

Annexure

Indicative outline of roadmap for Ministries/Departments to improve DGQI Scores

Better data preparedness would help improve the monitoring and consequently the outcomes of the schemes and interventions of Ministries/Departments. An indicative outline of roadmap to improve data preparedness and improve DGQI scores is given below. Ministries /Departments are requested to use the indicative outline to have discussions to develop a roadmap to achieve higher, systemic, ministry-wide data preparedness levels and make provisions for human and financial resources for using technology and analytics to improve service delivery. The DGQI theme-wise expectations are provided in **Attachment 1 of the Annexure**.

1. Background

- 1.1. Brief overview of the M/D's business allocation, roles and responsibilities (*in 2-3 lines*)
- 1.2. Current degree of digitization of administrative data systems in the M/D (*in brief*)
 - 1.2.1. *Scheme-wise initiatives for digitization (for CS/CSS schemes)*
 - 1.2.2. *Other initiatives for digitization (Other Central Sector Schemes (OCS)/Other MIS/Dashboards)*
- 1.3. Ministry/Department's reflections on DGQI Scores 2020 (*in one page*)
 - 1.3.1. *Major takeaways from the exercise*
 - 1.3.2. *Areas for improvement based on previous performance and DGQI methodology*
 - 1.3.3. *Limitations in achieving DGQI frontier scores (Dependence on states or other executing agencies for execution, human resource/financial constraints etc.)*

2. Vision, Mission & Objectives

- 2.1. Vision statement for achieving data driven decision making within the Ministry/Department (*in 2-3 lines*)
- 2.2. Mission statement for achieving DGQI frontier scores and going beyond DGQI by 2022 (*in 4-5 lines*)
- 2.3. Objectives of the roadmap to achieve DGQI frontier scores
(in half page – explaining Ministry/Department specific goals to achieve high levels of data preparedness; for instance, ensuring end-to-end digitization for high-quality, near real-time data generation across all schemes at project/beneficiary level, ensuring user-friendly MIS and dashboard systems for all scheme and non-schematic interventions, establishing an administrative system for human capability and technological development to enable data driven policy making etc.)

3. Strategy to achieve DGQI Frontier Scores

- 3.1. Scope of the strategy (*in 1-2 pages*)
 - 3.1.1. *Schemes to be covered under the road map along with their contribution to overall M/D scheme budget (Encouraged to include all CS/CSS schemes of the M/D including schemes executed by other partnering agencies/states/PSUs aligned with the M/D)*
 - 3.1.2. *Non-schematic interventions to be covered under the roadmap (Other MIS/Dashboards of the M/D which are not related to schemes; for instance, a*

sector-level MIS/dashboard used for monitoring the overall sector performance, separate MIS/dashboards for PSUs/Other Central Expenditure/any other purposes. Kindly note that administrative interventions for digitization within the office such as E-Office is not to be included here as it is outside the scope of the strategy. This strategy aims to implement digitization to improve monitoring and accountability of government expenditure on schemes and policies.)

3.2. Overall Approach (in 1-2 pages)

- 3.2.1. *Principles to be followed while developing the roadmap (For instance, accuracy in information, relevance/utility to the strategy, transparency in processes, privacy of personal information, openness in disseminating non-personal information, inclusiveness in digitization, interoperability, integration of uses, etc.)*
- 3.2.2. *Integrated approach (Outline of an integrated and well-coordinated approach to be taken by the M/D to improve digitization across the board. The approach should target end-to-end digitization of all levels of information – Scheme level MIS/Dashboards, M/D Sector level and finally linking it to digitization of necessary information needed for achieving SDG goals/national priorities relevant to the M/D. Similarly, how data collection frequency, quality and timeliness-at-entry will be ensured on the field and during subsequent stages of data flow at the district and national levels. Also, the approach should focus on across the board interventions – Capacity development at M/D, technological overhaul at M/D, coordination between various divisions of the M/D, setting up of administrative systems at M/D to lead the effort, carrot-stick approaches to improve uptake etc.)*

3.3. Scheme-wise Strategy (2-3 pages per scheme)

- 3.3.1. *Scheme 1 (A short assessment of current system to be provided along with areas identified for improvement. Subsequently, the strategy should entail detailed steps to improve on each theme of the DGQI as shown below.)*
 - 3.3.1.1. *Data Generation Strategy (Should cover steps for identifying data requirements of the scheme to have data on all relevant inputs, outputs and outcomes of the scheme; increasing granularity (beneficiary/project level) and frequency (near real-time) of digitization using latest sources of information; use of location tracking devices for data collection; using GIS mapping/geo-coding/geo-fencing/mobile devices for data generation)*
 - 3.3.1.2. *Data Quality Strategy (Should cover steps for ensuring rigorous data quality protocols for profiling/filtering incoming data, ensuring deduplication and redundancy removal within data, enforcement of data integrity, use of metadata standards for proper classification of data; use of mobile phones or other technologies for data quality control such as multimedia evidence, telephonic surveys etc.)*
 - 3.3.1.3. *Use of technology Strategy (Should cover steps for linking M/D MIS/data systems with other platforms such as PFMS for finances and JAM trinity for beneficiary-oriented schemes; use of alternative data sources to complement M/D data such as private sector or GIS data; use of emerging technologies to improve scheme processes/delivery such as Machine Learning, Artificial Intelligence, IoT etc.)*
 - 3.3.1.4. *Data Analysis, Use & Dissemination Strategy (Should cover steps for improving use of data by M/D to use it for policy making purposes; dissemination of data via websites/dashboards/social media/mobile apps;*

user-friendly visualizations; multilingual interfaces and compatibility features for differently abled etc.)

3.3.1.5. *Data Security & HR Capacity Strategy (Should cover steps for improving data security, compliance requirements and privacy; capacity development for developing data analytics capabilities in the M/D to improve use of data in policymaking etc.)*

3.3.1.6. *Data Management Strategy (should cover steps for managing data across various stages right from generation to its use; devising strategies for integrated data storage and data disposal; ways and means of dealing with personal data using techniques like encryption, de-identification, etc., ensuring proper data classification using good-quality meta data to enable better reporting, analytics, and use; fixing accountability for data management by fixing intra-ministry and inter-ministry data ownership and other responsibilities for dissemination and use of data)*

3.3.2. *Scheme 2 and so on.. (Strategy for each scheme under the purview as per section 3.1 to be framed and the strategy should entail detailed steps to improve on each theme of the DGQI as shown in section 3.3.1.)*

3.4. Non-schematic Strategy (2-3 pages per intervention)

3.4.1. *Intervention 1 (A short description of the purpose and scope of the intervention to be provided with areas identified for improvement. Subsequently, the strategy should entail detailed steps to improvise on each theme of the DGQI as shown in section 3.3.1.)*

3.4.2. *Intervention 2 and so on..(Strategy for each intervention under the purview as per section 3.1 to be framed and the strategy should entail detailed steps to improvise on each theme of the DGQI as shown in section 3.3.1.)*

3.5. Operational Execution Plan (After strategy is formed, execution plan to be laid down for institutional development).

3.5.1. *Organizational Structure – Breaking the silos (To have a central unit leading the efforts to build, implement and revise the roadmap, it is recommended that a Data and Insights Unit is established within the M/D and is placed directly under the Secretary. The proposed structure of the unit is provided in **Attachment 2 of the Annexure**. After setting up the unit, strategy for intra-ministerial coordination to be framed to ensure that the unit is able to work in conjunction with other scheme divisions and NIC.)*

3.5.2. *Human Resource Capacity Development (Should include steps for in-house capacity building to develop IT and data analytical capabilities, acquaint them with new tools/techniques, hire technical experts as per requirements if necessary, spread awareness about evidence-based policy making etc.)*

3.5.3. *Technological Development (Should include steps for overhaul of IT hardware and software systems in line with identified data generation, storage, management, and analytical needs including a procurement plan, development of data warehouses/ open data websites to create integrable data sources, creation of singular metadata standard/data classification norms to be followed across the M/D to create integrable datasets etc.)*

3.5.4. *Partnerships (Should include the nature of partnerships being planned with private sector or research organizations for developing capabilities, scope the possible partner landscape and areas of engagement, inter-ministerial coordination for*

synergies in data collection on common indicators, state-level engagements to help build adequate data systems at state level including CSS schemes)

3.5.5. *Resource Allocation (Should include assessment of required financial resources to implement the roadmap and plans to make provisions for the same in scheme and M/D budget in the next EFC/SFC/Budget cycle; assessment of human resources to be deployed to implement the roadmap and provisions for the same; any other resources)*

3.6. Consolidated roadmap *(Consolidated plan to be provided for all schemes and interventions listed in Section 3.3. and 3.4. as well as steps to be undertaken for institutional development in Section 3.5 with quarterly timelines against key strategy steps)*

Attachment 1 of Annexure

DGQI theme-wise expectations

The objective of this document is to provide general theme-wise expectations or requirements to enable Ministries/Departments prepare a relevant and comprehensive roadmap for achieving frontier DGQI 5.0 scores.

- 1. Data Generation:** A Ministry/Department should be able to identify its specific data requirements in order to exhaustively capture data on its inputs, outputs and outcomes at different levels – schemes, ministry or sector-level, and SDG/National priority level. Further, it should also be able to ensure the following:
 - a. Granular, unit-level and high-frequency, near real-time data is being generated with minimal manual intervention. A unit can be either a beneficiary, household, micro-geography (e.g. a village or a field for area-based interventions) or a project.
 - b. Use of location tracking devices for data collection, using GIS mapping/geo-coding/geo-fencing/mobile devices for data generation are some additional tools that can be taken into use by respective Ministries/ Departments to minimize manual intervention.
- 2. Data Quality:** It covers processes of scientifically and statistically evaluating data to ensure that it meets the required quality benchmarks. A Ministry/Department should:
 - a. Endeavour for quality-at-entry by collecting verification checkpoints (e.g. location, photographs, Aadhar linkage, etc.) along with programmatic data using technology with minimal manual intervention.
 - b. Regular and automated profiling/filtering of data at its primary processing level.
 - c. Develop a robust design for data pipeline, in order to avoid duplication and redundancy of data.
 - d. Collection of Metadata / data classifiers to enable efficient reporting, analytics and use.
 - e. Integration of datasets and internal and cross-dataset consistency checks.
 - f. Maximize technology use and establish dedicated data quality teams.
- 3. Use of Technology:** The Ministry/Department should leverage emerging technologies while maximizing use of existing platforms and alternative data sources for triangulation. In this regard, a Ministry/ Department should take care of the following:
 - a. Ensure linkage of relevant scheme MISs with PFMS, Aadhaar, mobile numbers and bank accounts.
 - b. Use of alternative data sources in order to support the existing M/D data.
 - c. Use of emerging, Industry 4.0 technologies like Machine Learning, Artificial Intelligence, IoT etc. for improving scheme delivery, monitoring and review.
- 4. Data Analysis, Use and Dissemination:** The M/Ds should maximize the use of available data to generate insights and institutionalize processes for its use in policy making. In this regard, a Ministry/ Department should:
 - a. Expand the type of data analyses being used by the M/Ds e.g. Exploratory, Modeling, Correlation, Causation, Regression or Predictive.
 - b. Maximize the use of different platforms for dissemination of data e.g., through websites, dashboards, mobile apps, and social media.
 - c. Ensure user-friendly visualizations for easier dissemination of information.
 - d. Ensure multi-lingual interfaces along with compatibility feature for differently abled.

- e. Endeavour to move towards, inter-agency, cross-functional, prescriptive analysis for augmented decision support.
- 5. Data Security and HR Capacity:** Ensure that capacity building activities are conducted for enhancing data analytics capabilities of the M/D Officials. In this regard, a Ministry/ Department should:
- a. Build an integrated human, technology, and infrastructural capacity building plan.
 - b. Ensure that the dedicated Data and Insights Units are established and the central teams, State, and field functionaries are well-trained in data analytics, use of technology, and sensitized towards thriving a culture of evidence-based policymaking.
 - c. Ensure 100% compliance on the statutory norms for data security.
- 6. Data Management:** The upcoming DGQI edition aims to include an important dimension of data management. In this regard, a Ministry/ Department should take care of the following:
- a. Management of data at various stages right from its generation to its use.
 - b. Strategy in place for integrated storage of data and its disposal.
 - c. Means of dealing with personal data using techniques like encryption, de-identification, etc.
 - d. Ensuring proper data classification using good quality meta-data to enable better reporting, analytics, and use.
 - e. Clarify data ownership and stewardship norms for different data classes, especially entailing intra-ministry and inter-ministry interactions.
 - f. Fix accountability for data management functions.

Attachment 2 of Annexure

Terms of Reference for Data and Insights Unit at Ministries/Departments

In order to create better mechanisms for digitization of processes related to implementation and monitoring of central sector/centrally sponsored schemes and other non-schematic interventions of Ministries/Departments, an institutional mechanism in the form of “**Data and Insights Unit**” may be set up within each Ministry/Department. The Data and Insights unit may support to build and harness data analytics, statistical, and technological capabilities of the respective Ministry/ Department. It may be headed by an Additional Secretary/Joint Secretary level officer who would be directly reporting to the Secretary of the Ministry/Department. The key roles/ functions may include the following:

1. **Breaking data silos** within the Ministry/Department to enable efficient data exchange, create integrated well-developed data systems for all CS/CSS schemes/ programs/ projects/ interventions, ministry and sector-level data to develop policy insights using cutting-edge technology and data analytics capabilities.
2. **Integrate various internal and external monitoring initiatives** such as the output-outcome monitoring of CS/CSS schemes, monitoring of sectoral or ministry/department level outcomes, Global Indices monitoring and SDG monitoring, and identify and develop high-quality administrative data mechanisms to plug the existing data gaps therein by triangulating it with MoSPI’s survey-based data availability.
3. **Use data analytics and visualization** to convert data into meaningful insights which may aid decision making to foster a culture of evidence-based policy making within the Ministry/Department.
4. **Availability of data quality protocols** and ensuring third-party quality assessments of administrative data to improve quality of data generated by the Ministry/Department with a goal to reach high-frequency, granular, transactional data generated with minimal human interference via end-to-end digitization of implementation processes.
5. **To develop mechanisms for use of alternative data sources and emerging technologies** in data generation and analysis through partnerships with leading private players, research organizations and academic institutions in the domain.
6. **Coordinating, facilitating and roping in States/other implementing agencies** for all of the above.
7. **To develop action plan for reaching DGQI 5.0** (or 5/5) frontier scores for all schemes of the Ministry/Department.

To implement the same, the Ministry/Department may choose to augment the present institutional setup of the Chief Data Officers (CDOs). These officers were nominated to spear head sharing of Data for value add by citizens. These CDOs are already being supported by a team of Data Contributors. These officers could be entrusted with the additional responsibilities outlined above. However, it is important that in such a case of CDO responsibility and accountability upscaling to ensure sufficient momentum needed for the exercise.

An indicative structure of the “Data and Insights Unit” is provided below:

“Data and Insights Unit” at M/D Level

