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Informed Choice?

Motivations and methods of data usage among public officials in India

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Informed Choice? : Motivations and Methods of Data Usage among Public Officials in India

Abstract

The importance of data in informing the policy making process is being increasingly realized across the world. With India facing significant developmental challenges, use of data offers an important opportunity to improve the quality of public services. However, lack of formal structures to internalize a data-informed decision making process impedes the path to robust policy formation. This paper seeks to highlight these challenges through a case study of data dashboard implementation in the state of Andhra Pradesh. The study suggests the importance of capacity building, improvement of data collection and engagement of non-governmental players as measures to address issues.

Introduction

Data continues to play an important role in the functioning of public administrations as a tool for reporting and accountability. With more national and sub-national Governments putting in place policies to formalize open data, several emergent opportunities for utilization of this data, not only by the general public, media and civic organizations, but also by Government officials for robust monitoring and effective policy making, present themselves. The paper studies the perceptions of public officials in India regarding data and explores the ecosystem for leveraging such data for effective policy making at the National and Sub-national levels with specific focus on the Southern State of Andhra Pradesh. The paper also seeks to identify motivations and drivers for bureaucrats' interest in data and the modalities for using it to inform their day-to-day functioning at different levels.

Literature Review

Governments usually are the largest collectors and keepers of data in any country (Davies, 2010). This data combined with recent developments in technology, presents significant opportunities for creating and deploying more effective policies. Data is also integral to decision-making and serves as an important tool for ensuring accountability (United Nations, Independent Expert Advisory Group on Data Revolution in Sustainable Development, 2014). Immense potential for synergy exists between the effector and detector tools of governance as identified by Hood and Margetts (2007). Civil society and commercial organizations can innovatively analyse and interpret data (irrespective of their reasons for doing so) and can contribute to improve the delivery of public services along with co-producing better services (Davies, 2010). While the significance of data as a tool for transparency is generally accepted by

Governments and public officials, the utility of data for supporting decision making processes and identifying policy priorities is still not well understood by them (Kaufmann, Kray and Zoido-Lobatón, 2000). Recently, there has been a significant interest among Governments (both national and sub-national) across the world in releasing the publicly-held data under some form of Open Government Data (OGD) initiatives. One of the predominant motivations for the use of OGD datasets is "Digitizing Governance" (Davies, 2010). Bowen and Zwi (2005) contend that the motivation and methods for using data in the policy making process are not only influenced by practical concerns like costs, timing and politics but also by the decision maker's value and belief systems.

The current literature on mechanisms of data-driven decision making in Governments primarily deals with Health and Education related policies at sub-regional levels, but Weiss (1979) identified various common modes of utilization of research evidence and data in the policy making process based on the motivations and interests of individuals/groups. These modes included the pro-active 'Knowledge-Driven' and 'Problem-Solving' models along with the reactive or exploitative 'Tactical' or 'Political' models with the possibilities of a long-term 'Enlightenment' model among others. Bowen and Zwi (2005) expanded on Weiss (1979) to identify the "influencing factors" at different stages of policy making with "system level capacity constraints, political salability and ideological compatibility" of the evidence being important inter alia in the application stage of policy making. They further identified key factors in decision making along with various capacities required at the individual, organizational and systemic levels. They also formalized the process in an "evidence informed pathway of progressive stages: adopt, adapt, and act". Some countries have tried to institutionalize the use of data as a decision support tool in their policy making process through executive declarations or statutory frameworks (Data Legislation Proposals UK, GPRA US). However, the journey of policy makers from data (raw facts) to information (described by Floridi (2004) as "data+meaning") to wisdom (judging what is the optimal decision as per Rowley (2007)) may require separation of the actors involved at different levels of data use (Mayo, 2007).

The Indian Context

The national and state governments in India collect a large amount of data. The Registrar General of India, Central Statistics Office, National Sample Survey Organization and various other ministries collect and generate national level data of varied granularity on various subjects . A parallel data collection mechanism also exists at the State level (National Statistical Commission, 2001). In addition, the Right to Information Act, 2005 requires governments to release exhaustive data through both *sou moto* and on-demand routes. Also, other statutory measures like Collection of Statistics Act, 2009 have been notified to streamline the collection of data. The Central government launched its Open Government Platform (www.data.gov.in) in 2012 to open up large datasets to be used and leveraged by the general public. The website hosted over 24000 high value datasets from more than 100 departments as of May 2016. The Central Government

also notified a National Data Sharing and Accessibility Policy in 2012 to enable streamlining and sharing of public data. States such as Sikkim have also followed suit by unveiling their own open data policies.

As a part of its e-governance initiative (Digital India), the government has expressed its intent to "to automate, respond and analyze data to identify and resolve persistent problems" through process improvements (Department of Electronics and Information Technology, Government of India, 2014). However, exhaustive search of existing literature does not point towards a formal structure for data-based policy making mechanisms. Despite the government increasingly adopting large Management Information Systems (MIS) for monitoring flagship schemes, their use remains limited to reporting purposes. Till the year 2014, the Planning Commission of India commissioned a large number of data-centric studies to aid the formulation of the five-year plans. However, these plans were not based on real-time statistics and had a long lag time between collection of data and implementation of policies. The Second Administrative Reforms commission had called for leveraging e-governance to improve service delivery but did not provide recommendations for enabling data-informed policy making (India. Second Administrative Reforms Commission, 2008).

Methodology

The paper primarily adopts a practitioner's approach towards the research along with other qualitative research methods such as document review, interviews and observation methods. Swaniti Initiative entered into a partnership with the Government of the State of Andhra Pradesh (hereinafter referred to as Andhra Pradesh) to provide IT-enabled analytical and mining tools to analyze Government data and develop a dashboard. The partnership provided a unique opportunity to understand how the public officials perceive and use data. This paper includes analysis of the observations (documented in internal memos and notes) of Swaniti's data scientists and public officials in conceptualizing and developing the dashboard. The authors were also directly involved as liaisons between the Government and the data scientists and have included their own observations in this paper.

Several serving and retired public officials of Andhra Pradesh and the National Government were interviewed during the research based on their willingness to participate. An effort was made to engage officials at different functional levels of the governments including Secretary rank officers at the policy making level and District Collectors at the field level of policy implementation. The questions were designed to understand why and how data is used by public officials, specifically in context of the data dashboard and also generally. Notes from the interviews were analysed and have shaped the observations and conclusions of this paper. As no formal systems for data-based policy making are currently in place in India, a review of the laws, policies and government orders relevant to policy making and IT-enabled governance was essential to understand the ecosystem and constraints in which the public officials operate while

making and implementing policies and to contextualize the information received from the public officials during the interviews.

The methodology adopted here faces certain limitations such as skewed regional and demographic biases. All the methods adopted focus primarily on the State of Andhra Pradesh which may lead to a lack of general applicability of the conclusions. The authors have tried to mitigate the risk by interviewing a cross-section of public officials across various departments at the national level. Similarly, as younger public officials tend to be more receptive to interview requests, the observations may be skewed in applicability towards the newer batches of the civil services. We have attempted to mitigate this bias by including observations from the interactions with older public officials during the dashboard development process.

The Andhra Pradesh CM Dashboard Project: A Case Study

Andhra Pradesh traditionally has been one of the early adopters in applying new technologies and innovative methods to governance and policy making. The State Government's IT policy of 2001 identified "the extensive use of IT within the process of governance for providing better citizen services and for enhancing efficiency, transparency, accountability of Government Departments, and agencies" as one of its principle priorities (Government of Andhra Pradesh, 2001). In May 2014, the Telugu Desam Party led by Mr. N. Chandrababu Naidu came back to power after 10 years with a large mandate. One of the agenda of the new government was to renew focus on innovative methods of data collection and decision making while specifically leveraging the advantages of Information and Communication Technology (ICT).

In October 2014, Swaniti Initiative was requested by the Andhra Pradesh Chief Minister's office to develop a dashboard to enhance the decision-making capacity of the Chief Minister (CM) and senior bureaucrats. The request entailed designing a dashboard which met the decision support requirements of the senior policy makers in the State of Andhra Pradesh and provided required insights based on data to identify the optimal policy options. The project was intended to fulfill the following broad goals:

- Providing decision tools to the government that will speed up economic growth and development in the state. The Chief Minister's data dashboard was meant to be a comprehensive tool for the CM and senior policy makers that will provide insight on the government's investment (e.g. expenditure on infrastructure projects, ongoing projects in education and healthcare etc.) and associated development outcomes (e.g. real-time infant mortality rate, electricity demand)
- Providing quantified measurements of important indicators in priority areas such as health, drinking water and so on. The data dashboard was meant to consolidate past gains, understand "what works" and improve efficiency in government

- Developing a sustainable tool for monitoring outcomes and impact of schemes/policies modified as per feedback based on the dashboard. This was to be achieved creating templates for data reporting, outlining a schedule for expected data input for each metric and training senior officials in the CM's office on the functionality of the dashboard to ensure continuity
- Developing an analysis tool to enable cross-state comparison on investment in development and related outcomes
- Creating a model state-level data-based system as a sample case to be improved upon and scaled up in partnership with other states

Selection of Sectors and Metrics: Based on this broad mandate provided by the Chief Minister's office, Swaniti's research team initiated interactions with them, the Principal Secretary and Secretaries in the Government to identify the priority development areas of the administration. The interactions enumerated five priority sectors as defined by the Government earlier in its public statements. These priority areas were: health, education, gender, livelihoods and investor confidence. A broad-based iterative consultation process was also adopted to identify the key metrics for each of these sectors which were indicative of the achievement of goals set by the state for itself. For example, in education, key metrics such as Gross Enrollment Ratio (GER) and Literacy Rates were indicative of the desired outcomes from investments made by the State.

After few initial rounds of discussions, it was evident that the existing set of metrics might be overwhelming, primarily because there were too many. Further, due to the urgency of the upcoming annual budget formulation, the Chief Minister's office also communicated that the dashboard should focus on only two areas: budget and outcome Analysis for Agriculture and Education rather than cover all priority sectors as identified earlier. Within these sectors the metrics were divided in two broad categories of input and output. Inputs were defined as the 'investments' that the government made and comprised of data like expenditure (e.g. spending on irrigation, investment in education). Outputs, on the other hand, were defined as the current state of development (e.g. agricultural productivity, school attendance rates). After the consultation process, all concerned departments were requested to compile the data sets as per their records to be used for the dashboard.

Collection and Compilation of Data: The research team met with public officials in different departments to collect the required datasets and co-ordinate formats for reporting data. While data for the metrics was generally available, huge variance was noticed in the granularity and frequency of the available data across departments. Similarly, the accuracy of the data (in comparison to data for the same metrics collected or held by other departments/Central Government/credible Civil Society Organizations) was variable. In order to ensure uniformity of data to be used for the dashboard, Swaniti's research team designed a template for bureaucrats to consistently enter quality data on the dashboard.

Concept Dashboard: Based on the inputs, Swaniti compiled a dashboard in the areas of education and agriculture as a proof-of-concept. The concept envisaged a real-time development indicator dashboard for key performance indicators of the priority sectors. The dashboard also

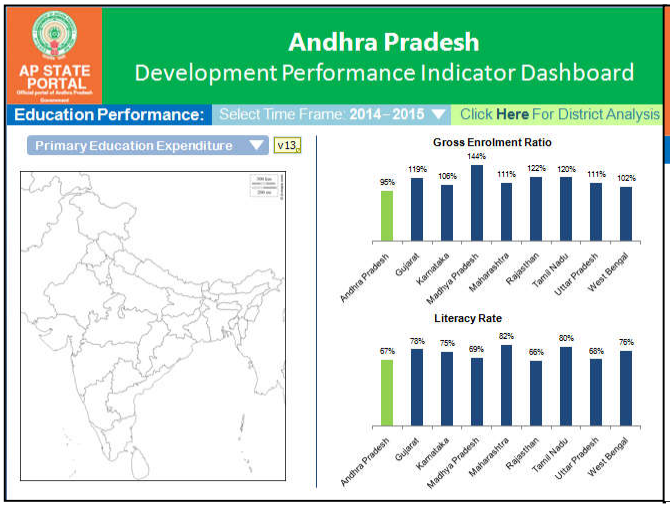

Figure 1: Inter-state Comparison of Education Indicators

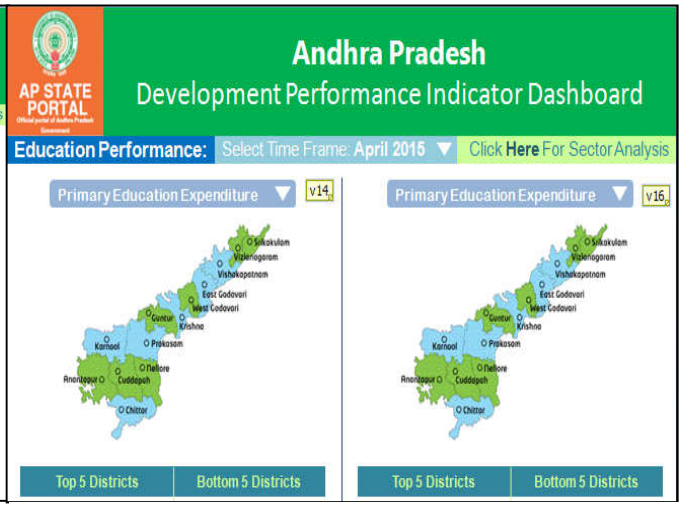

Figure 2: Inter-District Comparison of Education Spending

provided an allocation and spending analysis for each of the sector, along with comparable metrics in other states

In order to analyse comparison of performance of Andhra Pradesh with other states, Swaniti selected eight states comparable in population, current level of development and resources. These states included Karnataka, Madhya Pradesh, Rajasthan, Maharashtra, West Bengal, Tamil Nadu, Uttar Pradesh and Gujarat. A similar input and indicator analysis was conducted for all these eight states to ensure correct benchmarking of Andhra Pradesh's performance.

The concept dashboard also provided high granularity of data by providing options to drill down the performance indicators up to the block level. In addition, the dashboard also provided a month-wise temporal granularity to enable identification of spending trends and identify front-loading/back-loading of expenditure at different levels. It further included user-friendly and carefully selected visualization for the data to ensure intuitive understanding of the displayed data. The dashboard was then made available online as a limited release to selected officials for use and feedback.

Post-release Events: During the time between the initiation of the project and release of the concept dashboard, significant flagging of interest on the part of the Government was noticed.

- The uploading of data by the departments was infrequent and in many cases, was not continued beyond the initial datasets.
- The departments also suggested that Swaniti should procure the data through the RTI mechanisms and upload the data, rather than the departments providing the data. This

led to a degradation of the real-time information function of that the dashboard was offering.

- Some government officials communicated that they would prefer if the insights available on the dashboard was available to them in PowerPoint presentation formats rather than online interactive dashboards. This could have led to significant lag times in collection, analysis and provision of the data to the relevant officials.

Based on the feedback, Swaniti team provided a comprehensive analysis of the State's performance in agriculture and budget allocations. The analysis also provided detailed cross-state comparisons and listed the best practices adopted by other states. Based on interviews conducted later, officials noted that they had used some of the recommendations provided in the Swaniti documents. These events led to the further development of the dashboard to be discontinued.

In view of these events, Swaniti conducted a series of interviews with stakeholders to identify the causes that led to disuse of the dashboard and the observations and analysis from the same are included in this paper.

Analysis

Based on the different methodologies adopted during the research, the following sections details the observations made regarding the perception and use of data by public officials. The analysis provides an evaluation of the Indian context within the broad framework of Bowen and Zwi's (2005) "pathways to evidence-based policy and practice".

Takeaway I: A Weak Case for Data in Decision-making

In general, data remains a tool for reporting tangible goals set for each department, and not manifesting itself as a tool for informed policymaking. In specific cases where it is used for policymaking, it is an ad-hoc phenomenon due to lack of formal structures. The decision to use data is driven by different motivations at different levels with high dependence on individual preferences and capacities (Bowen and Zwi, 2005), in contrast to Greenhalg et al.'s (2004) contention regarding the importance of structures and organizational cultures. This explains why attempts to use data for policy making are being largely driven by (political or bureaucratic) individuals who are temperamentally 'early adopters' in other areas also.

Highlighting the importance of adopting a data-based approach by the political leadership can lead to public officials to be more open to the idea (various interviews).However, this does not necessarily ensure the sustainability of the concept, as illustrated by the Andhra Pradesh case study. In some cases, where public officials are interested in adopting the evidence-based approach, the constraints of the existing decision making systems may come into play. As stated by a high-ranking official of the Central Government, even when the data clearly points towards

a preferred policy option, a public official will be cautious to make the decision solely based on data, due to the possibility of future scrutiny by oversight and audit agencies.

The socio-economic context and timing of the presentation of evidence are of considerable importance for it being of some utility (Bowen and Zwi, 2005). These factors are more important in India because the systemic nature of the decision-making process in India is based on concurrence and consensus. This requires a broader acceptance of the need to adopt the data-recommended policy option. Such acceptance can be a result of a political decision (e.g. road safety measures on highway), robust advocacy by civil groups (e.g. focus on ground water conservation) or the broader public discourse (e.g. women safety in India).

Similar to other policy-making systems in the world, all models of data utilization identified by Weiss (1979) exist in India with some (the political and interactive) being predominant. An ideal situation for adoption of data-based policy making in India would require political champions to initiate the process, sequenced with an institutionalized process for decision making to sustain it over time.

Takeaway II: Source of Data is Important

The source of the relevant data and the associated analysis are also important factors in adoption of the data-based model of policy making. Various officials, during the interviews, indicated that they are more willing to accept data collected through normal government channels of data collection. However, in recent years, an increased willingness to accept evidence provided by multi-lateral agencies (such as World Bank, Asian Development Bank) and sector-specific experts is noticeable. While the government(s) still remains the biggest collector of data, the data may not always meet the widely accepted quality criteria of open government data as defined by Eaves (2009). As illustrated by the Andhra Pradesh case study, the datasets can vary in accuracy and lack the required granularity which can limit them from attaining optimal utility. As reporting continues to be the primary goal of Government data collection, selection of metrics tends to be biased towards 'tangible-achievable' rather than 'tangible-desired' (various interviews). One official also noted the lack of capacity to collect relevant data due to "the Indian state being thin in important areas of data collection". This may constrain the capacity of data to be used to inform policy-making even when intended.

The proliferation of Open Government Data is desirable to include a broader spectrum of stakeholders (commercial and non-commercial), to improve the public service processes by "breaking governmental monopolies on representing and interpreting data, and fuelling calls for policy change" (Davies, 2010). However, officials during the interviews, indicated multiple factors like the credibility of non-government processor of data and his history of previous interaction with the government which affect the acceptability of the evidence by the government even when the analysis and recommendations are robust. This can be due to lack of

trust, institutional inertia and lack of capacity to understand and interpret the evidence among the public officials (Bowen and Zwi, 2005).

A more robust OGD framework with formal avenues for inclusion of non-governmental players can greatly contribute to encourage evidence-based policy making.

Takeaway III: Methods of Analysis and Presentation are Important

The method by which data is analysed and presented also affects the ways in which the data is used by policy makers (Davies 2010). A public official would be more amenable to be influenced by evidence which identifies specific action points for his department than a more rigorous statistical analysis. For example, an official was provided with a statistical analysis of agricultural productivity that identified the high impact input factors that affect productivity based on statistical correlation. The official responded with a request for a list of specific actions to promote these input factors as that data was more actionable from his perspective than the correlation data. Multiple officials, during the interviews, expressed the need for the evidence to be easily consumable and explainable for being used by them.

The preference of public officials for presentations methods also affects the acceptability of the data in the process of policy making. The Andhra Pradesh case study highlights preference of officials for presentation formats over online portals. While these preferences may differ from person to person, they nevertheless highlight the need for evidence presentation to be customized as per the needs of the consumer unless standard capacities are developed.

Takeaway IV: Customization of Evidence for Different Levels is Essential

The need for customization of data at different levels was one of the important issues raised by the officials during the interviews. The need for data at the implementation level is different from its need at the policy making level. While this observation seems intuitive, the decision regarding selection of data to be provided at different levels must be rigorous. The effectiveness and granularity of the data can involve a tradeoff decision and needs to be carefully made by the processor of the data.

Conclusion

While no formal structures for data-based policy making currently exist in India, the process is being initiated in isolated cases, predominantly due to individual influence. In order to internalize this process, formal statutory or executive structures need to be established for a more robust process of decision-making. A series of actions to build capacity, improve data collection and engage non-governmental players would have to be initiated. In order to effectively optimize the process, inherent systemic biases may need to be corrected.

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