



# CITY DATA POLICY (CDP) 2020

OF

SHIVAMOGGA CITY CORPORATION (SCC)

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*(Signature)*



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## 1. Definitions

- ❖ -Applicable law means any law, statutory rules & regulations or standards applicable to the Company, under which any guideline/ provision with regard to the preservation of the documents has been prescribed.
- ❖ -Archival means the process of moving documents which are no longer used actively to a separate storage location after the end of retention period for long term retention.
- ❖ -Archival schedule means the time frame for which the documents are to be archived. Archival schedule will commence after the end of the retention schedule.
- ❖ -Data means a representation of information, numerical compilations and observations, documents, facts, maps, images, charts, table and figures, concept in digital and/or analog form
- ❖ -Data Archive -A place where machine-readable data are acquired, manipulated, documented, and distributed to others for further analysis and consumption
- ❖ -Data Set – A named collection of logically related features including processing data or information
- ❖ -Company means National Stock Exchange of India Limited and all its subsidiary companies
- ❖ -Current document(s) means any document that still has an ongoing relevance with reference to any ongoing contract, litigation, proceedings, complaint, dispute, or any like matter.
- ❖ -Data categories means types of documents by which the nature of the document can be identified. Refer 'Data Classification/ Data Categories' stated below.
- ❖ -Document(s) refers to notes, agreements, notices, advertisements, requisitions, orders, declarations, forms, correspondence, minutes, registers and or any other record (including those required under or in compliance with the requirements of any -Applicable law) maintained on paper or in electronic form and does not include multiple or identical copies.
- ❖ -Electronic form means maintenance of documents in any contemporaneous electronic device such as computer, laptop, compact disc, floppy disc, space on electronic cloud or any other form of storage and retrieval device, considered feasible, whether or not the same is in possession or control of the Company.
- ❖ -Geospatial Data --All data which is geographically referenced
- ❖ -Head of Department (HoD) – individuals or group of individuals, heading or jointly heading, any function, business vertical or department in the organisation including, individuals appointed as acting heads
- ❖ -Information—Processed data
- ❖ -Metadata- The information that describes the data source and the time, place, and

conditions under which the data were created. Metadata informs the user of who, when, what, where, why, and how data were generated. Metadata allows the data to be traced to know origin and know quality

- ❖ -Maintenance means keeping documents, either physically or in electronic form.
- ❖ -Negative List—Non-sharable data as declared by the departments/organizations
- ❖ -Personal data means any information relating to an identified or identifiable natural person, who can be identified, directly or indirectly, in particular by reference to an identifier such as a name, and identification number, location data, and online identifier or to one or more factors specific to the physical, physiological, genetic, mental, economic, cultural or social identity of that natural person.
- ❖ -Preservation means to keep in good order and to prevent from being altered, damaged or destroyed.
- ❖ -Restricted Data – Data which are accessible only through a prescribed process of registration and authorization by respective departments / organizations
- ❖ -Retention means preserving the documents in the live environment for active use of the Company, which are readily accessible by those who are authorised to access.
- ❖ -Retention schedule means the time frame for which the documents are to be retained.
- ❖ -SCDA means Smart City Data Alliance
- ❖ -Sensitive Data – Sensitive data as defined in various Acts and Rules of the Government of India
- ❖ -Sharable Data – Those data not covered under the scope of negative list and non-sensitive in nature
- ❖ -Standards – Any applications that embeds data handling functions (e.g. data collection, management, transfer, integration, publications, etc) and operates on data in a manner that complies with data format and data syntax specifications produced and maintained by open, standards bodies

## 2. Introduction

City Data Policy is the first significant step in the direction to provide conceptual clarity over accessing and sharing protocols over city data. City Data Policy also provides clarity around ownership of data, legal framework, terms of use etc. As an extension of this, Shivamogga City Corporation ("SCC") and 'Special Purpose Vehicle' Shivamogga Smart City Limited ("SSCL") has decided to design a city data policy document in line with National Data Sharing and Accessibility Policy, Government of India.

This policy document will comprise with the following strategy points:



- a. Open data Policy
  - o Data Classification
  - o Data Categorisation
- b. Data Archival and Retention
- c. Data Security
- d. Data Privacy

Policy document will guide the City Administration to set up enterprise processes to leverage the existing available data with City administration. It will help to establish processes to allow data to flow between departments and users seamlessly internally without any user interventions.

### 3. Objective

The objective of this policy is to facilitate the access to SCC and SSCL owned data and information in both human readable and machine readable forms to citizens/departments/etc. in a proactive and periodical updatable manner.

Preferred machine readable formats are as following:

- CSV (Comma separated Values)
- XLS (spread sheet- Excel)
- ODS (Open Document Formats for Spreadsheets)
- XML (Extensive Markup Language)
- RDF (Resources Description Framework)
- KML (Keyhole Markup Language used for Maps)
- GML (Geography Markup Language)
- RSS/ATOM (Fast changing data e.g. hourly/daily)

### 4. Scope of the Policy

This Policy will apply to all data and information created, generated, collected and archived by SCC/SSCL.

This policy applies to any person/user, organization, administrators, contractors / etc who intends to access information or assets of SCC/SSCL. Specifically, the Data Policy applies to the following information assets of SCC/SSCL:

- Data /Information that collected, captured, aggregated, processed and shared by SCC and SSCL
- Citizens Data / Information
- Personnel Data/ Information relating to employees of SCC/SSCL

## 5. Review of the Policy

This document shall be reviewed monthly/quarterly or as and when there is requirement of major changes incorporation.

## 6. Ownership of the Data

All data and other information generated or collected or submitted to SCC/SSCL shall remain or become the property of the SCC/SSCL.

## 7. Ownership of the Policy

The executive owner of this policy shall be Hon'ble Commissioner of SCC and the designated person for City Data Policy shall be City Data Officer (CDO)

### 7.1 Version Control

Major Changes to the Policy document shall require the approval of Hon'ble commissioner of SCC.

## 8. Roles, Responsibilities and Accountability

### City Data Officer

**Appointment of the City Data Officer:** Commissioner, SCC in coordination with MD/CEO of SSCL will appoint the City Data Officer (CDO)

**Tenure of Appointment:** Tenure of City Data Officer will be one year.

**Reporting Structure of the City Data Officer:** It is mentioned in the point no. 9.3 Data Flow/ Approval Framework

### Role

The CDO will act as custodian and driver of City Data Policy (CDP) and a flag bearer of open government initiative in respective city. CDO's major responsibility is to put data to its right use i.e. for generating insights, using data for effective service delivery or infrastructure delivery, improving civic operations by making real time decision making etc. City data officer will work with city leadership to assess and tap the potential of data and set up data culture across the organization and outside the organization.

City Data officer will report directly to Commissioner, SCC / MD/CEO, SSCL. City Leadership and act as single point of contact to all internal and external stakeholders in the city. CDO also



deploy dedicated skilled resources to drive the data initiative. Core objective of setting up City Data Office is to focus on setting up data driven governance culture across organization. It is implied that city leaders will be providing the required leadership support to drive the data driven decision making through seamless data collection, processing and analysis across all departments/government agencies.

### **Responsibilities**

- a) The CDOs will create a City Data Policy (CDP) for NMC which will be reviewed twice in the year i.e. after period of 6 months/annually to keep it contextual to the need of the times. The policy should be created post engagement with relevant stakeholders. The SCDA (Smart City Data Alliance) would act as advisory body for the review of CDP from time to time. It will be responsibility of Commissioner to ensure that the policy evolves as per the needs of various stakeholders of the city and relevant upgrades to policy are carried out time to time accordingly.
- b) Coordinate with State Data Officer and Mission Data Officer to align with mission data strategy and priorities with respect to Open government initiatives and policies.
- c) Formulate and organize regular meetings of Smart City Data Alliance (SCDA).
- d) Coordinate with officers of various other government departments/agencies within the city for the effective implementation of City Data Policy.
- e) Publish Data Catalogues and Data Sets/Feeds on OGD portal: CDOs will publish data Catalogues and Data Sets/Feeds on OGD Portal and will ensure that such data sets are updated at regular time intervals as needed and create mechanisms for continuous feedback from citizens and stakeholders on type of data sets to be published. The CDO will be responsible for publishing of such data sets/feeds as mandated as part of Mission Data Strategy.

### **Data Champions**

**Reporting Structure of the Data Champions:** It is mentioned in the point no. 9.3 Data Flow/ Approval Framework

#### **Role**

Data champions (DCs) is someone who understand the department and domain deeply.

He /She will be senior functionaries, not below the rank of a Head of Department or equivalent, who would champion the implementation of the City Data Policy in their respective departments/ organizations. DCs needs to act as trainers and lead the team of data coordinators at their respective department. DC will be first touch point of CDO in different city organizations and must undertake continuous capacity building programs for their CDOs and





other staff.

### Responsibilities

- a) Shall identify the data sets/feeds, derived information, intelligence or data challenge with respect to day to day operations of the department.
- b) Actively publish/ enable to publish data sets/feeds identified as relevant to the resolution of critical use cases for the city. They will work closely with the CDO for active implementation of the City Data Policy.
- c) Data Champions will be assisted by the Data Coordinators within the department to streamline processes of data reporting, collection and analysis etc. DCs will be responsible for data quality.
- d) Data Champions will undertake activities to engage with their stakeholders and evolve their department's strategy on data in line with the deliberations.

### Data Coordinator

**Reporting Structure of the Data Coordinator:** It is mentioned in the point no. 9.3 Data Flow/ Approval Framework

#### Role

Data Coordinator is someone who will execute the data policy in department under guidance of Data Champion and Data Officer.

He /She will assist Data Champions at the department/government agency level as reporting staff.

#### Responsibilities

- a) Aggregate the data demand from various channels.
- b) Sensitizing the department employees over the importance of data quality etc.

### Shivamogga Smart City Data Alliance (SSCDA)

#### Role

The SSCDA will provide a collaborative framework to create and define use cases to solve critical local city problems through the use of data, catalyse the right set of collaborations and networks to make available such data and undertake continuous dialogue between various stakeholders in the city around the City Data Policy so as to inform and evolve the

Shivamogga CDP effectively. The alliance will undertake education and awareness about data in the community, understand and address concerns on data privacy and security, build use cases for city problems, create data collaborations between various government and private agencies for solving relevant use cases and continuously evolve the culture of data in the city's context.

### Responsibilities

- a) To act as an advisory group to the city leadership on the City Data Policy.
- b) To assess the data needs of various Smart City stakeholders.
- c) To promote data driven governance and policy formulation.
- d) To design and implement solutions and analysis using city data.
- e) To support industry to design solutions using emerging technologies like AI, ML and Block chain.
- f) To assess and design use cases critical to the citizens of the respective cities.
- g) To generate awareness in various stakeholders towards open government initiatives.
- h) To bring Smart Cities stakeholders on common platform to influence the city data priorities.
- i) To facilitate data for co-creation and collaboration over civic issues
- j) To provide critical feedback to the city over the quality and relevance of data provided by Smart City.
- k) To deliver 4 Research paper annually using City Data on Civic Problems in Smart City
- l) To design and develop two prototype/ solutions annually on Civic Problems in Smart City
- m) To organize a data-challenge every half yearly on complex civic problems.
- n) To organize a Hackathon annually and support shortlisted solutions at city level
- o) To set up scholarship for postgraduate and graduate interns to work with Office of CDO.
- p) To sensitize ecosystem partners to share the data for leveraging data for solving civic challenges
- q) To support, engage and encourage network/groups/members of data enthusiasts in Smart City
- r) To improve city capacity over data driven governance and policy formulation
- s) To support CDOs by extending resources (like interns, researchers, technology experts), funds (program sponsorship etc.) and technology (solutions etc.)

## 9. Open Data Policy

In line with the objective this policy will apply to all data and information created, generated, collected, and archived.

Benefits of implementing this policy are as following:

- Maximising Use: Ready access to government owned data will enable more extensive use of a valuable public resources for the benefit of community.
- Avoiding duplications: By sharing data the need for separate bodies to collect the same data will be avoided resulting in significant cost saving in data collection
- Maximised Integration: By adopting common standards for the collection and transfer of data, integration of individual data sets may be feasible
- Ownership information: The identification of the owners for the principle data sets provide information to users to identify those responsible for implementation of prioritized data collection programs and development of data standards
- Better decision making: Data and information facilitates making important decisions without incurring repetitive costs. Ready access to existing valuable data is essential for many decision making tasks such as protecting the environment, development planning, managing assets, improving living conditions, national security and controlling disaster
- Equity of access: A more data transfer policy ensures better access to all bonafide users.

## 1. Data Categorization

Different types of data sets generated both in geospatial and non-geospatial form by different departments of SCC/SSCL are to be categories as a) Personal data and b) Non Personal data.

### a) Personal Data:

Personal data means data consisting of information which is related to a living individual who can be identified from that information (or from that and other information in the possession of the data users), including any expression of opinion about the individual but not any indication of the intention of the data user in respect to that individual. 'Data' is defined as information recorded in a form in which it can be processed by equipment operating economically in response to instructions given for that purposes.

Note: Personal Identifiable Information cannot be published by City on Data Platform under any data sets. Data sets must be anonymized before publishing.

### b) Non Personal Data:

Non-personal data also refers to anonymous information/data, namely information which does not relate to an identified or identifiable natural person, or personal data rendered anonymous in such a manner that the data subject is not

or no longer identifiable. In other word, anonymization means excluding any personal identifiers from data sets.

## 2. Data Classification

Personal and Non Personal Data will be classified into following category:

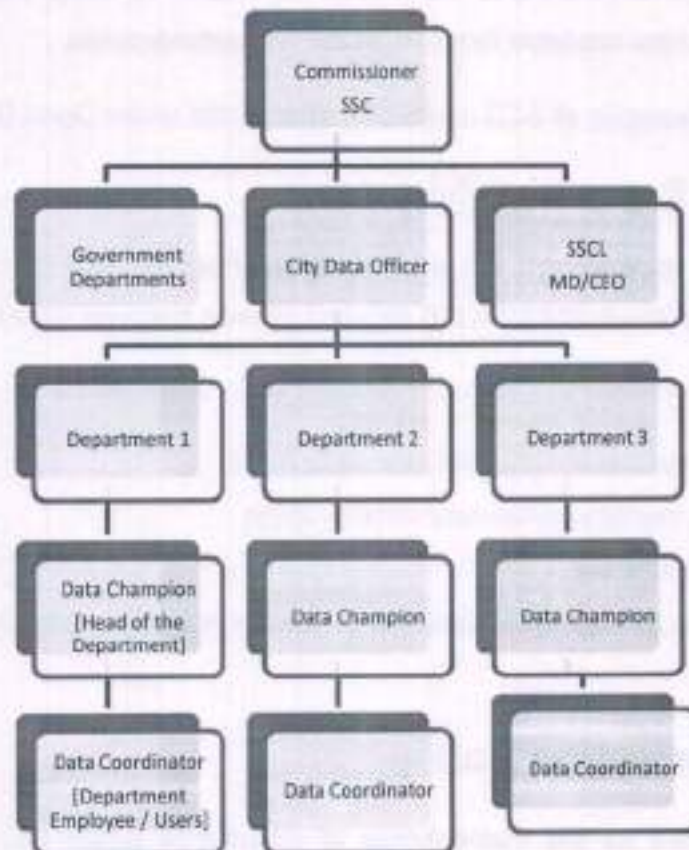
Classification	Class	Definition
Level 1	Public	Data available for public consumption and use.
Level 2	Internal Use	Information which could only be disclosed to Corporation employees for managing operations or delivery of public services on day to day basis.
Level 3	Sensitive	Data regulated by any City/ State/Central law or regulation like privacy etc.
Level 4	Protected	Data which needs to be protected for e.g. Identity of citizens and disclosure /notification needs to be issued by corporation in case of any breach or loss of data.
Level 5	Restricted	Data which could lead to threat to life or loss of public assets or critical infrastructure.

## 3. Data Flow / Approval Framework

City Administration needs to set up enterprise processes to control the existing available data with City administration.

- Data Flows internally between departments and users without any user interventions, the thought is to unlock the data available with different stakeholders and make it available seamlessly.
- Creation of City Data Cell.
- Identification of key data sets and publish high-value data sets on the Open Government Data Portal
- Convening stakeholders and create networks/ alliances
- Ensuring compliance with NDSAP, privacy compliance and required disclosures.
- Prioritize data security by ensuring the Confidentiality, Integrity and Availability of data through risk management processes and best practices
- Creating systems of resilience and recovery with respect to data
- The CDO will work with all the departments including those which are outside the jurisdiction of the corporation. For example, power utilities, telecom networks, gas distribution, etc.

Architecture Diagram for flow of the Data



Data Management Process

**Data management** includes obtaining, validating, storing, protecting, and processing required **data** to ensure the accessibility, reliability, and timeliness of the **data** for its users.

City Data Officer will share finalized data sets with Data Champions and Data Coordinator for collection purpose.

This is Data Coordinators responsibility to capture the data in correct format, also Data Coordinator along with Data Champions are responsible for:

- Validating the captured data
- Storing it with appropriate security
- Process the categorized data with ensure accessibility, reliability and timeliness

Security measures needs to be followed during the collection and management of the classified data at all department levels i.e. Personal data and Non Personal data

- o Minimize collection of personal data
- o Delete data that's no longer necessary
- o Restrict access to only those who need it
- o Secure data throughout its entire lifecycle

### Data Availability Platforms

SCC and SSCL owned data and information will require to make available in both human readable and machine readable forms to citizens/departments/etc.

This data will be available at SCC and SSCL Web Portal under Open Data Module

### 4. Community Engagement Processes

SCCs respective departments will take ownership/responsibility to create the awareness about availability of the G2C/G2B/G2G services offered amongst citizens/communities.

This can be achieved by:

- Promoting data availability at Open Data Portal
- Organising workshops/seminars/conferences
- Citizens Feedbacks
- Notifications through SCC Web Portal/ Mobile Applications or Social Media/Print Media

## 10. Data Retention Policy

Retention is defined as the maintenance of documents which can be accessed by an authorized user as and when required. Based on certain aspects such as the need for documents to resolve citizen queries, inter-department requests and responses to on-going audit requirements. In this regard the Government of India/ Government of Karnataka data retention policies will require to be followed.

Retrieval schedule of the data will be as per the rules and regulations defined by the Government of India / Government of Karnataka

### 10.1 Mode of Retention:

Electronic (E)	Records to be retained in electronic form. These records may be stored on shared drives with access to only authorized individual/ group of individuals.
Physical (P)	Record to be retained in physical form. These records may be kept in file cabinets or any other storage units assigned to each department with proper labelling so as to enable quick identification of the records.
Original Form (O)	Records to be retained in the original form in which they were created or used i.e. either electronic or physical.



## 11. Data Archival Policy

-Archiving is the process of moving data that is no longer actively used to a separate storage device for long-term retention. Archive data consists of older data that is still important to the organization and may be needed for future reference, as well as data that must be retained for regulatory compliance.

After completion of the retention period, it is required to archive the data and store it for specific time period as per the Government Rules and Regulations.

Archiving is defined as secured storage of data/ documents, such that the same is rendered inaccessible by authorised users, but which can be retrieved by an administrator designated authority.

Archival schedule of the data will be as per the rules and regulations defined by the Government of India / Government of Karnataka

### 11.1 Mode of Archival:

Electronic (E)	Records to be archived in electronic form. These records may be stored on assigned servers or on tapes as per rules and guidelines issued by the technology department.
Physical (P)	Record to be archived in physical form. The records may be archived in the premises or vendor premises.
Original Form (O)	Records to be retained in the original form in which they were created or used i.e. either electronic or physical.

## 12. Data Security and Privacy

Managing security including privacy of data is crucial for building and maintaining trust between end users/all stake holders and are the major element of the city data policy.

- Data collection, sharing and analysis must be ring-fenced by a privacy first approach to guarantee protections for residents and users.
- The usage rules for data elements must specify for what purposes the data can or cannot be used. For example, the patient's name in a hospital record may be fine to use by a doctor for a treatment plan, but not for any analysis or marketing without the consent of the data owner (the patient).
- For management of Privacy and Security of Data, it is recommended that all data access must be through Application Programming Interface (API) calls to ensure appropriate security controls.
- Need to establish or comply with existing standards and certifications for data privacy and security.
- Data dissemination should be only to authenticated and authorized stakeholders (both

internal and external) through data fiduciaries.

Except for open data, it is recommended that direct access to data be prohibited and use of APIs mandated.

### 13. Data/Information Security Management Policy

This section presents the Information Security Management policy with overall framework for implementing and sustaining a compliant and effective information security program. The details of standard for developing detailed security guidelines including the management, technical and operational controls for individual information systems is stated in subsequent domain policies.

The security program is based on the following principles:

**Confidentiality:** Protection of information by ensuring that information is accessible only to those authorized.

**Integrity:** Assuring the accuracy and completeness of information and its associated information processing methods.

**Availability:** Ensuring that information and associated assets or systems are available to authorized users when required.

#### Data/Information Backup Policy

All data stored on the Firm's file servers, email servers, network servers, web servers, database servers, domain controllers, firewalls, and remote access servers will be backed up in the High Availability DR environment.

Also in the production environment of the Server/Network an Active configuration shall have been implemented i.e. if primary server fails then the data traffic should have to be diverted automatically on secondary server (on failover/ redundant Server)

#### Mobile Computing Device Policy

The objective of this Policy is to protect information of SCC/SSCL while using Mobile Computing devices used by SCC/SSCL employees. Mobile Computing devices in the context of the policy are laptops, hand-held devices (Tablets/iPads), Personal digital assistant (PDA), Smart Phones.

SCC/SSCL do not require its employees to store or access its confidential information using devices that it does not own or manage. If the SCC/SSCL needs its employees to use a mobile computing device, then a suitably configured department owned device will be provided.





Protection of Data: Employee / User is responsible for the data stored in Mobile Computing Device / Laptop. He / She should take all steps to prevent unauthorized access, viewing and transmission of data. Backup of the data should be taken periodically as a business continuity measure

### Information Security and Resource Management

It is important to build security into the Human Resource process, from pre-employment, during employment, and through termination, to ensure that organization's (SCC/SSCL) data/information is protected from unauthorized access, disclosure, modification, destruction or interference. Regular training would ensure that employees and third party vendors are fully aware of their jobs, roles and responsibilities and understand the criticality of their actions in protecting and securing both data and facilities of SCC/SSCL. Below three areas of Information Security and Resource management would cover:

#### Pre-employment

- Prior to employment of candidates or outsourcing jobs to third party service providers, security roles and responsibilities should be defined and articulated in job descriptions or in the terms and conditions stipulated under General Conditions of Contract (GCC).
- Appropriate access level to computing resources and sensitive information as required for the job should be decided by the e-Governance division on a case-to-case basis.
- Background check levels and depth should commensurate with the roles, responsibilities and sensitivity of assignment of the candidates.

#### Employment Duration

- Information security awareness should form a part of all types of internal trainings.
- New employee orientation programs should provide pertinent information on Information Security Policy, Procedure and potential disciplinary process/actions for any security breaches.
- Additionally, new employees should sign a consent/acknowledgement indicating that they read and understand the SCCs'/SSCLs' acceptable Information security policy.
- All the third party service providers have to sign non-disclosures agreement prior to engagement.

#### Transfers/Exit & Retirements

- To prevent unauthorized access to sensitive and confidential information, access level to information must be modified or revoked immediately on change of position or exit of an employee.
- This also includes return of computing/ mobile assets held by the employee.

## Usage Policy for Data and Information Assets

The policy for good use of the data/information is necessary for the implementation of the enhanced Information security at SCC/SSCL. The policy encompasses everything from internet, information and other related infrastructure

### Usage Policy - Internet

Every organization should have a defined internet usage policy so as to prevent disclosures, destruction or modifications of information through unauthorized use of Internet.

#### *Internet Access*

Internet access to the employees should be provided as per need to know basis and authorized by the e-Governance through a formal process. The access privileges to the internet should be verified with the requestors HOD before authorizing depending upon the sensitivity of the role executed by the requestor.

- Internet sites which might contain profane, obscene and any other material which is not connected to work shall not be accessed.
- Abuse of Internet access for sexual, ethnic and / or racial harassment is prohibited.
- Users shall confirm the identity of individuals, over the Internet, through approved methods.
- Users shall not post any information proprietary to SCC/SSCL or its associates, on public forums, such as chat rooms and discussion rooms, on the Internet.
- Technical users may access discussion groups while attempting to resolve incidents. During such usage care shall be taken to ensure no confidential information is posted on the Internet.
- Users shall not download and install software including screensavers, wallpapers, instant messengers, games and other applications from the Internet.
- All files downloaded from the Internet shall be checked for malicious code and other bugs before usage.
- Users shall not send any confidential information through the Internet unless authorized.
- Subscription to real-time information distribution services and peer-to-peer messaging services on the Internet is prohibited.
- Establishment of any network connection with a third party by the users is prohibited unless permitted by relevant authority of e-Governance division.
- Users shall not use the Internet access to set up web pages, electronic bulletin boards, or other mechanisms to publish any information which might be either personal or about SCC/SSCL, without prior approval from the competent authority.



## Usage Policy – Information System

All the information of the SCC/SSCL resides in diverse Information Assets, it is imperative that to secure the information from the data the assets where it is residing or is stored to prevent disclosures, destruction or modifications of information through unauthorized use of information resources.

## 14. Source of References

1. <https://data.gov.in/>
  - a. Open Data Policy of India (NDSAP)
2. [https://smartnet.niua.org/sites/default/files/resources/datasmart\\_cities.pdf](https://smartnet.niua.org/sites/default/files/resources/datasmart_cities.pdf)
3. <https://smarcities.data.gov.in/sites/default/files/Data%20Maturity%20Assessment%20Framework%202019.pdf>

## 15. Annexure

None



# STANDARD OPERATING PROCEDURE FOR DATA COLLECTION

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## Introduction

Data collection is referred to as the method of collecting information in a systematic way. This is essential in the fields of research and management related studies.

- a) **Field Data:** Smart Cities are deploying various Internet of Things (IoT) sensors, actuators, devices, cameras and solutions to capture the data from the field directly. Gartner estimates that by 2020, there will be 9.7 billion connected things in Smart Cities, and 81% of those things will come from smart home and smart commercial building sensors.
- b) **Operations Data:** Various system are deployed under various departments to manage city core operations like Water Supply, Surveillance, Traffic Electricity, Street Lights, Water and Sewerage Treatment, Health, Education, Fire Department, Disaster Response and License permits etc. These systems generate various data points in different formats which provides critical information and intelligence to officers to manage critical services and Infrastructure of the city but in silos.
- c) **Third Party Platform and Mobile Apps:** Citizens also avail services from private businesses like radio taxi, food delivery, hospitals and labs etc. which could provide various insights and patterns which could be instrumental in policy formulation and city planning.
- d) **Internet:** Various platforms engage citizens and communities which captures general sentiments which could provide insights mood or opinion of citizens and communities towards specific issue.

Data collection is important as it helps to determine the following:

1. It gives accessibility to researchers to study previously recorded data by former researchers in the form of question answers. This useful to repeat and confirm the results.
2. It also helps to make predictions for future possibilities.
3. It is useful in making business decisions and helps to ensure quality assurance.
4. The correct data recording also helps the occurrence of future errors.

## Background

Shivamogga Smart City Limited is the SPV (Special Purpose Vehicle) aims to make the Shivamogga a model smart city. The objectives be pursued by the Company on its incorporation are:

- i. Appraise and Sanction Smart City & other infrastructure Projects of Ministry of

Urban Development (MoUD)/Government of India (GoI)/ Government of Karnataka (GoK).

- ii. Implement the Smart City Project & other infrastructure projects of MoUD/GoK.
- iii. Mobilize resources for implementation of the projects.
- iv. Take up Capacity Building activities.

Smart Cities are investing huge amount of resources in creating digital backbone in the form of communication networks, devices and various other kinds of ICT infrastructure. The digital landscape so created makes available high amounts of data for the city to create insights from. These insights are then transformed into actionable intelligence and decision support systems, which help the city, solve various critical issues, promote concretion and innovation and promote data-driven governance.

### Objective

1. To available Information related to Government Departments and NMC with transparency which is accessible by Open Data Portal.
2. Within the government is open data also contribute to higher efficiency and cost savings through greater exchange and better organization of data streams.
3. To ensure quality of the collected data sets by guiding the data coordinators to adequately monitor and evaluate departments data
4. To conduct the departments data collection at the prerequisite data set within the selected timeline

### Scope of Work

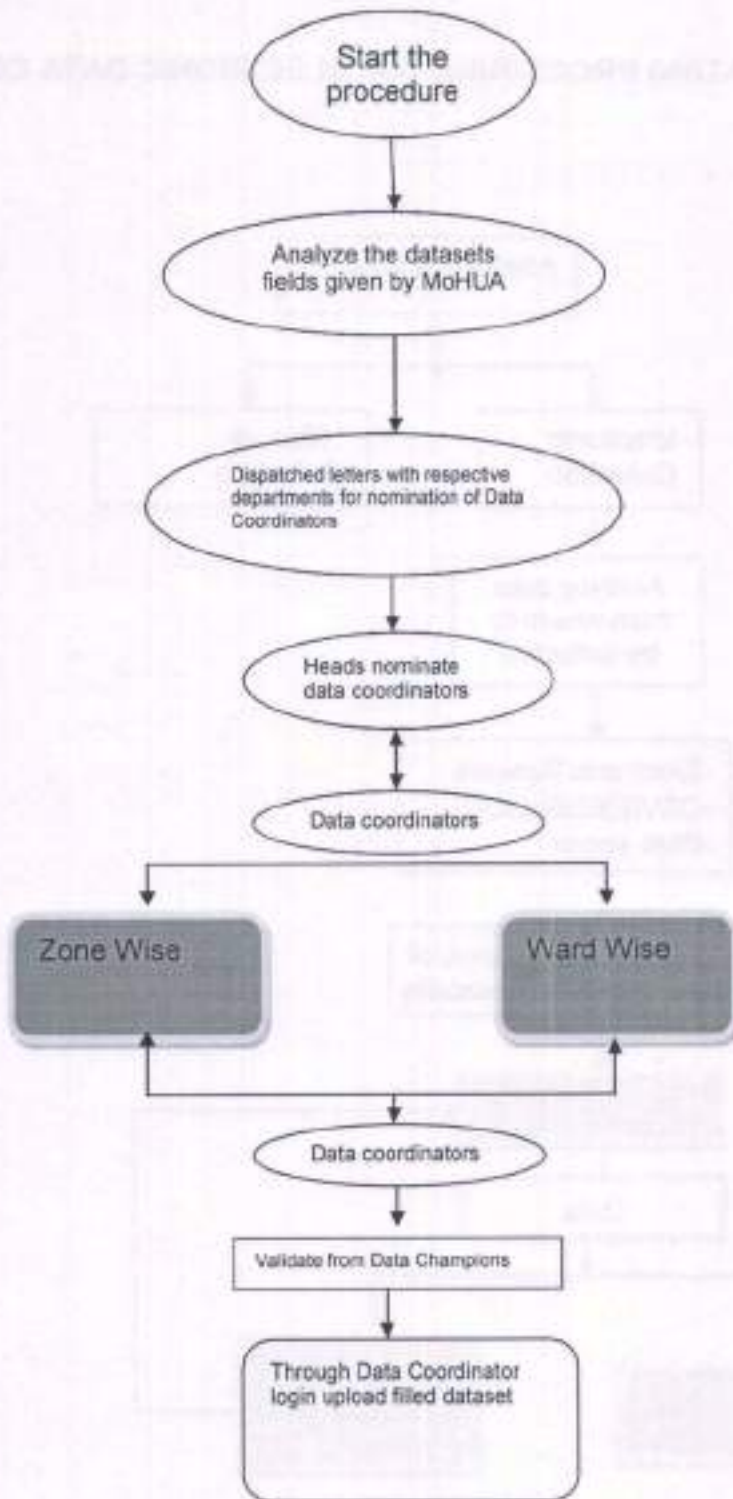
- An interactive web based Open Data Portal management System will maintain entire information of Shivamogga city assets.
- The system will allow users to upload new data, update existing data related to Shivamogga city, etc. This will help the Departments in possessing a valuable digital database for the entire city.
- Online and offline data collection easily available at multiple sites around the world
- The main purpose of this data collection system will be useful for researchers services, and indicators, via data collection
- The main purpose of data collection is Researchers requires local data which could unlock research on civic issues like transport, traffic, solid waste etc. Through this Multi-Disciplinary researchers may provide different perspectives or solutions on civic issues through data analysis.

### Procedures

- In order to get the primary data sets we have to collect data from different wards, zones which is under Shivamogga City Corporation, SSCL and Other Government departments.

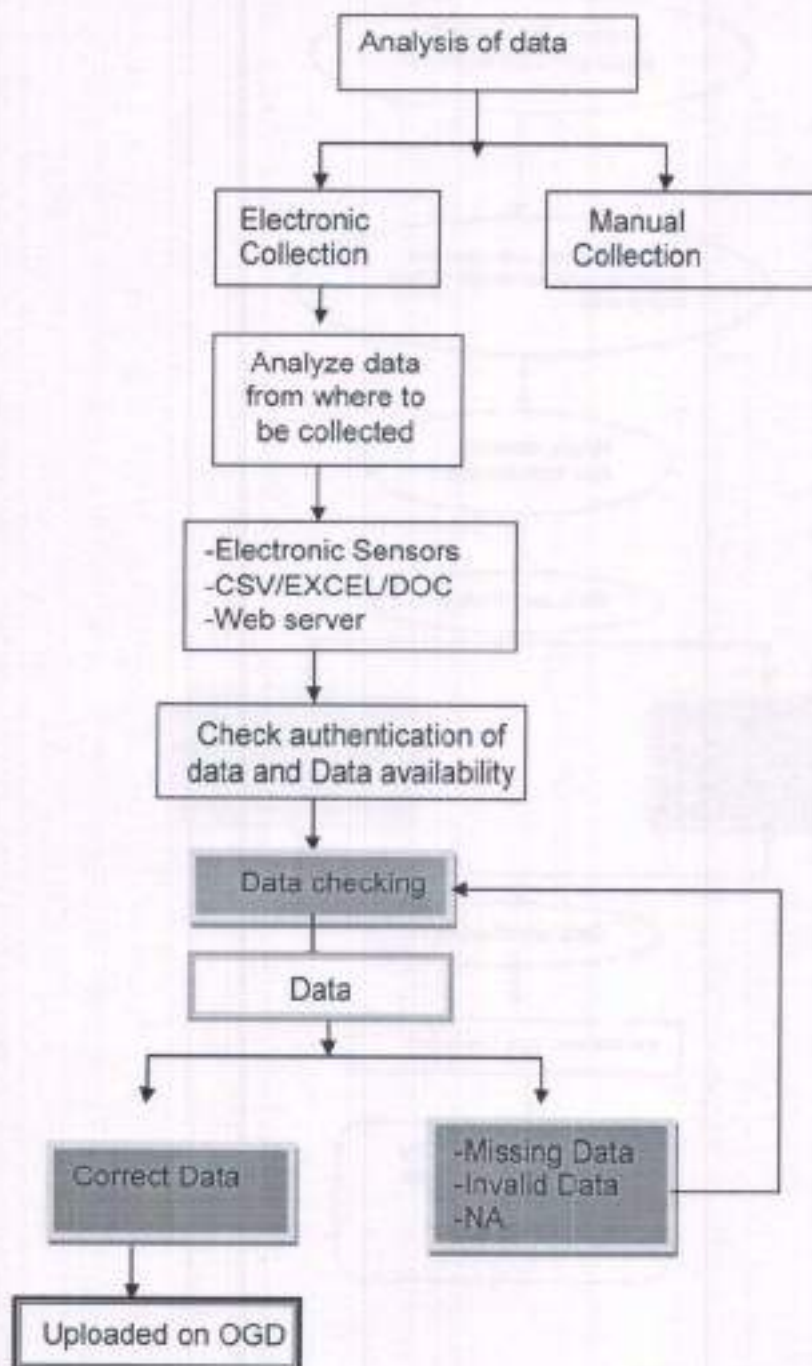


### Workflow Details



## STANDARD OPERATING PROCEDURE FOR ELECTRONIC DATA COLLECTION

### Work Flow Details





# STANDARD OPERATING PROCEDURE FOR DATA PROCESSING AND CLEANING

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## Introduction

Data quality is important. Old and inaccurate data can have an impact on results. Data cleaning, also called data cleansing, is the process of ensuring that your data is correct, consistent and useable by identifying any errors or corruptions in the data, correcting or deleting them, or manually processing them as needed to prevent the error from happening again.

## Background

Data collected is always in duplicate and redundant format. It should be collected in normalized format.

## Objective

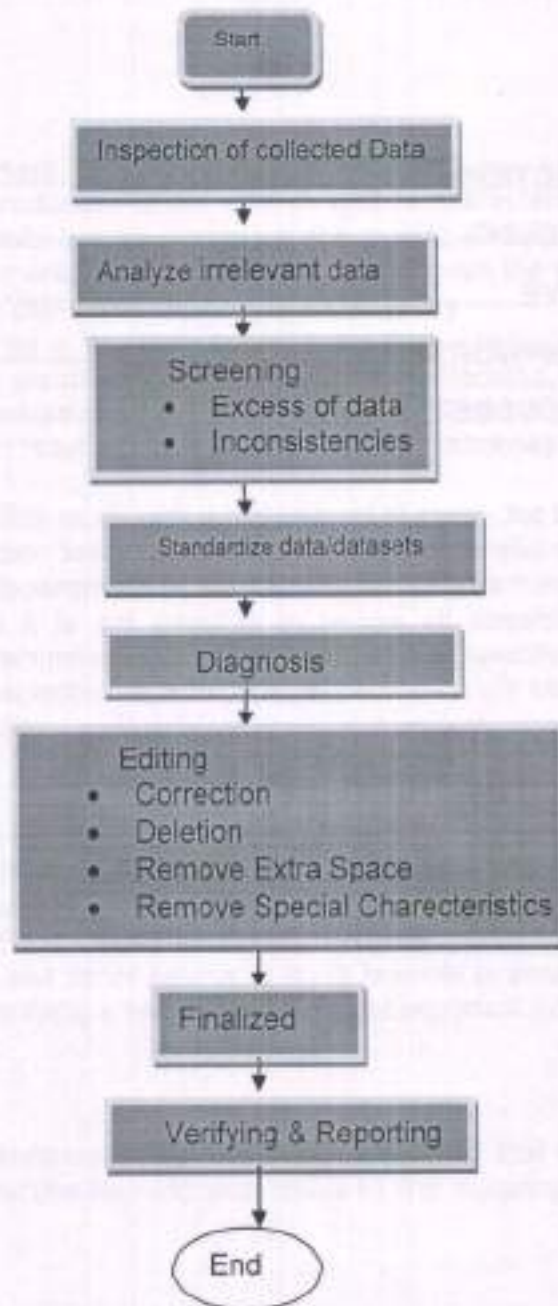
1. Eliminate Errors.
2. Eliminate Redundancy.
3. Increase Data Reliability.
4. Deliver Accuracy.
5. Ensure Consistency.
6. Assure Completeness.
7. Provide Feedback for Improvements.

## Scope of Work

Data coordinator collects data from their respective department it should follow the following Points

- Spaces in extra columns Compliance
- Ward Wise Compliance
- Blank Cells Compliance
- Standard format Compliance
- All NA Compliance
- Special Characters Compliance
- Split Sheets Compliance
- Datasets Compliance
- Data Completeness

## Workflow Details



STANDARD OPERATING PROCEDURE FOR DATA FOR QUALITY ASSESSMENT OF DATA SETS

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## Introduction

- Data quality assessment do survey related to the Company, government departments or system behind the production of the data as well as characteristics of the individual data product. Electronic data are so pervasive; the quality of data plays a critical role in all business and governmental applications. The following are the statistical practices that are associated with each dimension: Prerequisites of quality
- Data Availability – This is the most fundamental data quality issue, and refers primarily to gaps in data. If fields are missing or records cannot be located, then it is difficult to ascertain whether required services have or have not been delivered, Gaps in data limit the ability to conduct analysis, can result in client and commodity mismanagement and under-reporting of results.
- Data Consistency – This deals with a higher level of error - the transference of data from one record or data collection tool to another. This requires careful attention on behalf of dataset provider's staff and departments in the transcription of data from one form to another. During a rapid assessment it is not possible to review all possible sources of inconsistency. Therefore, this tool recommends a random selection of specified number client Identification Numbers from the respective register(s) to give some insight into standards at each facility.
- Accuracy and Reliability
- Serviceability
- Accessibility
- Data Validity – Data validity in this context deals with simple calculation errors, or failing to correctly sum data from registers and lower-level data entry tools into monthly summary forms and the reports sent to the next level on the dataflow. The monthly summary forms are the main source of data used to assess progress in service provision, and feed into government, project and donor reports. It is not feasible to assess all possible errors, so this tool is focusing on verifying a selection of the most important indicators.

## Background

Quality Analysis is an encompassing and multidimensional field that uses mathematics, statistics, predictive modeling and machine-learning techniques to find meaningful patterns and knowledge in recorded data.

## Objective

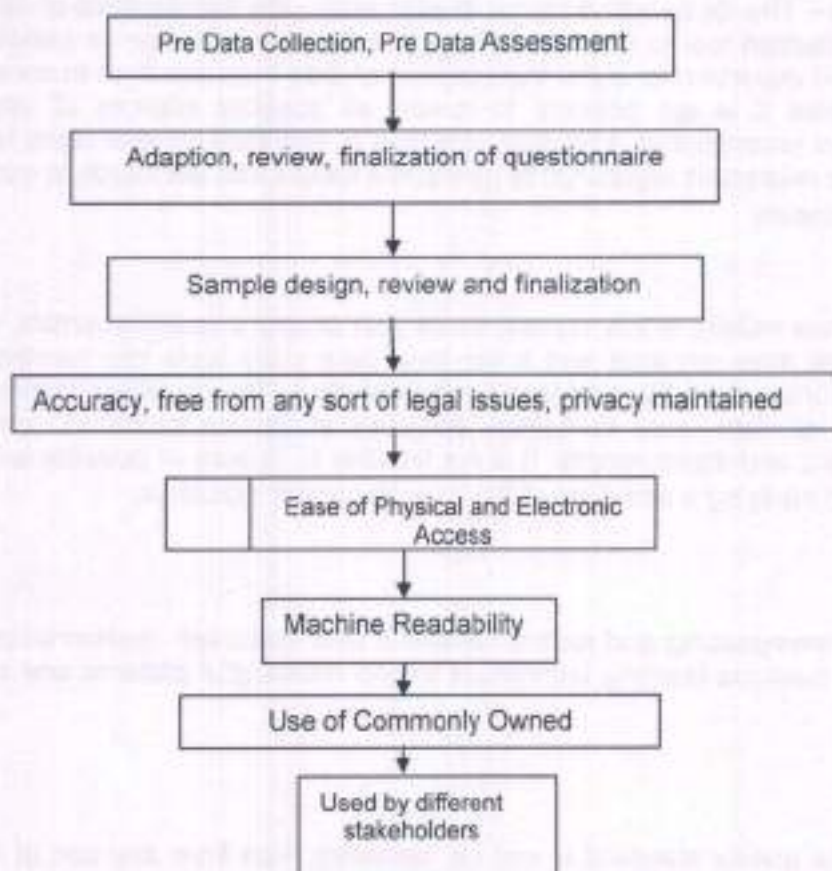
- To ensure that the quality standard is met i.e. accuracy, free from any sort of legal issues, privacy of an individual is maintained and does not compromise with the National security.
- To use the subjective and objective metrics to improve organizational data quality requires three steps
- To Perform subjective and objective data quality assessments
- To compare the results of the assessments, identifying discrepancies and determining root causes of discrepancies.
- Determining and taking necessary actions for improvement.
- To assess the provision made

## Scope of Work

After assessment Datasets should have following modernization

- Adequacy
- Appropriateness
- Utilization
- Effectiveness

## Work flow Diagram



# STANDARD OPERATING PROCEDURE FOR DATA PUBLISHING AS PER OPEN DATA NORMS

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## Introduction

National Data Sharing and Access Policy define standards for publishing data sets and feeds. SCDOs must ensure adherence towards defined standards and classification

- **Open by Default:** Datasets are considered to be open by default unless classified as internal, sensitive, protected or restricted.
- **Meta Data:** Datasets and feeds must be published with proper metadata. Information about the datasets being published using common data taxonomy/structure is needed as it helps in providing easy access through Data Platform.
- **Data Catalogue:** As per NDSAP metadata elements for data sets or feeds are defined as follows:
  - a. **Title (Required):** A unique name for the catalog (a group of resources) viz. Current Population Survey, Consumer Price Index, Variety-wise Daily Market Prices Data, State-wise Construction of Deep Tube wells over the years, etc.
  - b. **Description (Required):** Provide a detailed description of the catalog e.g., an abstract determining the nature and purpose of the catalogue.
  - c. **Keywords (Required):** It is a list of terms, separated by commas, describing and indicating at the content of the catalog. Example: rainfall, weather, monthly statistics.
  - d. **Group Name (Optional):** This is an optional field to provide a Group Name to multiple catalogs to show that they may be presented as a group or a set.
  - e. **Sector & Sub-Sector (Required):** Choose the sectors(s)/sub-sector(s) those most closely applies) to your catalogue.
  - f. **Asset Jurisdiction (Required):** This is a required field to identify the exact location or area to which the catalogue and resources (dataset/applications) caters to viz. entire country, State/ province, district, city, etc.

## Procedure

This section describes the steps required for publishing data to the Open Data Portal, Data Publishing Framework.

This SOP details the five steps for publishing data.

1. **Understand the Data Publishing Options.** Understand the various data sets.
2. **Process and Implement in a Development Environment/Platform.** Select the publishing option appropriate for your content, familiarize yourself with some general requirements and recommendations for preparing data for publishing, and prepare a development version for testing and troubleshooting your data/application.
3. **Deploy/Publish Content.** Follow procedures specific to the publishing option you have selected and work with the appropriate team (when necessary) to publish your data.
4. **Publish Metadata.** Follow established metadata procedures and work with your organization's Open Data Portal to publish metadata in the smartcities.data.gov.in and create linkages between data and metadata.
5. **Obtain Approvals and Finalize Deployment.** Obtain the appropriate management approvals for your content based on your selected data publishing option.





# STANDARD OPERATING PROCEDURE FOR ENGAGING STAKEHOLDERS TO ASSESS THE DATA NEEDS

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## Introduction

Specialist studies and continued engagement will assist with ensuring all relevant issues are captured with data analysis and that all stakeholders feel they have had a chance to suggest their concerns.

## Background

The concept recognizes the value of enhancing engagement among all four stakeholders of the quadruple-helix model—Government (SCC Departments, SSCL and Other Departments of Governments), citizens, academia, and industry, along with improvements in the internal workflow and decision-making processes of city Governments.

## Scope of Work

Shivamogga Smart City will embark on a journey to create a culture of data through various initiatives and engaging with various stakeholders in solving their urban challenges. Cities will be able to solve the numerous complex issues by unlocking this data and sharing them amongst key stakeholders. The Strategy will give direction to the various stakeholders who may be working in vertically integrated structures, holding data produced with following points:

1. State Desired Outcomes
2. Determine Purpose
3. Build a Plan
4. Implement the Plan
5. Monitor and Adjust the Plan
  - Reach Desired Outcomes

## Work flow

- Data collected by Data Coordinators from different government departments which are uploaded on data portal.
- Stakeholders do analysis on data give suggestions in outcome format so that it can be usable for city citizens.



# STANDARD OPERATING PROCEDURE FOR DATA COLLECTION PROCESSING AND ANALYSIS FOR ON FIELD SURVEY

For Introduction, Objective, Scope of work same as above SOPS

## Work Flow

### 1. Steps in Data Collection

Broadly speaking there are three major steps in data collection viz.

1. One can ask people questions related to the problem being investigated.
2. One can make observations related to places, people and organizations their products, Services, or outcomes.
3. One can utilize existing records or data already gathered by others for the purpose.
4. Administering questionnaire schedule to the target groups of area people across sampled sites.
5. Verifying the facts through cross checks in the answers and ground realities.
6. Integrating the observations, responses and recorded facts in a systematic and logical framework.
7. Knowledge about the offices/institutes etc. keeping the record of relevant data is of prime importance to obtain the secondary data/information.
8. Get an official letter containing your requirements of data and purpose of data collection from your Principal/Head of the Institute?
9. Keep a note book/record file to transfer data for the purpose. It could also be done with the help of photo copying systems.

### 2. Processing of Data

The processing of data/information is an essential dimension of stream lining the facts and writing of a field report.

A separate account of processing is given here.

- (A) Processing of primary data: The primary data collected from the field remains in the raw form of statements, digits and qualitative terms. The raw data contains error, omissions and inconsistencies. It requires corrections after careful scrutinizing the completed questionnaires.
- (B) The following steps are involved in the processing of primary data.
- (i) Editing of data: The editing of data can be done at two stages: field and post-field editing. The field editing is a review of Data Coordinator by the Data Champions for completing what has to provide in datasets from respective departments. The post-field editing is carried out when field survey is completed and all the Datasets of schedule have been collected together.
  - (ii) The coding of data in machine format.
  - (iii) Organization of Data: The data information collected through different sources should be organized.
  - (iv) Classification of data: A huge volume of raw data collected through field survey needs to be grouped for similar details of individual responses.
  - (v) Presentation of data in Graphical visualization format.

