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STATISTICS CENTRE

Statistical Data Quality Framework for Abu Dhabi

Methodology and Quality Guides - No. (6)

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Introduction

International recommendations in official statistical work and optimal practices indicate the importance of having a statistical data quality framework for statistical systems in order to determine the key quality standards, themes and objectives which statistics centers seek to develop.

Statistics Center – Abu Dhabi has adopted a set of basic principles of statistical practices as included in the document issued by SCAD under the title "Code of Practice". This document includes a set of principles that support and institutionalize the official statistical work so that it should perform its tasks professionally, objectively and capably with the aim of producing high quality data and indicators. Principle 4 of this document reads as follows: "Statistical Centre is committed to quality. It systematically and regularly identifies strengths and weaknesses to continuously improve statistical process and product quality." Principle 9 of the 'Code of Practice' includes a number of quality elements which SCAD seeks to achieve in statistical output, namely: relevance, accuracy, reliability, timeliness and punctuality, coherence and comparability, accessibility and clarity of data. The document of principles includes another set of quality supporting principles, and particularly the sixth principle pertaining to impartiality and objectivity, and the seventh principle stipulates the adoption of sound methodology and appropriate statistical procedures in the preparation of official statistics.

The development of a statistical data quality framework for the emirate of Abu Dhabi is part of the corporate business model followed by SCAD and based on continuous improvement of performance. Statistics Centre – Abu Dhabi plans for statistical projects and activities, and determines the plan for statistical process and approaches in order to carry out statistical surveys and counts or use the data of administrative records. Process quality is monitored to produce appropriate statistical data before use. Finally, positive results are made use of, and improvement process is developed for continuous guidance and application to statistical surveys and counts. Moreover, administrative records data is used to ensure its effectiveness and relevance within corporate business. The essential objective is to increase the reliability of the statistical product and win the confidence of data users.

Statistical System in the Emirate of Abu Dhabi (SSAD)

Statistical System in the Emirate of Abu Dhabi includes all entities that contribute to the preparation, publication and use of official statistics, it includes the following entities:

1. Statistics Centre – Abu Dhabi (SCAD) which is core entity in the statistical system of the emirate of Abu Dhabi. It aims to develop an innovative statistical system in the emirate which provides convenient and reliable statistics.
2. Government entities that prepare official statistics in accordance with statistical standards agreed upon with SCAD.
3. Government entities that provide with primary data from administrative records that are treated statistically by SCAD for the preparation and dissemination of official statistics in accordance with recognized statistical standards.

   Other groups are closely connected with SSAD in view of their role in the preparation of official statistics and their uses, as follows:

4. Statistical reporting units providing primary data, which are used to prepare statistics, such as families, individuals and economic establishments, through responding to designed statistical questionnaire for statistical data collection purpose. The importance of this group lies in the fact that it is the key source of data, this requires relevant procedures in order to obtain accurate data.
5. Official statistics users who have various interests, whether they are decision or policy makers or planners in different economic, demographic, social, agricultural, environmental and other domains. This group includes academicians, researchers, students and members of local, regional and international community who are concerned with official statistics about the emirate of Abu Dhabi.

The determination of the components of SSAD clearly helps to determine the scope and dimensions of quality framework, especially the dimensions of relevance and accessibility, which are closely associated in utilize statistics to users' needs.

Quality Policy in Statistics Centre – Abu Dhabi (SCAD)

SCAD issued its new policy on quality in April 2015. This policy, which is contained in "Quality Policy" document, as follows:

"Statistics Centre – Abu Dhabi (SCAD) is committed to offering distinctive statistical services that meet and exceed stakeholders' needs and provide quality services by collection, processing, storage and dissemination and maintain a quality management system in line with ISO 2008-9001 requirements.

To meet the requirements of our quality management system, we are committed to:

- Establishing reliable statistical services for all governments' entities, Private sector and individuals aligned with Statistics Centre - Abu Dhabi's mission and vision.
- Developing and organizing efficient and effective statistical systems.
- Providing efficient and effective statistical processes, including specify needs, design and build, collect, process , analyse, disseminate, archive, evaluate and managing data and related reports in accordance to the needs of users.
- Providing a suitable work environment for Statistic Center –Abu Dhabi employees, develop their competencies and adopt their creative ideas to build an effective and efficient quality management system.
- Continually improve our quality management system, as well as our process and services.
- Issue, implement Quality policy of Statistics Centre – Abu Dhabi (SCAD) and all employees are committed to it."

Through the Charter of Cooperation, Service and Transparency, SCAD is committed to implement the best world experiences and practices in the field of statistical business development, and provide its high quality and reliable statistical services and data on time. SCAD is committed to a set of basic values that support quality, namely: independence, transparency, reliability, confidentiality and focus on users.

Uses of the Framework

Statistical Data Quality Framework for Abu Dhabi Emirate, "Quality Framework", aims to acquaint statistical data producers and users with the concept, dimensions and basic procedures of statistical data quality. This framework also helps to prepare an efficient mechanism for monitoring and development of official statistics quality in the emirate of Abu Dhabi. The quality framework is determined by a range of basic quality dimensions (Quality Standards) which SCAD seeks, along with its strategic stakeholders and government entities that produce official statistical data, to apply to all statistical products issued from SSAD.

This framework relies on many accredited references that are recognized locally and internationally, mainly:

- The transcript of Fundamental Principles of Official Statistics issued by the United Nations in 1994, whose preamble was updated and issued in 2014.
- Data Quality Framework issued by International Monetary Fund (IMF) in 2003.
- SCAD's Code of Practice issued in 2016.
- SCAD's Statistical Data Quality Framework issued in 2011.
- Draft General National Framework of Data Quality prepared by Quality Experts Team in 2012.

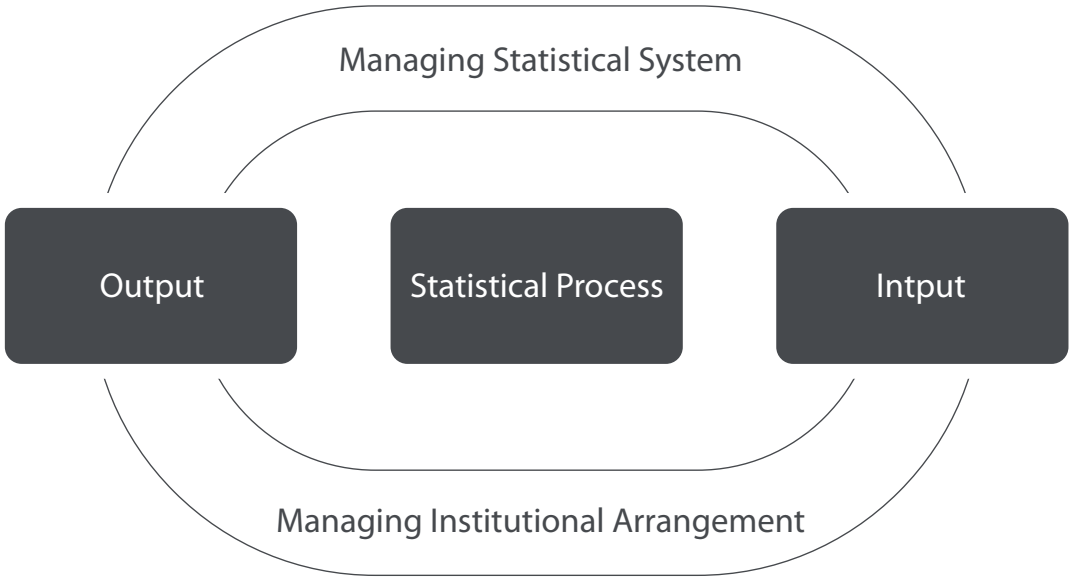
This framework identifies clearly quality standards which SCAD is committed to achieve when collecting and processing data, and preparing and disseminating statistics for users; whether the source of such data is statistical surveys or administrative records. This framework will seek to create a unified understanding of statistical quality for all entities in SSAD, which will enable these entities to prepare consistent mechanisms and procedures in order to monitor, evaluate and develop the statistical quality of its administrative data.

Quality Framework can be considered an essential reference for statistical quality management in SSAD. It determines the concept, importance, elements and standards of official statistics quality. This will lead to a common understanding among the components of the statistical system, including data providers, statistics producers and users. It also combines efforts to develop consistent integrated procedures that will enhance and develop the quality of official statistics issued from SSAD. Therefore, this framework should not be viewed as a detailed working manual of quality procedures, but as a basic reference to help SCAD and government bodies to prepare detailed manuals for official statistics control procedures, whether the source of their data is field surveys or administrative records. This framework also helps the agencies that constitute SSAD to prepare a mechanism for conducting quality assessment and following up its development, whether to be a self-assessment by the entity itself or an external assessment by another entity.

Statistical Quality Framework Model and its Standards

The ways of organizing and structuring statistical quality frameworks in national statistics vary. One key reason for this is the level of centralization of the statistical system, with some centers being highly centralized, others non-central and many a combination of both. Other factors include the maturity level of the statistical system in the country, the different interest of users of these statistics, and various other factors. Despite the variation in ways of organizing and structuring statistical quality, there are shared quality elements between them.

Figure (1); Model of statistical quality for SSAD



Quality model is a simplified chart, which shows the high-level key components of quality that exist. Figure (1) shows the model of statistical quality for SSAD, which displays the basic components of this system and how they interact. Based on this model, quality standards will be reviewed according to the following headings:

1. Managing Statistical System.
2. Management of Institutional arrangements that support quality.
3. Statistical process management.
4. Managing Statistical Output

The basic quality dimensions (quality standards) in this framework emanate from the comprehensive quality concept, which comprise the quality of statistical input, process, and output to meet statistical data users' requirements and the achievement of recognized statistical standards that are approved internationally and regionally, which makes these statistics "fit for use".

Below we will address the basic standards of the components of the statistical quality framework of SSAD:

1 | Managing Statistical System

The issuance of high quality official statistics requires an effective statistical system to guarantee consistent, reliable and non-conflicting statistics at the lowest cost through the efficient integration of efforts among the components of the statistical system. To guarantee this, the following standards must be taken into consideration:

1-1 Coordination and governance of the statistical system

The coordination of the government agencies comprising the statistical system in the emirate of Abu Dhabi (SSAD) is necessary for the maintenance and development of the quality of official statistics issued from those agencies. To ensure the effectiveness of the system, the following must be available:

- Corporate laws and regulations, which are fit for the statistical system.
- Clear mechanisms for coordination of the production and dissemination of official statistics by statistical authorities.
- Agreements and Memoranda of Understanding (MOUs) among members of the statistical system in order to organize statistical work and determine its priorities.
- Prepare and make available statistical working manuals that include statistical methodology, standards, classifications and concepts in order to ensure consistency in the preparation of official statistics.
- Manage and develop statistical knowledge and awareness.
- Prepare quality framework and quality manuals, ensure that the components of the statistical system will abide by them, and monitor the implementation of the standards included in them.

1-2 The Relationship with Strategic Stakeholders

It is important to establish an excellent and sustainable relationship with all strategic stakeholders in statistical work, including data and statistics users and producers, government agencies that support statistical business, and media and respondents, especially big companies. This aims to provide consistent and highly professional services and statistics for customers from the governmental, semi-governmental, private sectors, public sectors, and individuals, as follows:

- The statistical system must include a clear definition of strategic stakeholders, their roles and classification according to their importance and the nature of interrelations.
- The existence of clear and regular mechanisms to monitor the stakeholders' needs of the various data and statistical services.
- Meeting requirements according to priority and reflecting them on the statistical business program.
- The management of official statistics requests and queries by a regulatory unit specialized in customer relationships and recording them in accordance with approved procedures.
- The efficiency of procedures aimed at facilitating the acquisition of administrative data from government agencies for statistical purposes.
- The existence of a strategy to manage the relationship with media agencies and organize the role of media in the dissemination of statistical data and information.
- The existence of a committee to direct the dialogue between producers and users of statistics in order to provide the appropriate statistics for them.
- The measurement of customer satisfaction about whether the statistics and statistical services meet their requirements and expectations.

1-3 Statistical Standards

The unification of statistical standards for the statistical system reinforces the role of statistics and increases their consistency, efficiency and comparability, domestically and internationally. Therefore, unified statistical standards must be assured between the components of the statistical system. These standards include statistical concepts, terms, classifications and the fundamental statistical methodologies. This can be achieved as follows:

- SCAD should prepare the list of approved standards in the statistical system in compliance with international standards and the Emirate's need, and in cooperation and coordination with the strategic stakeholders.
- Work with stakeholders to review, develop and implement statistical standards.
- Provide mechanisms for management of amendments in the approved statistical standards of the statistical system.
- Provide statistical standards for all users, along with clear mechanisms of implementation.
- Build and enhance the statistical capacities of the entities in the statistical system in the implementation of statistical standards and sound, approved work methodologies.
- Monitor the implementation of approved statistical standards.

2 | Management of institutional arrangement That Support Quality

The statistical agency must be empowered and resourced to achieve the statistical work and produce official statistics and statistical data professionally and capably. This covers all corporate, legislative, financial, human, technological and other procedures that ensure the efficient implementation of statistical work. To guarantee that, the following criteria should be taken into consideration:

2-1 Professional Independency and Objectivity

Official statistics should be prepared, developed and disseminated professionally, objectively and independently from any external pressures or impacts, and also transparently and equitably with all users. This can be realized through the following:

- The existence of a law or legislation which authorizes the agency producing official statistics to prepare, develop and circulate statistics in a professional manner, independent from any pressures.
- The agencies producing official statistics are responsible for decision making regarding statistical methods, and technical standards and procedures in the preparation and production of official statistics.
- The agencies producing official statistics are obliged to abide by international and national codes of statistical practices.
- Collect statistics and statistical data on an objective basis to be determined by statistical considerations.
- Provide statistical methodologies and standards used in data collection and preparation for all users, and in case of making any amendments, informing users of them.
- Published statistics must be clear to users.
- The existence of clear dissemination policy and calendar for the statistical publication.

2-2 Statistical Confidentiality

The data provided by respondents (families, companies, administrative record data, etc.) must be kept confidential and used only for statistical purposes. This can be achieved as follows:

- There should be a law or legislation that provides for protection of the confidentiality of personal data and guarantees respondents' privacy. Prepare procedures that ensure its effective implementation.

- There should be rules and regulations for information security to protect data confidentiality. They may include the imposition of penalties on the employees who disclose confidential data to individuals, institutions or others.
- Provide a policy and measures to prevent disclosure of confidential data.
- Provide physical, technological and administrative resources for protection of statistical data security.
- Allow individual data to be seen only by the employees who need that data to perform their statistical tasks.

2-3 Commitment to Quality Assurance

Quality standards must be observed on preparation and dissemination of statistics, Strengths and room of improvement must be determined periodically and regularly in order to develop the quality of statistical process and output. This can be realized by the following:

- The existence of clear statements that the statistical data producing entity is committed to provide high quality statistical data.
- The existence of manuals that pertains to the standards and procedures of statistical quality and defines the scope of quality and how it should be applied in the entity.
- Take the necessary actions to plan and monitor statistical operations by specific persons or a specialized regulatory unit charged to do so.
- Monitor, evaluate and report the quality of statistical products regularly in accordance with statistical quality standards.

2-4 Relevance and Sufficiency of Resources

The necessary human, financial and technological resources must be provided to manage the statistical process professionally and capably with the aim of producing high quality statistics. This can be achieved by the following:

- The relevance and sufficiency of human and financial resources to meet current statistical needs and carry out the statistical survey program.
- The relevance of the qualifications of the staff working on the execution of statistical work and development of competencies continuously and as needed.
- Management of human resources efficiently and the measurement of the impact of this on the level of productivity (outcome-based management).
- The relevance and sufficiency of technological resources, including software and hardware, to support statistical process and needs.

3 | Statistical Process Management

What reinforces the credibility and quality of statistics is the efficiency of the statistical processes that are necessary for the production of statistics, whether in the stage of planning the survey, data collection, data processing and analysis or data dissemination stage. These operations must be performed efficiently, taking into consideration the quality, cost, timeliness and respondent burden of producing the statistical outputs. To guarantee this, the following standards must be taken into consideration:

3-1 Clarity and Soundness of Methodology

Statistics should be prepared in accordance with appropriate statistical methodology and procedures that are in agreement with scientific considerations, international standards and best practices, in line with national and domestic circumstances. This can be realized by the following:

- The statistical methodology framework should be in agreement with international standards and principles and best practices.
- There should be sufficient procedures to ensure the implementation of approved and standardized methodologies, standards, classifications and concepts.
- There should be appropriate procedures to measure the implementation of approved and standardized methodologies, standards, classifications and concepts.
- Document properly all work procedures in all stages and make it easy to access them.
- Design the statistical administrative records is such away to make them relevant for statistical purposes.

3-2 The Statistical Program Cost-Effectiveness

Various resources must be used effectively so as to produce statistical indicators in accordance with the already specified objectives at a reasonable cost. This can be achieved as follows:

- There should be supportive documents in order to attain the cost-effectiveness of the statistical program.
- There should be procedures to measure the level of effectiveness in the production of statistical indicators.
- Use statistical methods and appropriate procedures that take into consideration the reduction of cost.
- Use administrative records in the preparation of statistical indicators whenever possible.

3-3 Non-excessive Burden on Respondents

Individuals, families and companies are the main source of data on which statistics and statistical indicators are based. Therefore, it is important to obtain quality data and information from these sources. In contrast, a balance should be achieved between meeting the user's need for statistics on the one hand, and the level of cost and burden on respondents on the other hand. This can be realized through the following:

- Provide a manual on the management of relationship with respondents, how to take care of them and explain their vital role in the preparation of quality and useful statistics.
- Use administrative sources whenever possible in order to avoid the repetition of requests for information.
- Enhance and develop administrative data collection procedures in order to link data sources, whenever possible, in order to reduce burden on respondents.
- Implement response burden study in order to understand the amount of burden on respondents and how to reduce this burden
- Design the form and formulate the questions in a manner that help to reduce the burden of responding to them.

4 | Managing Statistical Output

Statistical outputs should meet the requirements and needs of the various current and potential users. This output should be prepared in accordance with recognized and accredited standards and methodologies. For this purpose, the following standards (quality dimensions) should be taken into consideration:

4-1 Relevance

Statistics should be produced to meet the needs of current and potential users. Statistical concepts and classifications should meet the needs and requirements of users, which can be achieved as follows:

- Identify current and potential users and determine their priorities and nature of their statistical needs.
- Provide specific procedures to consult users about their needs. Such procedures include responsiveness to emergent priority demands.
- Provide procedures to monitor how far issued statistics meet the needs of users.
- Measure periodically and regularly the opinion of statistics users, and user satisfaction of the relevance of produced statistics.
- Provide assistance for users immediately on the basis of expert knowledge, and publicize the person responsible for each domain.

4-2 Accuracy and Reliability

Prepare and circulate accurate and reliable statistics that are capable of correct description of different phenomena so that calculated statistics should approximate closely the true value . Accuracy is estimated by certain measurements relating to sampling errors, like standard error, relative error, design effect, and non-sampling errors, such as measurement errors, errors related to data collection, lack of data, non-response and other errors. This can be realized by the following:

- Provide sound methodologies and procedures to edit and check source data, intermediate results and statistical output.
- The entity should apply the standards and procedures to check data accuracy in a periodic and regular manner.
- Provide manuals, procedures and standards to evaluate the accuracy of data and statistics.
- Provide a methodology for data examination and checking processes, and mechanisms for regular follow up and handling of errors.
- Obtain quality indicators to measure data accuracy, including sampling and non-sampling errors.
- Validate and discuss the results of the inspection, editing, and evaluation of data with the aim of improving and developing data accuracy, as well as the determination of its impact on the quality of statistical indicators.

4-3 Consistency and Comparability

Prepare and issue statistics that are consistent with each other over time and can be compared with each other through the use of unified concepts and classifications so that they should be consistent and comparable. Consistency and coherence are among the most important standards of quality of statistical data, because they enable comparison and linking databases. This can be realized as follows:

- Compile statistics based on specific standards in terms of scope, definitions, units, and classifications in statistical surveys.
- Unify all used standards, classifications and concepts, and make them publicly available so that they can be accessed easily in order to prepare statistics in accordance with unified standards.
- Provide sufficient methodologies and procedures in order to make sure the consistency of statistical data by checking the compatibility of variables, indicators and produced tables within the same agency.
- Make a comparative study between the concepts, classifications and standards used in government entities and those used in SCAD.

- Provide a document which shows the degree of variation between the used statistical coverage, concepts and classifications and those applied internationally. Provide mechanisms to handle these variations, in order to achieve an appropriate compatibility level in used concepts and classifications.
- Conduct comparisons of the produced statistics with counterpart statistics from other sources. They can also be compared with statistics of other geographical regions and countries.
- Inform data users in case any revisions or updates are made in the previously published statistics.

4-4 Accessibility and Clarity

Statistics and metadata should be made accessible to users in a convenient way so that they can easily access and understand them, to realize maximum benefit at the lowest cost and in the shortest time. This can be achieved by the following:

- Establish specific policies and procedures and make them accessible to users in different ways that suit their various needs.
- Statistics should present a long with their metadata in a way that provides right interpretation of statistics and proper comparisons.
- Make accessible the necessary metadata in order to guarantee the clarity of produced statistics to all users.
- Use modern technology to publish statistics in order to serve the largest number of users and allow them to access the tables that suit their needs.
- Documentation of metadata according to the standards of accredited metadata systems so as to link statistics, indicators and their metadata.
- Facilitate communication with data users and acquaint them with the details of available data in terms of their benefit, periodicity and updated. Also conducting survey to understand their opinion and take their suggestions.
- Inform users of the quality of statistical output in accordance with the approved quality standards.

4-5 Timeliness and Punctuality

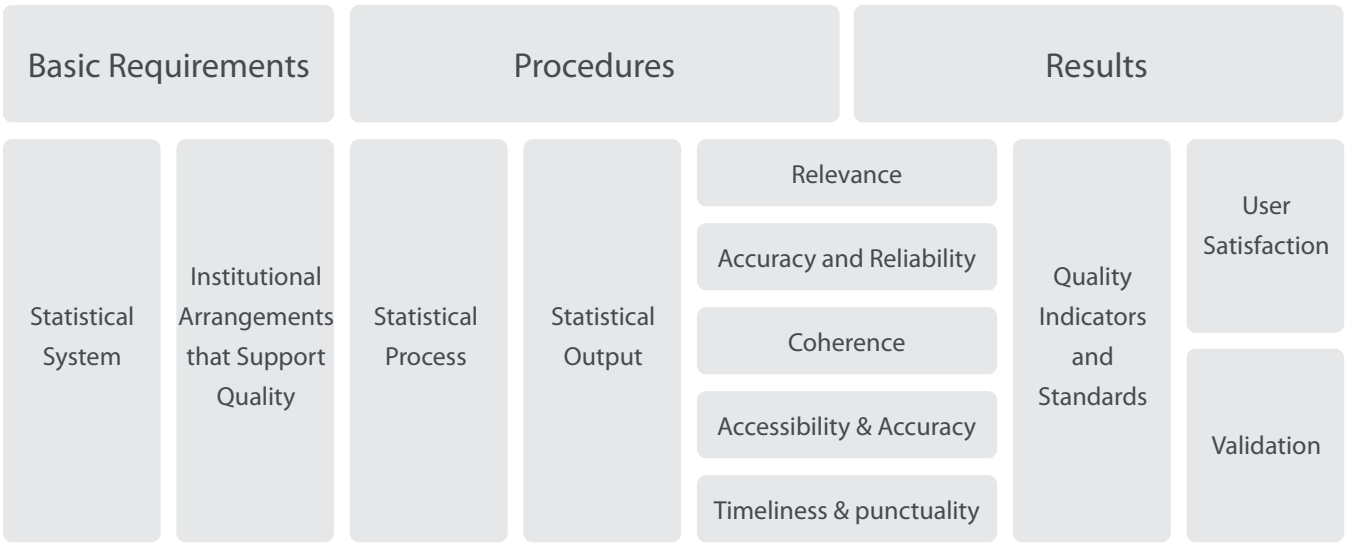
Statistics should be prepared and released in a timely and punctual manner to ensure the timeliness of the data made available to users and provide data with the appropriate periodicity according to the timetable agreed upon in advance with users. Data timeliness is the duration between the reference period of the indicator and the date of its release. This can be realized as follows:

- Specify appropriate timings to make statistics available in such a manner as to meet international statistical standards, such as the General data Dissemination system (GDDS) and Special Data dissemination Standard (SDDS) and others to meet the needs of users.
- Prepare a time schedule agreed upon with data users which states the dates of data accessibility. There must be a continuous follow-up mechanism to ensure the availability of data in the agreed timings.
- Inform users of any probable delays in the provision of data, along with the reasons for delay and the new dates of data availability. This should not exceed critical or important dates for the release of official statistics required for the decision maker in the Emirate / country.
- Provide measurements for the timeliness of the statistics provided to users and the extent of abidance with the agreed timings for the supply of data.

5 | Quality Evaluation and Development

The quality of statistical products should be evaluated regularly. The evaluation should cover the items of quality that were mentioned in this framework. A clear mechanism should be prepared to evaluate all components of the statistical process and output in their various stages. The quality evaluation and development is in agreement with quality model of the SSAD, as well as with the European Foundation Quality Model (EFQM) , which is approved by Abu Dhabi Award for Excellence in Government Performance, which is applied to all government agencies in the Emirate. The following figure shows the elements of statistical quality elements for the Statistical System of Abu Dhabi (SSAD):

Figure (2): The elements of statistical quality evaluation for SSAD



In this section, the basic stages of statistical data quality assessment and listing the strengths and opportunity for improvement will be addressed the aim of that is for continuous development of quality by verifying the extent of application of procedures for each of the elements mentioned above. The assessment process will contain a set of quality indicators and measurements to give a numeric evaluation of the effect of application of quality standards to statistical data.

5-1 Statistical Surveys

The statistical survey includes a number of interconnected operations which include the preparatory stages of the survey, data collection and processing stage, and data analysis and dissemination stage. SCAD conducts the survey based on standard statistical operation procedures, relying on the international model of statistical production known as the "General Statistical Business Processing Model (GSBPM)". Quality procedures for each of stage of survey are monitored by the use of a special template for this purpose, and then the detailed quality report is prepared along with the other output related to quality evaluation. These will be reviewed later. In addition, the validation of the relevant statistical process and metadata should be evaluated. This evaluation process aims to know the level of data quality and possible opportunities of improvement and development in order to avoid or minimize errors.

The evaluation process includes the following areas:

1. Evaluate the statistical process.
2. Evaluate the quality indicators relating to statistical process, which include sampling and non-sampling errors.
3. Evaluate the satisfaction of users with published statistics of various approved dimensions of quality.

The quality evaluation process should include the evaluation of the documentation of statistical operations, which includes the validation of statistical work with its different stages, in detail, as well as preparing summary of these procedures and including

them in the survey outcome publications. Survey documents, including statistical questionnaires, booklets, and definitions, are included in the official survey documents.

5-2 Administrative Records

Administrative Records can be defined as a set of data that emerges as a result of administrative operations provided by various agencies, especially government agencies, for individuals, institutions and communities. The development and control of a statistical quality assurance system for record data is an essential component of the methodology of using administrative records as one of the basic sources of official statistics. In order to demonstrate the achieved progress in the statistical quality of administrative records, and to ensure continuous improvement, a periodical quality evaluation must be performed with the aim of recognizing and promoting strengths and potential improvement opportunities. The evaluation of the statistical quality of administrative records is based on two elements, namely:

- Self-assessment (internally) of statistical quality: The government entity evaluates – internally by its relevant experienced staff – statistical quality of it administrative record data in accordance to the approved standards and procedures of statistical quality of administrative records. It also identifies strengths and good performance, as well as weaknesses and improvement prospects. This would help this government agency to develop a treatment and action plan for quality development.
- External evaluation of statistical quality: this can be done by SCAD performing the evaluation of statistical quality of administrative records of government agencies. To guarantee the efficiency of such evaluation, it must be performed after the Self-assessment of statistical quality.

To apply the continuous improvement concept of the quality of statistical surveys and administrative records, the following output of the evaluation process should be prepared:

- Detailed Quality report: The report contains the key quality procedures for surveys and improvement prospects. It is prepared through the quality procedure monitoring template, which is filled in by the work teams participating in the statistical process under supervision of the quality team.
- Action and Development Plan: it is an internal report that states the most important proposals of improvement of surveys, according to survey phases and specified dates. It is prepared based on the quality report, and discussed and approved by the work team.
- Quality Statement: the statement aims to reinforce the user's confidence in the quality of published statistics. It is a brief report on the major supportive procedures for the attainment of survey quality classified according to the approved quality themes. This statement is to be prepared from the information contained in the quality report and is published for users along with statistical data.

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