

Concept Note

Advice under Article 150, on 100 percent electronic financial transactions and data standards

Context

1. The “Digital India” programme envisages a vision to transform India into a digitally empowered society and knowledge economy. This is being driven by building digital infrastructure as a core public utility, providing transformative e-services to the citizen and digitally empowering the citizen to easily access all such e-services. A lesser appreciated fact is that transformative change in financial governance is critical to the success of ‘Digital India’. It is important today to meet the requirement of reliable, accessible, and searchable data related to Government revenue and expenditure.
2. Over the years there has been progress in digitizing financial transactions in the last decade. For instance, implementation of Integrated Financial Management System (PFMS for the Centre, IFMS for the States), allowed capturing of many additional attributes of financial transactions like name/s of recipients, addresses, bank account numbers, sanctions backing the funds transfer/expenditure, etc. in one location. Such information was maintained in separate registers in the manual system. Similarly, implementation of online tendering or publishing systems such as Government e-Marketplace, Centralized Public Procurement Portal, and various e-procurement systems developed by various Union and State Government agencies, allowed capture of many important attributes of public procurement activities.
3. However, the usability of the above data is restricted as it is generated/collected by different government agencies and departments across all tiers of Government, in separate and disparate databases primarily for their own purpose. Data is difficult to link, compare and analyse across Government due to lack of common data standards. A metadata catalogue or common data dictionary is not operational. Many of the existing IT systems lack modern data protocols for extracting and sharing data securely through means like Application Programming Interfaces (APIs).

4. For example, data on utilization of grants and loans, unified list of vendors or contractors with payments made and due, common beneficiary database, etc. is not available to policy makers in one place.
5. The transactions are not digitized end-to-end as already shown in Annexure 1 and 2, which leads to low operational efficiency, routine breaches of financial rules, and makes government wide visibility of transactions impossible. The resultant incomplete and incomparable data is not able to support establishment of budget baseline, data driven project/ activity cost estimates, performance comparison of departments and agencies, benchmarks, etc.
6. Apart from this, off-budget expenditure and presence of corporations, autonomous bodies and other parastatals, further compounds the issue of taking stock of actual on ground expenditure.

What are Data Standards?

7. Data Standards are rules by which data is described and recorded. In order to exchange, share and understand data, both the format and the meaning are required to be standardized. Data Standards make it easier to create, share, and integrate data by making sure that there is a clear understanding of what the data represents and that it is in a form that is expected. It also helps remove ambiguities and inconsistencies in the use of data.
8. At the root of the Data Standards are Data elements, which are atomic units of data that have precise meaning and semantics, which is defined by Metadata. Metadata represents the data element's name, definition, type, size and allowable values. Metadata provides the foundation for building consensus and establishing shared meaning. For example, it ensures that data elements representing a procurement award from a Government Department/ agency is easily understood, equivalent in meaning, and comparable to a procurement award from another agency.

Introducing DATA

9. This advice is about an enabling legislation called DATA (Digital Accountability & Transparency Act) that aims to bring transformative change in financial governance. It is based on the principle of “Accountability by Design” where all spending and receipts information is required to be made available using an ‘open data’ and ‘data standards-based’ approach. It advises end-to-end digital transactions in Government resulting into complete and reliable data, which in turn will support establishment of budget baseline, data driven cost estimates, performance comparison of departments and agencies, etc.
10. It aims to ensure completeness of data capture by prescribing ‘Data Standards’ for recording and reporting of expenditure and receipts by Government and all agencies or entities including corporations, autonomous bodies, etc., which perform functions on behalf of Government.
11. This advice envisages that data elements (minimum parameters) will be set for each type of transaction to be captured by or in respect of each agency or entity. By prescribing data elements for each type of transaction, whether a purchase order or invoice or loan or grant or receipt, etc., data standards will ensure standardisation of definitions, classifications, terms, formats and structures for hundreds of data elements and will set protocols that will enable different systems, databases to talk to one another, across entities receiving government funds, collecting revenues on behalf of Government and those discharging core functions on behalf of Government comprehensively. This data would be made available to decision makers and stakeholders through a centralized website or portal with an appropriate access mechanism (e.g. API (Application Programming Interface)). Agencies or Entities will be held accountable for providing accurate and complete data to this portal. Also at a meaningful level of aggregation, data would be made available to the public.
12. In order to appreciate data standards, some **examples of categories of data standards** are given below by way of an illustration:

<p>1. Account Level Data Standards</p>	<p>Account level data standards would standardize and remove definitional ambiguities, discretionary classifications and provide a more robust framework for accounting for financial information within All Ministries/Departments of Government and also across levels of Government, including the current exercise underway in MoPR and MoHUA on the need to integrate local government accounts with those of the Union and States for an on ground sectoral view of expenditure.</p> <p>Presently, the six tier accounting classification is not standardized at levels below minor heads across the Union and the States. As there is no standardization of what is a programme and what is a scheme, minor head and scheme heads are used interchangeably. There are instances where substantive amounts, as much as 25 percent of total expenditure, are booked under an omnibus minor head called ‘800-Other Expenditure’, obscuring financial reporting.</p> <p>Financial data becomes incomparable due to lack of standardization. For instance, it is not possible to compare expenditure on components of Infrastructure development across States. Land, Buildings etc. feature as object heads of account (primary unit of appropriation) but not across all State Budgets. In some cases, buildings are booked under ‘Major works’ and in others under ‘Construction’. Similarly, some States operate capital heads such as canals, distributaries, lift irrigation, flood restoration, etc. which provide a much more objective assessment of capital expenditure than an omnibus classification under construction or major works, which is the case in some States. This variety of heads of accounts leads to identification and measurement issues and affects completeness and comparability in measurement of capital expenditure.</p> <p>Apart from this, off-budget expenditure and presence of corporations, autonomous bodies and other parastatals, further compounds the issue of taking stock of actual on ground expenditure. This issue can be resolved by designing appropriate Data Standards for such entities.</p>
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<p>2. Transaction Type Characteristic Data Standards</p>	<p>This category of data elements describe characteristics of various transaction types such as contractual payment, grant, loan, subsidy, financial assistance to individual beneficiaries, etc. For instance, data elements to be captured in a procurement process are described below:</p> <div data-bbox="495 426 1344 957" data-label="Diagram"> <pre> graph TD A["Administrative Approval (unique A/A ID, Approving authority, Date up to valid, Amount)"] --> B["Tendering Process (Tendering ID, Date, Method, Time given for bidding, name and other details of participating bidders (Contractor ID), technically qualified bidders, financial bids, Successful bidder)"] C["Technical Sanction (unique T/S ID, Sanctioning authority, Bill of Quantity, Amount)"] --> B D["Financial Sanction (unique F/S ID, Sanctioning authority, Date up to valid, Amount)"] --> B B --> E["Contract (Contract ID, Contractor ID, Amount, Bank Guarantee Details, Time allowed, Rates Quoted, penalty, etc.)"] E --> F["Running Account bills (Bill ID, Quantity of items executed, Rate, Claimed Amount, etc.)"] F --> G["Payment (Payment ID, Amount, Bank Details, etc.)"] </pre> </div> <p>Many of these elements are already being captured but in separate and disparate databases leading to truncated view of entire transaction. These elements could not only be captured for Government Ministries and Departments but also for Autonomous Bodies and Corporations functional under them.</p>
<p>3. Recipient Entity Data Standards</p>	<p>These data elements would describe the recipients/awardees of Government funds. For instance, Recipient legal entity name, recipient unique identifier (a unique identifier for recipient or vendor or contractor and sub-contractors across all agencies of the Government), legal entity address, parent legal entity where applicable, parent legal entity identifier, etc.</p>

13. The above is just an illustrative list. Data standards would have to be set across other categories of funding and transaction. Thus, DATA will allow capturing of almost the entire spectrum of data attributes on public financial operations and make it available on a centralised portal. It will facilitate financial reporting in a variety of ways for meeting information requirements of different stakeholders. It can potentially simplify

classification and presentation of budget. It is computer friendly and will open the accounting database to complete slicing and dicing. The retrieval of information from the system will be easier and reporting will be more flexible. Maintenance of the Code (classification system) would be far more responsive, easier and uniform across the various tiers of Government.

14. Principles outlining data standards are advised as follows. Data will be required to be:

- **Machine readable:** Data in a format that can be processed by a computer. It must be structured data;
- **Granular:** Data must be captured at the lowest level of granularity, not aggregated or summarized;
- **Non-repudiable:** Assurance about the origin and integrity of the data. For instance, every rupee leaving the bank account automatically generates an entry minimising claims of “data quality” or “data errors”;
- **Comprehensive:** Covers all aspects of all financial transactions of all entities;
- **Purpose linked:** Each entry must contain detail of why that spending occurred, whether for a specific program or other-wise.

Advantages of DATA

15. Implementation of data standards will ensure that accurate, consistent, reliable, and searchable government-wide spending and receipts data is available to policy makers and other stakeholders. As all spending and receipt information would need to be in the standard format, data will become usable to more than just the project or person that created the data. It will clarify ambiguous meanings, minimize redundant data and ensure data integrity. It will ensure that information is available and published in machine readable and open formats, capable of being downloaded in bulk and available for automated processing, auditing and analytics.

16. Linking government contract, tender, award, loan, subsidy and grant spending information to programmes of agencies would enable policy makers to track government spending more effectively. The aggregation and linking of data stored in various Government

systems such as PFMS, GeM, and CPPP can easily be leveraged by establishing Data Standards and using modern data protocols. The proposed Government wide data standards, coupled with real time data capture end-to-end, would facilitate systematic availability of high quality data. Linking financial data to programme and performance data, would empower policy makers to practice evidence based policy making. It will enable the use of analytics and other cognitive intelligence tools like Artificial Intelligence, Machine Learning and Deep Learning, which in turn will support establishment of budget baseline, data driven project/ activity cost estimates, performance comparison of departments and agencies, benchmarks, etc. It will also help in detection of anomalies and abnormal behaviour.

17. A single source of truth encompassing every rupee of public money, with the appropriate attributes from a citizen centric world view, would be a game changer in the digital empowerment of the citizens which is progressively being aimed by Government as part of its Digital India programme.

Building Blocks

18. There are various building blocks, which have already gone into the Digital India programme, which would facilitate the convergence of the ideas around the grand and overarching theme of the DATA. Some of these initiatives are:
 - Integrated Financial Management System (PFMS for the Centre, IFMS for the States): The availability of transactional accounting information in a digital mode, originating seamlessly from the transaction, linked to the banks' core banking systems, where the moneys are either paid out or received, are key building blocks for the objectives of the DATA. These systems are at various stages of completion across Governments;
 - Government e-Marketplace/Centralized Public Procurement Portal/ e procurement portals in States;
 - IndEA – India Enterprise Architecture Framework: The India Enterprise Architecture (IndEA) is an IT framework notified by the Government of India in October 2018, which requires that the IT systems are built to seamlessly work towards common government citizen initiatives and would have the capabilities of interoperability.;

- Various IT systems developed by government entities and agencies;
- National Data Sharing and Accessibility Policy (NDSAP): Government of India notified a policy in 2012 with an objective to disseminate all Government data, which is sharable in a machine-readable form through a portal (data.gov.in), to facilitate evidence based planning and decision making. The portal is operational but falls well short of the expectations of proactive sharing of all relevant sharable information in an effective and easy-to-use manner.

Case Study of the US Federal Government

19. In the case of the United States, the Federal Government has followed an iterative approach to the DATA Act, which was structured as an amendment to a previous law, the Federal Funding Accountability and Transparency Act of 2006, thus progressively moving to Government wide publication of machine readable granular data, which would be used to both inform the citizens, but also used to practice Evidence based Governance.
20. The DATA Act took certain basic steps - (a) it required the Treasury Department and the White House Office of Management and Budget (OMB) to establish government-wide data standards for the spending information reported by federal agencies; (b) the Treasury Department and OMB were required to publish this standardized spending data for free access and download; (c) it also sought to standardize the information that recipients of federal funds, such as contractors and grantees, must report to the Government. The DATA Act included a provision for the US Government Accountability Organization (GAO) to report on the quality of the data collected and made available.
21. The third leg of the DATA act also enjoins the governance mechanism to use statistically valid methodologies for assessing the outcomes of the Government programmes and spending. It requires a transparent system of spelling out the evaluation criteria and the methods which are proposed to be used before undertaking the programme and using it to evaluate it later.

Next Steps

22. The Government is advised to bring in DATA. It is proposed as an enabling legislation that aims to make spending and receipt information of Government (defined widely as above), available on a centralised portal, using an ‘open data’ and ‘data standards-based’ approach and based on principles of such data being machine readable, granular, comprehensive, non-repudiable and purpose linked. To take this forward, appropriate structures for Data Governance including creating a Data Governance Authority and a mechanism for checks and balances would have to be put in place. The basic policy structure of the DATA should receive wide support and generate a consensus, led by the Political Executive at the highest levels, to ensure its success. Our advice, as conveyed in CAG’s letter, should serve to generate an in principle approval to consider all facets of the issue. A process to generate a Detailed Policy Note on the DATA, which would spell out the framework, scope, and methodology should begin immediately.