# Maturity Model on Quality Culture in Official Statistics

Prepared by the Subgroup on Quality Culture

of the United Nations Expert Group on National Quality Assurance Frameworks (EG-NQAF)

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## Glossary of Terms

1. The following list provides definitions of key terms used in this Maturity Model. The primary reference for these definitions is the UN NQAF Manual I.C. Important Terms. While the definitions below are specific to this Model, it is important to note that definition could be varied depending on different organization and countries.

***Ethical principles***: guidelines or a code of conduct for assuring objectivity and impartiality.

***Key statistics***: in this Maturity Model, key statistics refer to a set of essential official statistics that provide a comprehensive overview of a country's conditions. These statistics are critical for informing policy decisions, monitoring progress, and assessing the overall well-being of a nation. It is important to note that the specific definition and scope of key statistics may vary between countries. Each country may prioritize different areas and policies, resulting in a set of official statistics tailored to its socio-economic context, development goals, and policy needs.

***Major producers of official statistics***: all significant contributors within the national statistical system responsible for producing official statistics.

***Management***: a group of individuals who hold leadership and supervisory roles, responsible but not limited for setting strategic directions, making policy decisions, and overseeing the overall functioning the agency.

***Metadata (from UN NQAF Manual)***: data that define and describe other data. Structural metadata and reference metadata can be distinguished from each other. Structural metadata define and accompany the data and consist of identifiers and descriptors that are essential for discovering, organizing, retrieving and processing a statistical data set (e.g., titles, subtitles, short descriptions, dimension names, variable names, etc.)

***National statistical office (from UN NQAF Manual)***: the leading statistical agency within a national statistical system. National statistical office and national statistical institute mean the same thing. In general, the NSO has a coordination role within the national statistical system, and is responsible for the development, production and dissemination of official statistics across multiple statistical domains.

***National statistical system (from UN NQAF Manual)***: the ensemble of statistical organizations and units (statistical agencies) within a country that develop, produce and disseminate official statistics on behalf of the national Government (and other levels of government). It is the responsibility of each country to define the scope of its NSS (see also statistical agencies, data providers and statistics producers and data ecosystem).

***Official statistics (from UN NQAF Manual)***: statistics that describe, on a representative basis, economic, demographic, social and environmental phenomena of public interest. Official statistics are developed, produced and disseminated as a public good by the members of the NSS in compliance with the Fundamental Principles of Official Statistics and accepted quality frameworks such as the UN-NQAF, as well as other internationally agreed statistical standards and recommendations. In many countries, official statistics are defined and described in the statistical programmes.

***Other producers of official statistics (from UN NQAF Manual)***: members of the NSS (see also statistical agencies).

***Production and dissemination of official statistics***: in this Maturity Model, the production and dissemination of official statistics refer to the whole process through statistical agencies design, collect, compile, analyze, and disseminate data and information that are considered official statistics.

***Quality assessments (from UN NQAF Manual)***: the part of quality assurance that focuses on an assessment of how well quality requirements (the stated needs or expectations) are fulfilled.

***Secure/"Safe" environment***: under the context of this Maturity Model, a secure/no-blame environment refers to a workplace culture that encourage open communication, transparency and collaboration without fear of punishment or retribution. This workplace culture is vital in fostering continuous improvement in quality assurance and error handling.

***Self-explanatory***: under the context of this Maturity Model (in Key Characteristic 2), self-explanatory refers that the statistics are presented in such a way that they can be easily understood without the need for extensive interpretation or additional explanation. This involves using clear language, appropriate visuals and providing sufficient context so that external users and stakeholders from diverse backgrounds can understand the meaning of the data independently.

***Sensitive data***: information that requires special protection due to its nature and the potential impact of its unauthorized disclosure or misuse. This type of data is subject to confidentiality and security measures to ensure that it is not accessible to unauthorized individuals and is handled in compliance with legal, ethical and organizational standards.

***Staff***: employees who execute the statistical methodology, ensuring data quality and produce accurate statistical outputs under the guidance and direction provided by management.

***Staff survey***: staff engagement survey or the employee perception survey, which is a structured questionnaire designed to gather insights into employees’ attitude, opinions, and perceptions regarding various aspects of their working environment, culture and experience.

***Statistical agencies (from UN NQAF Manual)***: members of the NSS, encompassing the NSO and other producers of official statistics. Statistical agencies other than the NSO normally have other main purposes and tasks than the production of official statistics and only a section or a small group of people within the institution produces statistics. The quality requirements for processes and output are the same for all official statistics. However, for a ministry or administrative body where only a part of that body produces statistics, the requirements linked to the institutional environment apply only to the entity producing official statistics. For example, while the ministry or administrative body is typically not independent, the unit within the ministries/administrative bodies that is responsible for producing statistics should decide on how to produce and when to disseminate its statistics independently.

## Part 1: Introduction

1. *Official statistics* play a critical role in informing decision-making. Their fitness for purpose directly impacts the effectiveness of the design and implementation of government policies and programmes in addition to supporting the decision-making of the entire society, individually or collectively. Having access to timely and accurate official statistics allows decision-makers to respond to any challenges and opportunities swiftly and appropriately.
2. *Importance of a Quality Culture.* A strong quality culture encompasses a shared commitment to deliver high-quality statistical products and services with the relevance, accuracy, timeliness, and punctuality for users. This commitment applies to everyone in a statistical agency or statistical unit and throughout the national statistical system who is involved in the production and dissemination of official statistics and guides their actions and decision-making processes. A high level of management commitment and support is essential for the successful establishment of a quality culture. Management is required to establish quality policies, monitor practices, and encourage continuous improvement efforts. In this context, adopting quality management systems and complying with international standards are also of great importance. Quality culture is not only an internal effort, but also a collective process that requires the participation of a wide range of stakeholders. Without a well-established quality culture, the risk of producing data and statistics not fit for its intended use or even erroneous will increase and eventually undermine the trust and confidence in official statistics and the national statistical system. A commitment to quality assurance and a quality culture for official statistics is equally important for the cooperation with other countries and regional and international organizations, as it supports global monitoring efforts, such as the Sustainable Development Goals (SDGs), and enhances cross-border research collaboration and ultimately helps fostering global development.
3. *Maturity Model of a Quality Culture.* A maturity model is a framework that organizations use to assess and improve their processes and overall performance in a particular area. These models help organizations to understand their current state and to set goals for improvement. This document introduces a maturity model to assess the quality culture in national statistical agencies, which includes the national statistical office (NSO) and other producers of official statistics. Some proposed indicators of the maturity model concern quality culture in the national statistical system (NSS). The maturity model provides a generic roadmap for the improvement of quality culture. Statistical agencies may focus on and prioritize efforts on the most critical aspects based on their circumstances. It also provides a common language for communication within the NSS, hereby supporting and fostering collaborations among different organizations. In addition, the maturity model can serve as a valuable tool for external stakeholders, including policymakers, international organizations, and funding bodies, by offering a transparent and standardized method for assessing and reporting on the quality culture within national statistical systems.
4. *Users and Uses.* While a maturity model is used to assess the organization in a certain perspective, it is crucial to acknowledge the inherent challenges in quantifying and measuring culture. Therefore, the proposed maturity model and related measures in this document should be viewed as a tool for identifying areas for improvement rather than scoring and should be used on voluntary basis. This maturity model should be used in a flexible way and adapted to national circumstances and priorities. Nevertheless, to ensure comparability is key to define the minimum measures that are required to achieve.
5. *Development of the maturity model.* This maturity model for a quality culture in official statistics was developed by the Subgroup on Quality Culture (hereinafter referred to as Subgroup) of the United Nations Expert Group on National Quality Assurance Frameworks (EG-NQAF). The Subgroup was established by the EG-NQAF in June 2023. The Expert Group and its Subgroup consists of experts on quality assurance from Member States and international and regional organizations.[[1]](#footnote-2) This draft is based on some initial research, responses to an initial survey among the members of the Expert Group, feedback received from countries during a workshop and an expert group meeting and an iterative discussion process within the Subgroup on Quality Culture. One challenge encountered during this work has been the absence of well documented national practices and experiences. Therefore, respondents to the global consultation are requested to share any experiences and best practices in fostering (and measuring) a quality culture for official statistics. We also welcome volunteers to test the maturity model (see end of document).
6. This maturity model complements the set of guidelines and instruments developed by the EG-NQAF as the National Quality Assurance Framework Manual - NQAF; the self-assessment checklist and the roadmap for the implementation of the NQAF. The model could be applied by the countries that have implemented additional instruments like the Code of Practice or particular frameworks for quality management.

## Part 2: Definition of quality culture for official statistics

1. **Quality culture for official statistics can be defined as the shared values, mindsets, behaviours, practices, and knowledge related to quality assurance within a statistical agency (or unit) of the national statistical system that shape and characterize the work environment and individual workplace. It is a shared commitment focused on user needs and delivering of statistics products and services that are fit for purposes, while continuously striving for improvement, innovation and adherence to best practices and methods hereby ensuring trust in official statistics. A common understanding of key concepts related to quality assurance on official statistics is fundamental to developing and sustaining this culture.**

## Part 3: Key Characteristics, levels of maturity and their measurement

1. *Identification of key characteristics*. The Subgroup on Quality Culture was established by the Expert Group on National Quality Assurance Frameworks (EG-NQAF) to develop practical guidance and suggest a maturity model on how a quality culture in official statistics can support the implementation of the national quality assurance framework at the NSO and throughout the national statistical system. Through a review of existing cultural frameworks in other sectors and drawing on expert experiences, six key characteristics[[2]](#footnote-3) are identified that reflect and support the implementation of a quality culture in national statistical agencies:

* Key characteristic 1: Awareness and Innovation
* Key characteristic 2: Communication Management and Channels
* Key characteristic 3: Data Governance
* Key characteristic 4: Quality Assurance Monitoring and Error Handling
* Key characteristic 5: High-level Commitment
* Key characteristic 6: Staff Commitment

1. *Description of the maturity model.* The proposed maturity model features four levels for each key characteristic.[[3]](#footnote-4) The subsequent section provides concise definitions of each level. Each key characteristic is evaluated individually, with proposed indicators (measures) for each level included in part 3.2. Statistical agencies may focus and prioritize efforts on the most critical aspects based on their circumstances. The overall maturity can be calculated as a simple average of the level achieved across the six key characteristics[[4]](#footnote-5) while the maturity level of each key characteristics is calculated as weighted average of the assessment of the four different levels.[[5]](#footnote-6)

## Part 3.1 Levels of maturity and their measurement

1. *Levels of maturity*. Four levels are proposed to measure quality culture within the statistical agency (or unit) of the national statistical system. The levels indicate the extent to which the entire statistical agency integrates a quality culture aimed at producing high-quality official statistics into its the shared values and commitments. The four maturity levels are as follows:

* Level 1 (Basic): This level represents the foundational stage where the statistical agency has established a rudimentary and emerging quality assurance culture for official statistics. The staff has an initial awareness and understanding of the importance of quality assurance and there are basic efforts to establish a quality culture.
* Level 2 (Intermediate): At this level, the statistical agency transitions from a basic understanding of quality to a more structured and consolidated approach with an established quality assurance framework. Standardized procedures for data collection, processing, and dissemination are implemented to ensure consistency. Quality policies and objectives are clearly defined and communicated. Training programs are more comprehensive, and staff members understand their roles and responsibilities in relation to quality management. Basic quality assurance tools and techniques are implemented to ensure data accuracy and reliability.
* Level 3 (Advanced): This level indicates a culture of continuous quality improvement within the statistical agency, actively promoting best practices to other stakeholders involved in the production of official statistics. A systematic approach to quality management is implemented, ensuring quality assurance is integrated and embedded into the regular workflow. A knowledge transfer and management system foster a supportive environment where quality is valued. At this level, all major producers of official statistics have achieved and maintained Level 1 and Level 2 measures. However, the overall assessment for Level 3 does not depend on whether other producers of statistics have met these measures.
* Level 4 (Established): At this level, a statistical agency has fully integrated a quality culture into its operation (in an all-encompassing way). This commitment is evident in the actions of both staff and management. Well established processes, financial and human resources and infrastructure support the continuous development and refinement of the quality culture. There is a comprehensive and mature system in place to monitor and improve quality. As a result, the statistical agency sustains and builds upon the high level of trust users already have in official statistics.

1. *Measures for assessing quality culture within the statistical agency.* A maturity model on quality culture requires the identification of measures that allow to determine the level of quality culture present within a statistical agency. The shared values and beliefs that constitute a quality culture which are often linked to qualitative measures may be difficult or impossible to observe directly and subjectively. Their measurement must rely on the observation of certain practices and behaviours or the conduct of surveys, interviews, focus group discussions, self-assessments, or behavioural tests.[[6]](#footnote-7) The measures[[7]](#footnote-8) suggested in the maturity model below can be used to construct such assessments.
2. *Measures to foster quality culture across the National Statistical System (NSS)*. A strong quality culture across the National Statistical System (NSS) is essential for ensuring the high quality of all official statistics. Assessing the quality culture across the entire NSS can be challenging. The list in Annex 3 provides a few measures that could be used for guiding actions or plans for establishing or fostering quality culture across the NSS. The additional measures (#2 to #7) overlap with requirements and elements to be assured of the UN National Quality Assurance Framework (UN NQAF). The Subgroup on Quality Culture of the United Nations Expert Group on National Quality Assurance Frameworks (EG-NQAF) did not develop a methodology for assessing quality culture across the national statistical system (NSS) due to the complexity of assessing quality culture and the diverse circumstances within countries. Therefore, the following list of measures is not intended to assess quality culture across the NSS but rather to suggest actions that countries can consider when fostering a quality culture across their NSS.

## Part 3.2 Key characteristics and maturity model[[8]](#footnote-9)

1. *Categorization of all measures.* All measures identified in this maturity model have been categorized as "mandatory" or "optional". For each maturity level within every key characteristic, only two measures have been identified as "mandatory" to simplify and facilitate the use of this maturity model. The designation of "mandatory" or "optional" does not imply that any measure is strictly mandatory or optional; rather, all suggested measures should be monitored as applicable and as resources permit. The assessment of a measure is considered optional if it involves more ambitious promotion of quality culture or if the measure may not be relevant to a specific national statistical agency. The users can change designation of "mandatory" or "optional" depending on their specific circumstances. The list of measures categorized as "mandatory" are included in this section, while all "optional" measures are listed in Annex 2.
2. *Assessment Checklist*. In the Assessment Checklist based on this Maturity Model, available in Excel and developed by the Subgroup on Quality Culture, all "mandatory" or "optional" measures are listed under the respective key characteristics in their sequential order, but only the first two measures under each maturity level of every key characteristic are designated as "mandatory". This results in 48 "mandatory" measures (8 per each of the six key characteristic).

### Key characteristic 1: Awareness and Innovation

1. There is a shared understanding of the importance of quality among all levels of the staff involved in the production and dissemination of official statistics. Additionally, fostering a culture of systematic innovation is essential for continuous improvement of the quality of official statistics, including the use of new data sources, process refinement and tailoring outputs to user needs. The testing and use of technology and new methods and tools supports and drives innovations.

Mandatory Measures:

|  |  |
| --- | --- |
| Maturity Level | Measure |
| Level 1 | **Half of the staff complete basic training on quality assurance** - At least 50% of the key staff[[9]](#footnote-10) working in the production and dissemination of official statistics, with senior staff taking the lead, have completed a basic training on the quality assurance requirements, concepts, frameworks, and tools for official statistics. |
|  | **All staff use basic tools for quality assurance** - All staff working in the production and dissemination of official statistics use basic validation tools and procedures, such as basic comparison tables and tools to identify outliers, inconsistencies, and missing data points. |
| Level 2 | **Most staff complete basic training on quality assurance** - At least 75% of the staff working in the production and dissemination of official statistics, with senior staff taking the lead, have completed a basic and refresher training or workshop on the quality assurance requirements, concepts, frameworks, and tools for official statistics. |
|  | **Most staff use basic tools for quality assessment** - At least 75% of the staff working in the production and dissemination of official statistics use basic tools of quality assessment such as quality indicators, quality reports and user surveys. |
| Level 3 | **All staff complete mandatory training courses** - All staff working in the production and dissemination of official statistics have completed a mandatory training courses and knowledge test on statistical quality assurance. These training sessions and assessments were conducted either in-house or through external training institutions, depending on the available resource capacities. |
|  | **Selected staff participate in internal knowledge-sharing activities** - Selected staff participate in internal knowledge-sharing activities to identify and implement innovative methods and tools for the production and dissemination of official statistics. |
| Level 4 | **All staff participate in periodic self-assessments, peer-reviews, and benchmarking exercises.** |
|  | **Most staff acknowledge their awareness of quality assurance** - At least 80% of staff member report knowing and executing actions for quality assurance, user orientation and innovation through the application of instruments such as staff survey or interviews. |

### Key characteristic 2: Communication Management and Channels

1. Effective communication among all staff and with users is a fundamental characteristic of a quality culture. It requires clarity, openness, and transparency in both the internal and external channels (mechanisms) for communicating data quality, data transformation, quality issues and improvements. This fosters the fitness-for-purpose of official statistics and continuous collaboration for improvements.
2. External users and stakeholders include policymakers and planners, internal users from other ministries and departments, the private sector, civil society, academia and research institutions, the general public, as well as international and regional organizations. Additionally, data providers are also considered as external stakeholders.
3. Internal staff and stakeholders are the staff in the national statistical system, working in the production and dissemination of official statistic or related areas, including but not limited to official statistical production staff, management and leadership, policy analysts and researchers, information technology and data management staff and quality assurance staff.

Mandatory Measures:

|  |  |
| --- | --- |
| Maturity Level | Measure |
| Level 1 | **Reference metadata is published for all key statistics.** |
|  | **Staff respond to user requests and inquiries** - Staff involved in the production and dissemination of official statistics regularly and promptly respond to user requests and inquiries. |
| Level 2 | **Metadata is maintained and updated by staff members** - Internal staff members provide metadata for the statistics under their responsibility and ensure that it is up to date. |
|  | **Statistics are disseminated to all users** - Statistics are presented and disseminated to all external users and stakeholders in a clear, inclusive, accessible, and self-explanatory way through traditional communication channels, with novel cannels used optionally when they enhance communication. |
| Level 3 | **Quality challenges are discussed openly within the statistical agency** - There are informal and formal internal communication mechanisms such as meetings, workshops, and online forums to discuss quality challenges openly within a “safe” environment. |
|  | **Staff engage with external users to understand their users needs and quality issues** - Internal staff and management regularly engage with external stakeholders, including but not limited to users, data providers and academia, through workshops, conferences, and other communication channels (or mechanisms) to obtain their feedback on their needs and quality issues. |
| Level 4 | **Staff establish partnerships and initiatives with external users and data providers to improve the quality of official statistics**. |
|  | **There is a platform for knowledge-sharing and communication on quality assurance** - There is a platform for knowledge management and communication. It is open to all statistical agencies and allows sharing of tools, methods, and best practices. |

### Key characteristic 3: Data Governance

1. Data governance is the foundation of building trust in statistical agencies, ensuring the confidentiality and security of official statistics, and is based on a common vision that high quality (fit for use) data generates public value. It involves the establishment of policies, standards, rules, and measures for data access, use and reuse and the authority and control over data production, management, and transformation with the goal of increasing the value of data assets and mitigating data-related risks. It also requires staff’s commitment and compliance to safeguarding sensitive data. This commitment requires regular mandatory training and clear roles and responsibilities of every staff member. There is transparency about data governance and mechanisms to respond to and address public concerns.

Mandatory Measures:

|  |  |
| --- | --- |
| Maturity Level | Measure |
| Level 1 | **All new staff declare their commitment to confidentiality** - All new staff members sign a declaration indicating their commitment to protecting confidentiality in accordance with established policies and procedures. |
|  | **Basic procedures to ensure data confidentiality and privacy are in place** - There are basic procedures to ensure data confidentiality and privacy in statistical production and dissemination. |
| Level 2 | **Standardized practices ensure confidentiality and security** - Standardized practices, policies and tools are implemented to ensure data confidentiality and data security while allowing required data sharing within the statistical agency. |
|  | **Staff complete mandatory training on confidentiality and security** - Staff members working in the production and dissemination of official statistics must complete a mandatory training on data confidentiality and data security. |
| Level 3 | **Data governance is responsive to user needs and especially considers public policy needs.** |
|  | **Data confidentiality principles are integrated into all aspects of the statistical production process.** |
| Level 4 | **Data systems are monitored for security vulnerabilities** - The data systems are continuously monitored for potential security vulnerabilities and action plans are developed and implemented for continuous improvement. |
|  | **Ethical principles and risks of new technologies are assessed** - Compliance with ethical principles is ensured and the impacts and risks of new technologies, such as artificial intelligence and innovative methods in statistical production are assessed to ensure their proper use. |

### Key characteristic 4: Quality Assurance Monitoring and Error Handling

1. Regular quality evaluation and reporting will improve the staff member’s awareness of quality assurance and thereby strengthen the quality culture within the organization. The establishment of key measures offers valuable insights into the effectiveness of quality improvement initiatives. A strong quality culture emphasizes the use of standard tools for quality reporting and the importance of openly documenting and communicating errors, as well as their underlying causes. This transparent approach fosters a cooperative and collaborative environment where continuous error handling and the enhancement of the quality of official statistics become integral part of the organizational culture, ultimately educating staff, and reinforcing the commitment to maintaining high-quality standards.

Mandatory Measures:

|  |  |
| --- | --- |
| Maturity Level | Measure |
| Level 1 | **All statistics undergo basic validation before release** - All statistics undergo basic data validation before release to catch major errors and inconsistencies. |
|  | **An error management policy is in place and is publicly available.** |
| Level 2 | **Quality reports on error sources are available and updated** - Quality reports informing about the most important sources of errors are available for all key statistics and updated with every data release. |
|  | **Users can report quality concerns through clear and simple channels.** |
| Level 3 | **Staff highlight quality issues in a no-blame environment** - Staff point out possible quality issues and inform about and document possible errors in a no-blame environment for collective learning and improvement. |
|  | **Management and staff take responsibility for quality assurance** -Management and staff take responsibility for the implementation and further development of quality assurance throughout the data lifecycle starting at data collection/data acquisition/data entry. |
| Level 4 | **Revision studies are conducted and made public.** |
|  | **GSBPM or a similar standard is implemented for all statistics** - The Generic Statistical Business Process Model (GSBPM) or similar internationally adopted standard of business processes needed to produce official statistics is implemented for all official statistics. |

### Key characteristic 5: High-level Commitment

1. High-level commitment in a quality assurance culture is a cornerstone trait that shapes the entire organization's approach to quality. When leaders actively advocate for and prioritize quality assurance, they stress the importance of quality assurance throughout the organization. By implementing policies and measures to embrace the values of quality assurance, leaders promote the responsibility for maintaining and improving quality standards within the organization. The high-level leadership typically consists of the head and deputy heads of the national statistical agency or unit and the subsequent director level, as applicable.

Mandatory Measures:

|  |  |
| --- | --- |
| Maturity Level | Measure |
| Level 1 | **A public declaration on quality commitment is available** - A declaration or statement on the commitment to quality is publicly available and included in the strategy for the development of official statistics. |
|  | **Senior management actively engages with key users.** |
| Level 2 | **Senior management commits to data quality at meetings** - Senior management regularly expresses its commitment to data quality and continuous improvement at public and internal meetings and events. |
|  | **Senior management discusses quality challenges and supports improvement efforts.** |
| Level 3 | **Quality management is institutionalized as a priority** - Quality management and assurance are institutionalized as a main and constant priority within the statistical agency. This includes a properly resourced framework, with dedicated roles such as a quality manager position, focal point, circle, or similar instruments, ensuring a commitment from all staff to quality assurance. (See key characteristic 6 regarding the commitment of all staff to quality assurance. |
|  | **Senior management promotes international standards on quality** - Senior management promotes and monitors the adoption and compliance with international statistical standards and classifications including on quality management. |
| Level 4 | **The statistical agency participates in peer-reviews and external audits.** |
|  | **Quality assurance is part of business planning and resource allocation** - Quality assurance is an integral component of business planning, with senior management responsible for ensuring adequate resource allocation to maintain quality standards. |

### Key characteristic 6: Staff Commitment

1. Employee commitment is a pivotal characteristic of a quality culture within the organization. It is fostered through a sense of responsibility and accountability, where employees collectively share the duty to uphold the value of high-quality official statistics. This commitment is further strengthened by a culture of collaboration, where departments and teams work together across functions to establish and maintain quality assurance standards.

Mandatory Measures:

|  |  |
| --- | --- |
| Maturity Level | Measure |
| Level 1 | **A designated team promptly handles user inquiries** - A designated unit or team promptly responds to user inquiries and requests and technical experts promptly provide their inputs as required. |
|  | **All staff recognize quality assurance as their responsibility** - All staff understand that quality assurance is a responsibility of everyone and take responsibility for the implementation of quality principles and procedures.[[10]](#footnote-11) |
| Level 2 | **Staff provide suggestions for quality improvement actions.** |
|  | **Staff work together to discuss and resolve quality issues.** |
| Level 3 | **Staff adhere to international and national standards** - Staff working in the production and dissemination of official statistics are committed to adhering to international and national standards, classifications, and guidelines in their work. |
|  | **Staff seek to improve knowledge through training and self-study** - Staff seek to improve their knowledge on innovative methods and tools, for example, by participating in workshops, seminars and training activities or self-study. |
| Level 4 | **Staff are aware of shared ethical principles in statistics** - Staff are aware of the shared values and ethical principles of statistics as reflected in the Declaration on Professional Ethics of the International Statistical Institute. |
|  | **Staff develop novel ideas for the improvement of official statistics.** |

## Annex I: Considerations for the implementation of a quality culture maturity assessment

The maturity model allows assessing a quality culture achieved at a statistical agency or statistical unit involved in the production of official statistics. The model is generic and recognizes key values and behaviors that a national statistical office (NSO) and/or national statistical system (NSS) may need to demonstrate to promote a quality culture. An overall result will be obtained from evaluating all six key characteristics and their indicators (measures).

An Assessment Checklist on Quality Culture Maturity has been developed as a complementary document to this Model. It is also feasible to focus on specific key characteristics defined as mandatory in the checklist, with the selection of the measures aligned to the priorities of the statistical agency and the NSS, depending on the specific context. The checklist enables the assessment of each key characteristic using a scale where a score of 1 represents a full compliance, 0.5 represents partial compliance and 0 indicates no compliance.

**Calculation methodology:**

To determine the maturity level of a statistical agency, three steps are involved: 1) Calculate a score for each maturity level within each key characteristic; 2) Assess the maturity level of each key characteristic; and 3) Assess the overall maturity level of the statistical agency.

Calculate a score for each maturity level within each key characteristic:

Once the assessment is completed for each maturity level within each key characteristic using the scale of 1 for full compliance, 0.5 for partial compliance and 0 for no compliance, a simple average is calculated for each maturity level within each key characteristic.

For instance, if there are two measures within level 1 of a key characteristic, with one measure fully compliant and the other partially compliant, the score for level 1 of this key characteristic would be: (1+0.5)/2 = 75%

Assess the maturity level of each key characteristic:

A weighted average approach is used to determine the maturity level of quality culture for each key characteristic, based on the Maturity Model on Quality Culture. The model has four levels, with level 1 being the lowest (there is no level 0). As maturity increases, so do the associated challenges. Therefore, the weights assigned to each maturity level are: 1 for level 1, 2 for level 2, 3 for level 3, and 4 for level 4.

For example, if a statistical agency has a 75% (calculated from step 1) for level 1, 50% for level 2, 30% for level 3, and 10% for level 4, its maturity score is calculated as follows:

Maturity Level score: (75%\*1+50%\*2+30%\*3+10%\*4)/(1+2+3+4) = 31%

Using a weighted average, the maturity level can be determined according to these ranges:

Level 1: ≤ 10%, which corresponds to 1/(1+2+3+4)

Level 2: > 10% and ≤ 30%, which corresponds to (1+2)/(1+2+3+4)

Level 3: > 30% and ≤ 60%, which corresponds to (1+2+3)/(1+2+3+4)

Level 4: > 60%

1. Assess the overall maturity level of a statistical agency

A simple average is calculated across all key characteristics to determine the agency’s overall maturity level. For example, if a statistical agency achieves maturity level 2 for the first three key characteristics and level 3 for the other three key characteristics, then the average level would be (2+2+2+3+3+3) / 6 = 2.5, which, when rounded to its nearest integer, corresponds to maturity level 3. This implies that the statistical agency has achieved an advanced level in quality culture.

**Recommendations for the implementation of the assessment:**

1. Establish a lead team at the NSO to oversee the assessment process. This team will facilitate the coordination among all stakeholders involved in the assessment.
2. The suggested range of time for such an assessment process can vary based on the specific goals and context of the evaluation. A typical range of time could be 1-2 years to identify recent changes and provide suggestions for new policies. However, this shorter time frame may not reveal long-term trends.
3. Initiate the assessment with a focus on the NSO and expand the scope to the NSS in a second phase.
4. Identify and engage key stakeholders within the NSO and the NSS, ensuring representation from the staff and management. This approach facilitates reaching agreements on the achievement of a maturity level for each of the six characteristics while minimizing possible biases due to subjectivity.
5. Coordinate meetings with the key stakeholders that represent different teams and perspectives from the NSO and the NSS. During the review of each key characteristic and its associated indicators, it is important to identify the evidence supporting the assessment.
6. The results should be consolidated and shared with the top management for review, validation, and suggestions. Based on this feedback, a tailored action plan should be designed and implemented. The plan should consider activities, schedule, responsible persons and resources. During the planning process, it is necessary to prioritize characteristics and aspects to be improved.
7. It is necessary to monitor the implementation of the action plan and ensure follow-up on its results.

## Annex II: Optional measures for assessing quality culture

**Key characteristic 1: Awareness and Innovation**

Optional Measures:

|  |  |
| --- | --- |
| Maturity Level | Measure |
| Level 1 | **There is a basic documentation for quality** **assurance** - There is basic documentation of partial production and dissemination processes (such as methodology and methodology sheet), including validation, for all key statistics. The documentation is not regularly updated or updated in an inconsistent way. |
| Level 2 | **All management have completed a basic training on statistical quality assurance.** |
|  | **Selected staffs use IT tools for quality assurance** - All staff working in the production and dissemination of official statistics who need IT packages or software tools to assist in their work use such tools and packages, such as Excel, R, and other open-source or commercial tools. |
| Level 3 | **All staff identify quality issues and propose improvement measures** - All staff working in the production and dissemination of official statistics identify quality issues that pass the basic validation and assessment process and propose measures to improve the quality of these statistics. |
|  | **All staff participant in advanced workshops** - All staff working in the production and dissemination of official statistics participate in advanced workshops addressing current challenges and relevant topics in quality assurance. These workshops cover new areas of quality assurance, such as process automation, data validation, data linkage, anonymization, use of AI, aligning with the specific scope and responsibilities of their roles. |
|  | **Selected staff use advance IT tools for quality assurance** - Staff who need IT packages or software tools to assist in their work use advanced IT tools and infrastructure, such as advanced statistical software or cloud-based infrastructure, for the production and dissemination of official statistics. |
| Level 4 | **Selected staff participate in external trainings** - Selected staff participate in external workshops, research, and knowledge-sharing activities to identify and implement innovative methods and tools for the production and dissemination of official statistics. |
|  | **There is an initiative for driving innovative methods on quality assurance** - There is an initiative such as innovation unit or that drives the implementation of innovative methods and tools for the production and dissemination of official statistics. |

**Key characteristic 2: Communication Management and Channels**

Optional Measures:

|  |  |
| --- | --- |
| Maturity Level | Measure |
| Level 1 | **There is a public statement regarding the statistical agency’s commitment to high-quality statistics.** |
|  | **There are internal discussions on quality assurance** - There are ongoing (periodical) internal discussions on quality assurance within the organization involving specific quality staff/teams and shareholders. |
| Level 2 | **Quality related information is documented and communicated to all staff** - Quality policies, objectives and visions which can be, for example, contained in development and transformation plans are clearly documented and communicated to all internal staff and stakeholders. |
|  | **Quality related information is communicated to external users** - External users and stakeholders are informed about the statistical agency’s quality policies, rules, and procedures through official communication channels, ensuring that external stakeholders are well-informed. |
| Level 3 | **All rules and policies governing the production of official statistics are publicly available.** |

**Key characteristic 3: Data Governance**

Optional Measures:

|  |  |
| --- | --- |
| Maturity Level | Measure |
| Level 1 | **IT infrastructure safeguards data confidentiality and privacy** - An IT infrastructure is implemented to safeguard data confidentiality and privacy. |
| Level 2 | **Metadata is documented for data collection and dissemination** - The metadata contained in data dictionaries and the metadata related to the phases of data collection, processing, analysis, and dissemination at statistical agency, including the use of new data sources, such as administrative and other data records are documented. |
|  | **Staff are aware of data governance mechanisms** - There is evidence that staff members have basic awareness and understanding of established data governance mechanisms, as indicated by instruments such as staff surveys. |
| Level 3 | **Management and staff attend refresher training every two years** - All management and staff members working in the production and dissemination of official statistics attend refresher and special training sessions on confidentiality and security practices once every two years. |
|  | **Data governance policies and processes are regularly reviewed** - The policies, infrastructure and processes for data governance are subject to regular reviews such as internal and external audits and peer reviews, conducted at least biennially, in respect to the implementation of best practices. |
|  | **Disclosure control measures are implemented, validated and subject to regular reviews.** |

**Key characteristic 4: Quality Assurance Monitoring and Error Handling**

Optional Measures:

|  |  |
| --- | --- |
| Maturity Level | Measure |
| Level 1 | **Standard quality indicators are established for key statistics** - Standard quality indicators are established for all key statistics. These indicators should consider quality dimensions[[11]](#footnote-12), including relevance; accuracy and reliability; timeliness and punctuality; accessibility and clarity; and coherence and comparability. |
| Level 2 | **User satisfaction surveys are conducted and results are used** - A user satisfaction survey is conducted, and the results are used to improve the processes involved in the production and dissemination of official statistics. |
|  | **Statistics undergo extensive validation before release** - All statistics undergo extensive data validation procedures before release ensure a comprehensive review to ensure data quality. |
|  | **Staff report errors promptly and relevant teams respond respectfully** - Staff promptly report any errors to management, quality assurance team or relevant team, who must respond to these reports respectfully and appreciatively, and remain committed to resolving the issue. |
|  | **Users are promptly informed about any errors and their reasons.** |
|  | **Regular quality assessments identify improvement actions** - Regular quality assessments (such as after each reporting cycle) identify possible improvement actions. |
| Level 3 | **Metadata and quality reports follow a standard format.** |
|  | **Most of users are satisfied with the quality of statistics** - Approximately 80% of users are satisfied with the quality of official statistics, based on the results of the conducted user satisfaction survey. |
|  | **Data revisions are thoroughly documented and explained to users.** |
|  | **There is a policy for error management which is publicly available.** |
|  | **Voluntary audits, peer reviews, and certification are performed** -Voluntary audits, peer review and certification are performed, and users are informed about the key results. |

**Key characteristic 5: High-level Commitment**

Optional Measures:

|  |  |
| --- | --- |
| Maturity Level | Measure |
| Level 2 | **Senior management leads quality culture assessments** - Senior management actively leads or participates in initiatives assessing the quality culture. |
|  | **Senior management reviews key statistical outputs** - Senior management reviews and participates in the launch of key statistical outputs. |
| Level 3 | **Senior management ensures risk management is integrated with quality management** - Senior management ensures that risk management is implemented in the organization at different levels and it is integrated with quality management. |
|  | **Efforts for quality improvements of staff are encouraged and recognized**. |
|  | **Professional independence is guaranteed by law** - The professional independence of the statistical agencies or units is guaranteed by law. |
|  | **Senior management leads improvement plans for continuous quality** - Senior management is directly involved in the development and implementation of improvement plans and actions, defining a quality culture as one of continuous improvement. |
|  | **Quality management for official statistics is established by law**. |
| Level 4 | **The head of the statistical agency is responsible for quality** - The head and deputy heads of the national statistical agency are by law responsible of the quality of official statistics. |
|  | **Management commitment to quality is evidenced** - A high level of management commitment to data quality is evidenced through the application of instruments such as staff surveys. |
|  | **Staff is encouraged to participate in regional and international conferences and workshops.** |

**Key characteristic 6: Staff Commitment**

Optional Measures:

|  |  |
| --- | --- |
| Maturity Level | Measure |
| Level 2 | **Staff show interest in new tools for quality improvement** - Staff demonstrate interest in the use of new tools and technologies to achieve quality improvement. |
|  | **Staff take pride in producing high-quality statistics** - Staff demonstrate a strong sense of pride in producing high-quality statistics.[[12]](#footnote-13) |
|  | **Staff contribute to research and train junior statisticians** - Staff contribute to research on official statistics and provide training and lectures to junior statisticians. |
| Level 3 | **Staff take pride in quality improvement initiatives** - Staff demonstrate pride in being involved in quality improvement projects or initiatives and are eager to adopt new methods, technologies, and tools. |

## Annex III: Measures to foster quality culture across the National Statistical System (NSS)

|  |  |
| --- | --- |
| **Measure No.** | **Measure** |
| 1 | All major producers of official statistics have implemented Level 1 and Level 2 measures outlined in the Quality Culture Assessment Checklist. |
| **The following additional measures could be used to foster quality culture across the National Statistical System** | |  |  |  |
|  | |
| 2 | The NSS is perceived as innovative and as maintaining the high quality of its statistical outputs.[[13]](#footnote-14) |
| 3 | Identified quality champions actively promote quality culture within and across statistical agencies, by for instance, fostering best practices, advocating for consistent application of quality assurance framework and sharing lessons learned and successful approaches in quality assurance. |
| 4 | Regular meetings among data providers within the NSS are conducted once per year to share best practices regarding data governance and to coordinate processes of access to data for statistical purposes.[[14]](#footnote-15) |
| 5 | User satisfaction surveys document the high trust of users into official statistics. |
| 6 | The head of the national statistical office or the coordinating agency of the NSS is designated by law as responsible for the coordination of the NSS. |
| 7 | Staff at statistical agencies are known for providing high quality statistics. |

\*\*\*\*\*

1. See <https://unstats.un.org/unsd/methodology/dataquality/about/>. The terms of reference of the Subgroup are available here: <https://unstats.un.org/wiki/display/EGNQAFSQC/EG-NQAF+Subgroup+on+Quality+Culture>. [↑](#footnote-ref-2)
2. The numbering of the characteristics is not indicative of their priority or importance. [↑](#footnote-ref-3)
3. Many maturity models use five levels, but four levels were found to be sufficient and more practical for the maturity model on quality culture considering that those levels had to be defined for each key characteristic and given the challenges of measuring quality culture. [↑](#footnote-ref-4)
4. If a statistical agency achieves maturity level 2 for the first three key characteristics and level 3 for the other three key characteristics, then the average level would be (2+2+2+3+3+3) / 6 = 2.5, which, when rounded to its nearest integer, corresponds to maturity level 3. [↑](#footnote-ref-5)
5. Detailed calculation methodology is included in the Annex. [↑](#footnote-ref-6)
6. It is acknowledged that certain practices and behaviours such as taking a training course may be the result of a requirement and not the result of an individual choice. Also, the responses to surveys or during interviews may be influenced by what the respondent beliefs is expected in their response. However, the existence of requirements and of beliefs about what is expected are also part of, and the result of a quality culture. [↑](#footnote-ref-7)
7. If an indicator (measure) includes multiple examples, the indicator (measure) is considered satisfied if at least one of these examples is observed or met. [↑](#footnote-ref-8)
8. Some indicators (measures) proposed in the maturity model repeat across different key characteristics as they are relevant from different perspectives. [↑](#footnote-ref-9)
9. The measure applies only to key staff members involved in the production and dissemination of official statistics. The identification of these key staff members should be flexible and depend on the specific circumstances and structure of each national statistical office. [↑](#footnote-ref-10)
10. To measure the level of staff’s understanding, some suggested methods include staff surveys, interviews/focus groups, and feedback forms. Staff surveys questions can quantitatively assess staff attitudes towards their work and their eagerness to adopt new methods and technologies. Interviews and focus groups provide qualitative insights into staff experiences and motivations, while feedback forms collected after participation in quality improvement initiatives or training sessions offer additional perspectives on their engagement and enthusiasm. [↑](#footnote-ref-11)
11. These dimensions are defined in the UN NQAF Manual (available at <https://unstats.un.org/unsd/methodology/dataquality/un-nqaf-manual/>) [↑](#footnote-ref-12)
12. To measure the level of pride, some suggested methods include staff surveys, interviews/focus groups, and feedback forms. Staff surveys questions can quantitatively assess staff attitudes towards their work and their eagerness to adopt new methods and technologies. Interviews and focus groups provide qualitative insights into staff experiences and motivations, while feedback forms collected after participation in quality improvement initiatives or training sessions offer additional perspectives on their engagement and enthusiasm. [↑](#footnote-ref-13)
13. To assess the innovation within the national statistical system, proposed indicators include:  
    1) technology adoption; 2) methodological advancements; and leadership committed to innovation. In terms of quality assurance, tools such as UN NQAF Self-Assessment Checklist (available at <https://unstats.un.org/unsd/methodology/dataquality/tools/>) and other internationally adopted standards can be employed. These tools help ensure adherence to quality standards and continuous improvement in statistical practices. [↑](#footnote-ref-14)
14. The actual frequency of regular meetings among data providers within the National Statistical System (NSS) depends on the specific circumstances and structures of each NSS. [↑](#footnote-ref-15)