as their data is kept up to date on the system. This has led to increased governmental transparency and accountability, fewer citizens being left out, and increased protection for the most marginalised and vulnerable in society.

Despite these positive outcomes several challenges remain to be addressed in pursuit of a system closer to the SDG call to leave nobody behind. The internet, browser-based nature of the *Samagra* portal has negatively impacted timely access for remote and rural communities, where many of the most vulnerable and marginalised citizen's live. The same people are also the most likely to be excluded from the full benefits of the system by illiteracy, lack of technical knowledge and awareness of *Samagra*; with some having been missed out of household surveys, thereby failing to secure a *Samagra* ID and the benefit entitlements it would have unlocked. Other citizens, already included in *Samagra*, may fail to update their information, such as in the case of a birth, death or marriage, limiting the extent to which *Samagra* can be deemed a live population register; while at-risk groups, including the elderly, disabled and sick, have struggled with the conversion from in-hand to DBT payments due to being unable to travel to their designated, local financial institutions to access their benefit allowances.

A radical route to improved inclusivity rates, and to enhance data accuracy through better citizen-led updating, is to harness the Indian mobile phone network to bring *Samagra* straight to even the remotest places via

individual smart phones. *Samagra* information and updating mechanisms, in local dialects, available directly in a beneficiary's home, coupled with extended mobile banking capabilities could bring universal financial and SP inclusion one step closer. Many more incremental technical improvements can increase accuracy, security and ease of use, including reconfiguration of the back-end infrastructure to improve data navigation, and an increase in IT and administrative human resources to speed up data handling.

Finally, development of a strong and open regulatory framework for use of *Samagra* data for wider surveillance and planning purposes is critically important to ensure governmental transparency and accountability. While participation in the *Aadhaar* identification scheme is legally voluntary, *Samagra* registration is compulsory for the receipt of social protection payments, and hence integration of the two is a powerful lever towards making *Aadhaar* effectively obligatory also. This heightens the need to strengthen data protection guidelines, and to establish complaints procedures and other accountability mechanisms to protect civil liberties.

There is scope for further research into how *Samagra* works in practice in MP, and how it has affected state-society relations, including through analysis of media coverage, and covering both initial implementation and subsequent consolidation of the reforms. A stronger demand side perspective, to complement the supply side view offered here, could usefully draw on both survey based and ethnographic assessment of changing costs and constraints to accessing benefits, how payments are used, and evolving relations between front-line staff, those eligible for payments and those who are not.

There is also scope for further research into the *Samagra* policy development experience, its potential relevance to other contexts and to understanding the causal processes influencing policy reform processes and implementation outcomes. While *Samagra* offered medium term efficiency and budgetary pay offs, it also entailed addressing significant challenges and risks. These included confronting potential losers within the state bureaucracy, who were threatened with reduced control over specific programmes, and able to whip up fears among existing beneficiaries that they might lose out.⁷ The complexity of the combined *Samagra* and *Samrudhi* programmes also presented a formidable technical and administrative challenge, with associated risks of cost and time overruns.

Four factors have been identified in this article as critical to overcoming these policy reform challenges. First, the programme drew on a powerful narrative of improvement that resonated with development discourse at state, national and global levels. Second, this attracted strong political and administrative leadership at the state level, enforced through strong high-level cross departmental coordination. Third, the project was carefully sequenced, and in such a way as to build momentum by achieving early and substantial budgetary pay-offs. Fourth, project implementation was facilitated by reliance on strong internal technical capacity, with a presence down to district level. Another factor, worthy of further research, is the contribution media

⁷ One instance of this centered on whether the requirement for a *Samugra* identity number was unnecessarily adding complexity to the administration of transfer schemes, alongside the roll-out of *Aadhaar* numbers (Afridi, 2015).

reporting, open political debate and public relations management made to feedback loops and an adaptive implementation process. It is beyond the scope of this article to discuss how far the initial problems of fragmented and inefficient PBT delivery faced by the MP government are mirrored elsewhere.

The *Samagra* experience is relevant to attempts to address data and programme fragmentation problems in other contexts. But it should be based on a careful appraisal of whether the above factors are present, or not, rather focusing more narrowly on how to replicate technical characteristics of *Samagra*. Subject to this caveat, *Samagra* does have the potential to inspire progress across low and high income countries towards delivering on the letter and spirit of the SDGs that no one should be left behind.

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