Measuring value of the official statistics in the new data eco-system in TURKSTAT

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Abstract

In recent years, the rapid progress of the information age has led to an increased amount of data, increased importance of trustworthy information, increased the the value of reliable data and increased expectations from producers of official statistics such as national statistical offices (NSOs) and other official statistics producers worldwide. Nevertheless, the incease in the volume and variety and sourses of data does not imply that obtaining quality information and producing reliable statistics requires less effort. The significance of official statistics is continually being shaped by these advancements, and the emergence of the new data environment has further emphasized the importance of official statistics as a provider of valuable and dependable data.

The Official Statistics Programme (OSP) plays a crucial role in ensuring the efficient operation of the Turkish Statistical System. TurkStat, as the coordinator of the system, is responsible for reviewing the quality of official statistics produced within the framework of the OSP. This quality review is known as the "Quality Logo," and TurkStat has been conducting it since 2015. Additionally, TurkStat also conducts quality reviews for its own statistics, this quality review is known as Quality Monitoring and Assessment Tool (QMAT)

As the data ecosystem evolved, statistical production has expanded from traditional survey and administrative data sources to web data and big data. To adapt to this development, TurkStat modified the self-assessment instrument and integrated ESS CoP (European Statistical System Code of Practice) principles with scoring tables to measure the value of official statistics. This method has demonstrated that the value of national statistics is quantifiable.

This paper presents both the theoretical and practical details of the TurkStat quality review system, quality review process, and the model used to measure the value of official statistics in the new data ecosystem.

Key words: Value of official statistics, Quality review, MM Scoring, New Data Ecosystem

1. Introduction:

The Oxford English Dictionary defines "value" as the quality of being useful or important. This can be interpreted as a tangible or monetary dimension, such as the price charged for a product or service. However, for a public institution like TurkStat, value would have a different meaning, such as the value added to society by the organization, regardless of whether its entire contribution has a price tag.

TurkStat aims to produce and present high-quality, timely, reliable, valuable, and impartial statistics based on international standards. TurkStat has a central office and 26 provincial offices. National Statistical System (NSS) in Türkiye includes both TurkStat and Other National Authorities (ONAs). It is a system consists of different government institutions and using usually administrative data sources produce statistics. NSS is structured as the Presidency of Turkish Statistical Institute and the Statistics Council, based on the Statistics Law of Türkiye No. 5429.

The Statistics Council advises on the preparation and implementation of the Official Statistics Program (OSP), the development of official statistics and their functions, and carries out studies that include forward-looking opinions and suggestions. The OSP is prepared for five-year periods based on the Turkish Statistical Law No. 5429.

The duties of the Council according to its regulation is: to determine the basic principles and standards for the production and publication of official statistics needed at the national and international level. The program aims to prevent duplications in statistics production, reduce the burden of respondents, and increase trust in official statistics. It also provides standardization, defines responsible institutions, clarifies which data will be compiled by which method and for which periods, and when it will be published.

In the first plan period (2007-2011), attempts were made to avoid duplications the production and publication of official statistics, to reduce the burden on respondents, and save on public sector resources.

In the second period (2012-2016), efforts were focused on establishing national quality standards, developing an inventory of administrative records, creating an official statistics portal, establishing a system for transmitting data internationally, and generating metadata information.

The third plan period (2017-2021) is focused on prioritizing data integration, increasing the use of administrative records in statistical production, data security and privacy, granting TurkStat access to administrative records, and standardizing the descriptive information for both individuals and entities, as well as variables.

The goal of the fourth OSP (2022-2026) is to enhance data integration, advance in digitalization, and improve access to alternative data sources. This raises the issue of determining quality in the new data ecosystem and how to assess its value at Turkstat.

Several methods have been proposed to measure the value of official statistics. These approaches suggest evaluation through various indicators. If we classify these indicators, we get three groups, These groups of indicators are: Objective indicators, Subjective Indicators and Tangible/Monetary indicators.

Observable “objective” indicators: Each of the aforementioned indicators, such as the use of statistics, the relevance of statistics, the transparency of statistics, and the quality of statistics, are some of the methods used to measure the value of official statistics. However, “subjective” indicators such as user satisfaction surveys are employed to evaluate the value of statistics in terms of user trust, confidence, usefulness, and accessibility. Tangible/Monetary indicators, on the other hand, are a very powerful and convincing tool to match official statistics with a monetary value and thus show its value[1].

In this article we focus on evaluating the quality and hence value of statistics using both "objective" and "subjective" indicators. There are international standards such as the United Nations National Quality Assurance Frameworks (UN-NQAF), the European Statistics Code of Practice (ES-CoP) and the Quality Assurance Framework of the European Statistical System (ESS-QAF). The quality of statistics can be measured by the level of compliance with this quality principle and standard. These methods guide National Statistics Institutes (NSIs) and Other National Authorities (ONAs) to produce quality statistics. In order to measure the quality in statistics and express it with a value, we created National Quality Standards.

TurkStat assesses and monitors the quality of official statistics produced within the national statistical system according to the National Quality Standards. The "Quality Logo" is granted to statistics produced by ONAs that apply for it, to indicate the high quality of their statistics. Additionally, TurkStat uses the "Quality Monitoring and Evaluation Tool (QMAT)" to evaluate the statistics it produces.

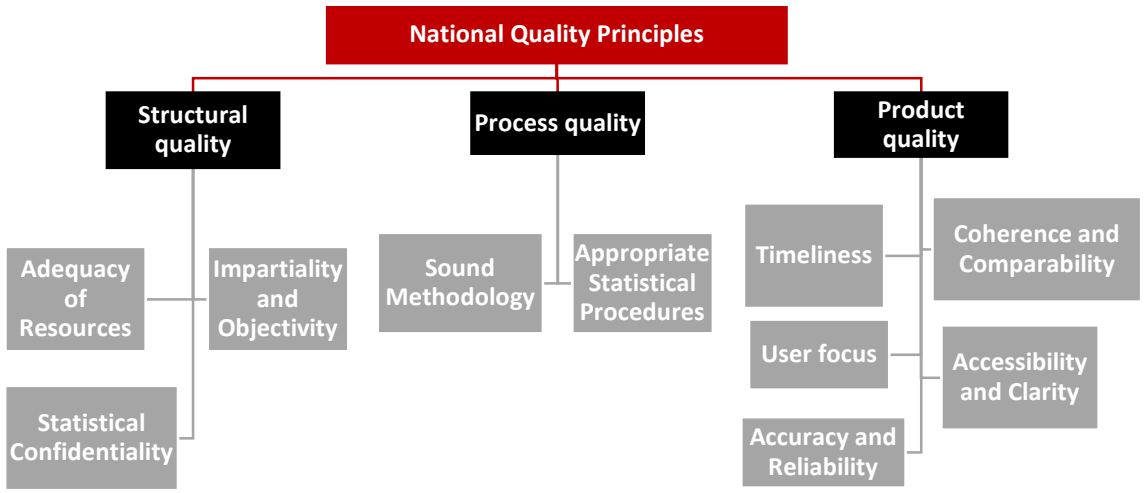
2. Metodology

The Turkish Statistical System aims to create a sustainable statistical system that is tailored to the needs of its users and adheres to international standards. This objective highlights the importance of establishing a framework for quality assurance in the official statistics produced. With the quality assurance framework, it is aimed to continuously improve the statistical production and distribution processes by considering international standards and user needs, and as a result, to ensure economic, social and environmental sustainability.

In a multi-actor system such as the Turkish Statistical System, the concept of sustainability is extremely important for a large-scale cooperation and interoperability to be successful. In this context, it is important to focus on developing a sustainable statistical system that creates value and benefits for users and stakeholders through constant cooperation. Additionally, increasing confidence in official statistics should be a top priority. In this sense, the quality assurance framework in official statistics provides an important infrastructure that also reveals the reliability of official statistics and statistics producing

[1] Recommendations for Promoting, Measuring and Communicating the Value of Official Statistics

institutions. The quality assessments of official statistics are based on ten national quality principles, which include sixteen standards and forty-one indicators.



The national quality principles ensures that statistics must be produced, analyzed, and disseminated according to professional standards, and should be clearly explained and tailored to user needs. Compliance with these principles and standards by organizations and institutions that produce official statistics ensures that the products offered to users through the Turkish Statistical System meet the requirements of quality assurance.

a. Quality Logo

TurkStat implemented a method to measure the value of official statistics using both "objective" and "subjective" indicators. The Quality Logo is a method for determining whether the official statistics produced by ONAs adhere to the National quality principles. It consists of a situation analysis, scoring, quality improvement suggestions, and the reporting of improvement plans with objective indicators. To initiate the quality logo evaluation process for an official statistic, the owner institution of the relevant statistic must submit an application to the Turkish Statistical Institute with an official letter.

Before applying for quality logo evaluation, ONA who is responsible for the relevant statistic, must fulfill the following basic requirements:

- Responsible institutions need to have a separate statistical unit and employ an adequate number of statisticians.
- Responsible institutions should use the metadata standard format defined by TurkStat and publish this metadata on their website. They should also ensure periodic updates of metadata.
- Responsible institutions should ensure the internal consistency of administrative data.
- Official statistics should be accurate and reliable.

- International definitions, methodology, and classifications should be used in the production of official statistics. If there are no international standards, national standards should be defined, used, and documented.
- Appropriate statistical procedures should be applied in the process of producing official statistics.

Once ONAs apply for quality logo evaluation, a questionnaire and checklist are used to evaluate the official statistics they produce. The Official Statistics Assessment Form includes 8 sections and 54 questions. These sections consist of General Information, Data Sources and Cooperation, Determining User Needs, Data Collection, Classifications, Data Processing and Analysis, Official Statistics Dissemination, Opinions and Suggestions. The evaluation process relies on a control checklist and is an evidence-based system. It incorporates both objective and subjective indicators to measure the value of official statistics.

The evaluation scores are categorized into four levels: fully compatible, compatible, partially compatible, and non-compliant, with the score of three indicating full compatibility and zero indicating non-compliance.

The value of the principles of “Sound Methodology” and “Coherence and Comparability” should be at least “2” as a result of the quality logo evaluation study. The value of other principles must be at least "1", except these indicators, to ensure that the official statistics meet the necessary standards. In case the other indicators are not applicable to the mentioned statistics, in order to ensure correct scoring; excluding indicators that are not applicable, the original weight of the indicators to be used as a basis for the calculation is taken into account, and the score of the principle is calculated by re-weighting so that the total weight is 1. As a result of the quality evaluation study, the official statistics with a score of 90 or more are given the quality logo.

The Quality Logo has been given for 5 years since 2015. Official statistics, which receive a quality logo, can re-apply at the end of the 5 year term. In the renewal process, the actions taken to improve the statistics are reviewed to determine if they have been completed. In the renewal process, the improvement actions are checked to see whether they were completed or not. During the renewal evaluation, ONAs complete the self-assessment questionnaire and documents based on their current situation. TurkStat assesses them accordingly.

a. Quality Monitoring and Assessment Tool (QMAT)

The Turkish Statistical Institute (TurkStat) uses a tool called QMAT to evaluate official statistics in accordance with national quality principles and standards. Methodological resources such as Quality Indicators for the Generic Statistical Business Process Model Version.2.0, Methodologies for an Integrated Use of Administrative Data (MIAD), The European Self Assessment Checklist for Survey

Managers (DESAP), ES-CoP, ESS-QAF were used in the development of this tool. The self-assessment questionnaire for QMAT contains 169 questions, with each question linked to a quality indicator from the GSBPM and a quality principle from ES-CoP. The questionnaire is designed to evaluate the quality of statistics produced from both surveys and administrative data.

To evaluate the quality of official statistics produced by TurkStat, QMAT is used, which includes a self-assessment form, a quality assessment report, and an improvement action plan. The Commission, which comprises experts and an internal auditor, conducts quality assessments using QMAT according to a predetermined schedule that is coordinated with the relevant units under the responsibility of the Quality Unit. After the quality assessments, a Quality Improvement Action Plan is created to identify areas that require improvement, and it is monitored annually.

b. Maturity Model and Scoring tables

Scoring tables and maturity models are methods that are commonly used to evaluate and assess the performance and capabilities of organizations, processes, or systems.

A scoring table is a tool used to evaluate the performance of a specific entity based on a set of predefined criteria. The criteria can be qualitative or quantitative and are assigned a numerical value. The entity being evaluated is then scored based on how well it meets the criteria. The scores are then added up to provide an overall score, which can be used to identify areas for improvement.

A maturity model is a tool used to assess the capabilities of an organization or process against a set of defined levels or stages. Each level represents a higher level of capability or maturity, with organizations progressing through the levels as they improve their performance. The model sets out five levels of maturity. The reason for choosing five levels is to help make it easier for administrations to assess where they are by providing clear distinctions in the descriptions of maturity. This would become more difficult the more maturity levels there are. At the same time, having five levels helps to ensure that the distinctions between the levels are not so great that it becomes difficult for administrations to see the pathway to higher levels of maturity.[2] TurkStat defined and used these levels to combine with QMAT. These are beginner, awareness, intermediate, advanced and role model.

Scoring tables are used to evaluate performance against predefined criteria, while maturity models are used to assess capabilities against predefined levels or stages. Both tools can be useful in identifying areas for improvement and provide a structured approach to evaluating and assessing organizational performance.

3. Result:

[2] Analytics Maturity Model, OECD (2022), Analytics Maturity Model, OECD, Paris

Available at: https://www.oecd.org/tax/forum-on-tax-administration/publications-and-products/analytics-maturity-model.pdf

During the fourth program period, spanning from 2022 to 2026, a total of 62 institutions and organizations, 10 main subjects, 51 sub-subjects, and 326 official statistics are included. Out of these, 170 official statistics are produced by ONAs, and the remaining 156 are produced by TurkStat. To date, for the quality logo, 71 official statistics applications have been received. Among the 48 statistics that received the logo, 208 improvement actions have been identified, with the majority falling under the quality principle of "User Focus" and the quality indicator of "Official statistics meets the user needs". These results indicate that in order to produce valuable official statistics, institutions should prioritize meeting the expectations of their users.

The evaluation using QMAT was conducted on two statistics, one of which was an index while the other was a survey-based statistic. A total of 22 improvement actions were identified for the index, while 29 improvement actions were identified for the survey-based statistic. The majority of the suggested improvements were related to the dimensions of relevance, sound methodology, accuracy, and reliability.

To ensure the reliable measurement of the value of official statistics for the new eco-system, TurkStat is improving the quality assessment tool QMAT and has initiated a revision process. The team has held 9-10 meetings to discuss all the questions and has examined all the platforms of the institution, including product inventory, research inventory, administrative record inventory system, reference metadata bank, process management system, institutional quality reports, press releases, and websites. As a result, the self-assessment questionnaire has been updated with 50 questions removed, 30 questions revised, and 28 questions added, for a total reduction of 22 questions compared to the previous version. The revised questionnaire also includes 11 questions that can be answered automatically.

In the future, the updated self-assessment questionnaire will be used to assess the quality and measure the value of Foreign Trade Statistics & Foreign Trade Indices. The QMAT reports for Labour Force Statistics, Labour Input Statistics, Labour Cost, and Earnings Statistics have been completed.

4. Discussion, Conclusion and Recommendations:

TurkStat has been implementing Quality Logo and QMAT to produce high-quality statistics in the Turkish Statistical System. The findings from the Quality Logo and QMAT studies have indicated that the two most important quality principles for improving the statistics are "User Focus" and "Accuracy and Reliability." These quality principles are directly related to both objective and subjective indicators of measuring value, and they demonstrate that the statistics production process needs to be more user-focused and accurate. By meeting user needs and producing accurate data, the value of statistics can be increased. It is essential to provide statistics that meet user needs, and the quality perceived by the users can be measured through user satisfaction surveys and keeping communication channels open with users.

To increase the value of statistics, it is necessary to strengthen the "User Focus" quality principle by implementing certain measures, such as identifyin and acknowledging the users of statistics, systematicly identifying user needs through meetings, building strong partnerships with users, and conducting surveys to measure user satisfaction while frequently monitoring the results. For example, listening users, communicate them transparently, provide excellent user service, collaborate with them etc. Ultimately, putting users at the center is essential to achieving this goal.

To enhance the value of statistics, it's important to strengthen the "Accuracy and Reliability" quality principle through various measures. These measures include ensuring data quality control, performing both micro and macro controls, determining the appropriate sampling method and framework, and useing the latest information technologies in the statistical production process.

TurkStat has adopted the use of Quality Logo and QMAT to evaluate the quality of their official statistics. These tools consist of international quality indicators, self-assessment checklists, and a generic statistical business model. However, as TurkStat has move towards a new data ecosystem, these tools are being reviewed and updated. The data source for the 2022-2026 OSP program varies from surveys to web data. For example during the first year of monitoring the improvement actions identified through the QMAT quality assessment, it was discovered that index produced by Turkstat began incorporating scanner data, barcodes, and data scraping alongside their usual survey data. This was our first challange in new data ecosistem evaluation. Although the index calculations were based on data collected from the survey before 2022, data from barcodes and web scraping have been incorporated into the calculations since 2022. As the data collected from these sources is daily, there has been a significant increase in the volume of data flowing into the system. It was observed that barcode data from external sources could be received late. For these reasons, it was noted that there may not have been enough time for data checking, coding, processing, and, if necessary, quality corrections before the bulletin was published. Due to these factors, TurkStat needed to define improvement actions. However, before making a decision, TurkStat had to measure the value of these statistics using "subjective" indicators that focus on assessing user trust and confidence in official statistics, as well as the accessibility and clarity of official statistics. During our research in this area, we could not find any information sources, regulations, procedures, or handbooks. TurkStat intends to use a combination of maturity models and QMAT to measure the value of official statistics. Maturity models are frequently used for self-assessment purposes, and the ES-CoP is a well-known tool for improving statistical quality. By merging these approaches, TurkStat aims to score their official statistics and evaluate them from a self-evaluation perspective, thereby making their value measurable. This is especially important in the new data ecosystem, where it is crucial to effectively incorporate and apply quality principles.

The ES-CoP includes criteria for ensuring institutional quality, process quality, and output quality. Similarly, the objective indicators used to measure the value of official statistics are directly related to the principle of "Impartiality and Objectivity", which is the 6th principle, and the principle of "Relevance", which is the 11th principle. Therefore, a documentation with a detailed

description/sampling of how quality principles will be applied in the ESS-QAF would be useful in measuring the value of official statistics in the new data ecosystem. Additionally, using the Maturity Model for new data sources such as scanner data, barcodes, and data scrabbing enables the determination of a scalar in measuring the value of official statistics.

National statistical offices use the ES-CoP to ensure the quality of their statistical productions, and they can adapt the ESS-QAF to create their own national quality assurance frameworks according to their specific needs. By incorporating international quality principles and standards such as the ES-CoP and ESS-QAF and using an objective scoring system, statistical offices can measure the value of their official statistics. It is important for them to prioritize the measurement of value to identify the strengths and weaknesses of statistics within a numerical range. Once the value of official statistics is measured, improvement actions can be developed based on the reviews to facilitate continuous improvement, which is the most effective method for increasing the value of official statistics. To achieve quality and valuable statistics both now and in the future, it is crucial to establish measurable self-assessment methods to improve weaknesses and build upon strengths.

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