Title of Paper

“How to Measure and Improve the Quality of Economic Statistics:
An Experience on Statistics User Survey”

Abstract

How can we measure the quality of our statistics? One major way to do this is communicate with the users with a survey and determine their assessments about the statistics and related services. It is considered that institutions, which are responsible from official statistics, should regularly identify weaknesses and strengths of their statistics to continuously improve process and product quality.

In the Central Bank of the Republic of Turkey, first statistics user survey was conducted in 2015 to monitor views of our users to our products and services. It was experienced that user opinions and feed - backs are an important tool to measure and improve quality of statistics and publications. These assessments can be generalized to all statistic publisher institutions as well.

In the first part of the paper, Data Quality Assessment Framework of IMF and Quality Assurance Framework of European Statistical System Committee are explained emphasizing on the related elements and indicators to user survey. In the second part, “Statistics User Survey” is discussed as an indicator to measure the quality of the economic statistics and share the Central Bank of the Republic of Turkey statistics user survey results on quality.
## I. Contents

I. Contents................................................................................................................................................2

II. Introduction.............................................................................................................................................3

III. Measurement and Improvement of Economic Statistics.................................................................3

   A. International Quality Standards on Statistics .......................................................................................3

      1. Data Quality Assessment Framework of IMF ....................................................................................3

      2. Quality Assurance Framework of European Statistical System.......................................................6

   B. Statistics User Survey ...............................................................................................................................9

      1. Central Bank of the Republic of Turkey Experience .........................................................................9

      2. Results of the Survey ............................................................................................................................10

IV. Conclusion...........................................................................................................................................15

V. References .............................................................................................................................................15
II. Introduction

Developments occurring in the global market in recent years have increased especially the importance of economic and financial statistics. In addition, these developments have also raised the number of data users as well as the expectations from the quality level of the statistics.

Products which have quality are suitable for use and satisfy the demands and expectations of customers. This means that qualified statistics should satisfy the expectations and demands of their users. Data series can be disseminated to meet a range of users’ needs with various levels of details.

Quality assurance frameworks of international organizations define the quality features of statistics with some indicators and principles. User surveys are suggested as a tool to implement some of these indicators and principles.

The results of the first statistics user survey of the Central Bank of the Republic of Turkey (CBRT) will help develop strategies to improve the quality, reliability, and availability of CBRT statistics and publications.

III. Measurement and Improvement of Economic Statistics

A. International Quality Standards on Statistics

1. Data Quality Assessment Framework of IMF

IMF developed Data Quality Assessment Framework (DQAF) as an assessment methodology which aims to provide a flexible structure and a common language for the qualitative assessment of the statistics. By preparing this methodological document IMF envisioned to improve three main areas. First, DQAF could be useful to strength member countries' statistical systems. Second, it could be useful to IMF staff while preparing Reports on the Observance of Standards and Codes (ROSCs) on the quality of data. Third, it could help the users of data with gauging the data quality. Work on the DQAF was begun in 1997 by Statistics Department of IMF after the establishment of the Special Data Dissemination Standards (SDDS) in 1996.

DQAF was adopted in July 2001 as part of the IMF’s overall data quality assessment program then it was revised in July 2003. The current version was disseminated in May 2012 as an update of the July 2003 version and it has been developed for seven different areas which are;

- National accounts statistics
- Consumer price index
- Producer price index
- Government finance statistics
- Monetary statistics
- Balance of payments statistics
Income poverty statistics

DQAF comprehensively covers the various quality aspects of data collection, processing and dissemination. The first level of DQAF covers the **prerequisites of quality**, which can be defined as a group of pointers of the quality, includes elements such as:

i. Legal and institutional environment
ii. Resources available for the statistical program
iii. Relevance
iv. Other quality management

After determining the prerequisites, DQAF identified five **dimensions of quality** which are:

I. Assurances of integrity
II. Methodological soundness
III. Accuracy and reliability
IV. Serviceability
V. Accessibility

Each of these prerequisites and five dimensions has some relevant **indicators** and **elements** which explain and give detailed information about the related dimension.

The final steps of the quality process of DQAF are **focal issues** and **key points** that give more details. First three steps of DQAF which are “dimensions – indicators – elements” are common for all the seven statistics with the aim of to ensure a common and systematic assessment across datasets. The last two steps “focal issues – key points” are special to the relevant statistics and differ from dataset to dataset (Figure 1).

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**Figure 1. Content of DQAF**

**a) User survey on DQAF**

User survey related indicators and elements in DQAF are listed below:

- **Prerequisites / Relevance**

  “The relevance and practical utility of existing statistics in meeting users’ needs are monitored.”
It is important to ensure that current statistics are whether meet needs of data users or not. This information can be obtained by consulting the data users through surveys. This consulting mechanism can also identify emerging data requirements with a periodic process.

- **Prerequisites / Other quality management**

“Feedback from users on quality standards and on new and emerging data requirements”

Users’ assessments on the quality standards of statistics can come to know with feedbacks from users and user survey is one of the major ways to take feedback from the users. These feedbacks and assessments show the quality level of the current statistics and the needs on the emerging data.

- **Accessibility / Data accessibility**

“The presentation of the monetary data is commensurate with users’ needs”

The disseminated data series should meet the users’ needs with various levels of detail. It is stated that related breakdowns should be published in addition to the aggregated data. By consulting the users, statistic offices / central banks / ministry of finances can learn how much are they meet the user needs in terms of details.

“… statistics are disseminated in formats to suit users’ needs.”

Statistics should be disseminated in an easy understand manner. More comprehensive or detailed statistics may not make sense and cannot be interpreted by users correctly. Users’ opinions about the format of the published data series are important since if users cannot understand the data truly, its implications on the related works may be inaccurate.

- **Accessibility / Metadata accessibility**

“Different levels of metadata details are made available to meet users’ requirements”

Not only the details of the data should meet the requirements of the users but also the levels of metadata details should meet the users’ needs. Communication with the users though an user survey and ask them the satisfaction level of the metadata gives to statistic offices / central banks / ministry of finances chance to learn their current level of quality on metadata.

- **Accessibility / Assistance to users**

“Adequate assistance is given to users of monetary statistics”

Users will contact with the responsible institutions if they have any questions about the statistics and related items. The satisfaction of the users on the assistance though e-mails, phone calls, etc. can be monitored by user surveys.
2. Quality Assurance Framework of European Statistical System

European Statistical System Committee (ESSC) adopted the European Statistics Code of Practice (CoP) in February 2005 and revised on 28 September 2011. With these principles it is aimed to improve the quality of statistics by using common definitions. The code is based on 15 principles with covering the “institutional environment”, “statistical processes” and “statistical outputs” (Table 1).

<table>
<thead>
<tr>
<th>Institutional Environment</th>
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<tbody>
<tr>
<td>1. Professional Independence</td>
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<tr>
<td>2. Mandate for data collection</td>
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<tr>
<td>3. Adequacy of resources</td>
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<tr>
<td>4. Commitment to quality</td>
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<tr>
<td>5. Statistical confidentiality</td>
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<tr>
<td>6. Impartiality and objectivity</td>
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<table>
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<tr>
<th>Statistical Processes</th>
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<tr>
<td>7. Sound methodology</td>
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<tr>
<td>8. Appropriate statistical procedures</td>
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<tr>
<td>9. Non-excessive burden on respondents</td>
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<td>10. Cost effectiveness</td>
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<table>
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<tr>
<th>Statistical Output</th>
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<tr>
<td>11. Relevance</td>
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<tr>
<td>12. Accuracy and reliability</td>
</tr>
<tr>
<td>13. Timeliness and punctuality</td>
</tr>
<tr>
<td>14. Coherence and comparability</td>
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<tr>
<td>15. Accessibility and clarity</td>
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Table 1. The Principles of the European Statistics Code of Practice

In addition to the CoP, “Quality Assurance Framework” was prepared by ESSC in 2011 in order to provide guidance on how to put into life the CoP principles. Quality Assurance Framework (QAF) describes activities, methods and tools that facilitate the implementation of principles 4 and 7 to 15 of the CoP. The remaining five principles have not been further developed in the QAF since they are considered to being closely linked to the implementation of Commission. These recommended activities, methods and tools in the QAF help to understand what is needed for fulling the requirements of the code.
User Survey in QAF

User satisfaction surveys are described in the QAF as a method to implement the some of the principles of the CoP. It is considered as an important tool in the documentation and measurement part and an element of the quality improvements (Figure 2).

**Figure 2**: Eurostat quality assurance framework. (Matamala, Junker, 2010)

Indicators which are related to user survey in QAF are listed below:

- **Principle 4: Commitment to Quality**

  “Indicator 4.3: Product quality is regularly monitored, assessed with regard to possible trade-offs, and reported according to the quality criteria for European Statistics.”

  “Method 2: **User satisfaction surveys.** User Satisfaction Surveys or other indirect methods are implemented on a regular basis and their results are made public and incorporated where useful in Quality Reports, since they monitor “Relevance”, amongst other dimensions”

  User satisfaction surveys are directly recommended as a method to implement the indicator 4.3 of commitment to quality principle. By user surveys responsible agencies of official statistics can monitor the product quality regularly and by analyzing the results they can take actions in order to improve the quality of statistics.

  **Indicator 4.4:** There is a regular and thorough review of the key statistical outputs using also external experts where appropriate.

  “Method 6: Feedback from users. Feedback from different users is used as input to action plans (making use of User Satisfaction Surveys or Focus groups).
Method 6 of the indicator 4.4 is about the feedback from the users and user satisfaction surveys are considered as a tool to obtain the assessments of users on the quality of the statistics.

- **Principle 7: Sound Methodology**

  “Indicator 7.2: Procedures are in place to ensure that standard concepts, definitions and classifications are consistently applied throughout the statistical authority”

  “Method 3: Views of relevant experts and users. Surveys or statistical processes benefit from the views of relevant experts and users where appropriate.”

Methodology is an important part of the statistics and methodological explanations should be clear and users can understand it easily. It is considered that responsible institutions can get information about the soundness of their methodology via user surveys.

- **Principle 11: Relevance**

  “Indicator 11.3: User satisfaction is monitored on a regular basis and is systematically followed up.”

  “Method 1: User satisfaction surveys. User satisfaction surveys (including e.g. compilation of quality indicators on user satisfaction) or similar user studies are carried out and assessed regularly with an office-wide scope.

  “Method 2: Improvement actions arising from the user satisfaction surveys. Improvement actions arising from the user satisfaction surveys are defined and scheduled for implementation”

User surveys are explicitly suggested as a method to implement the relevance principle of CoP. Through user surveys, the relevance of the current statistics can be determined and required steps can be taken.

- **Principle 13: Timeliness and punctuality**

  “Indicator 13.3: The periodicity of statistics takes into account user requirements as much as possible.”

  “Method 1: Consultation of users on periodicity. The statistical authority consults users regularly on periodicity.”

User requirements on the timeliness and punctuality of statistics can be identified through the user surveys. If the current situation of the periodicity does not meet the user needs, responsible agency can work on the issue and improve the timeliness of the published statistics.

- **Principle 15: Accessibility and clarity**

  “Indicator 15.1: Statistics and the corresponding metadata are presented, and archived, in a form that facilitates proper interpretation and meaningful comparisons.”
“Method 2: Consultations of users about dissemination. Users are consulted about the most appropriate forms of dissemination (e.g. Focus groups, Customer Satisfaction Surveys) on a regular basis.”

Accessibility of the statistics is as important as the content of the statistics because if the users cannot reach the statistics, content and the figures will be meaningless. Consulting accessibility position of the statistics to the users via surveys is gives opportunity to responsible agency to perceive whether their statistics are easy accessible or not.

B. Statistics User Survey

As discussed above, Data Quality Assurance Framework of IMF and Quality Assurance Framework of European Statistical System suggest carrying out user survey to measure the quality level of the statistics. Thanks to this survey the weak and powerful sides of the statistics can be determined and required steps can be taken to improve quality of the statistics. In addition, user needs and their expectations about the statistics and related services such as methodology and accessibility can be identified and consistent strategies can be developed to meet the user requirements.

1. Central Bank of the Republic of Turkey Experience

CBRT aims to produce high quality statistics. In order to measure the quality level of the statistics and to come to know the expectations of the users the first “Statistics User Survey” of CBRT was held in 2015.

Before starting to compose the survey questions some survey examples of international organizations, statistic offices and central banks are examined, these are:

✓ Eurostat
✓ European Central Bank
✓ World Bank
✓ Bank of England
✓ National Bank of the Republic of Macedonia
✓ Turkish Statistical Institute
✓ Statistical Office of the Republic of Slovenia
✓ Statistical of the Republic of Serbia

After reviewing these user surveys, CBRT survey questions were prepared. None of these sample surveys were translated directly. Mostly, questions were composed relying on the user satisfaction survey conducted by Eurostat. To supplement these, some additional questions were created by CBRT. After conducting a pilot survey to the CBRT Monetary Policy Department in order to test the survey questions, some questions were changed. Final version of the survey covered 4 sections with 24 questions. The sections are;

a. User type
b. General information about the use of CBRT statistics
c. **Quality aspects of CBRT statistics**
d. Disseminating services
A large number of survey web sites were examined and one of them was preferred for the CBRT statistics user survey and questions were prepared using this website.

Registered CBRT web site users who follow news from CBRT including press releases, reports, research and statistics were invited to the web based survey via an e-mail message and 675 of them participated to the statistics user survey.

2. Results of the Survey

There were 5 questions in the user type section which covers questions in order to recognize the users such as their nationality, gender, age, education level and user group.

The second section, general information about the use of CBRT statistics, contained 7 questions which were related to usage of the statistics. As mentioned above, meeting the requirements of the users is an important issue and there were two questions concerning this topic.

First one was “Are Current Statistics Produced by CBRT Meet Your Requirements?” 38.2% of the respondents answered this question “Fully” and 43.1% of them answered “Greatly”. Only 1.2% stated that current CBRT statistics does not meet their requirements (Chart 1). The second question was continuity of the previous one as “If Your Answer is not “Fully”, Please Indicate Below Your Demands, Under the Responsibility of CBRT, in Order of Importance?” This was an open-ended question and 211 demands were indicated from 118 users and these are categorized under four parts (Table 2).

![Chart 1. Current statistics’ position for meeting the user requirements](chart)

<table>
<thead>
<tr>
<th>Category of indicated requirements</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Not under the responsibility of CBRT</td>
<td>38.2%</td>
</tr>
<tr>
<td>2. Under the CBRT responsibility and already disseminating</td>
<td>43.1%</td>
</tr>
<tr>
<td>3. Under the CBRT responsibility but either not disseminating or partly disseminating</td>
<td>13.2%</td>
</tr>
<tr>
<td>4. Requirements except statistics</td>
<td>1.2%</td>
</tr>
</tbody>
</table>

Third section, quality aspects of CBRT statistics, had 4 questions which concerns the quality level of the statistics.
Participants rated CBRT statistics on a range between 1 to 5, where 1 represents “very poor” and “5” represents “very good.” The average overall quality of CBRT statistics came in at 4.1 out of 5. “Exchange Rates”, “Real Effective Exchange Rate” and “Monthly Money and Banking Statistics” have the highest quality ratings (Chart 2). This question is considered as an essential tool to measure the quality of the statistics.

![Chart 2: Quality levels of CBRT statistics](image)

When we calculate the quality of the statistics on the user group bases, it has seen that quality grades of non-financial institutions and central bank employees are higher than other user groups. On the other side, household and academic users gave lowest quality ratings to the CBRT statistics (Chart 3).

Another interesting point is the gender approach. The results show that female users assessed the quality of CBRT statistics higher than male users (Chart 4).
Most of the respondents (59.6%) find the quality of CBRT statistics better than other domestic official statistics in Turkey and only 3.0% of them think CBRT statistics’ quality worse than other domestic official statistics in Turkey (Chart 5). On the other hand, 36.6% find the quality of CBRT statistics the same as international organizations’ statistics (ECB, Eurostat, IMF, BIS, OECD etc.) (Chart 6).

Most of the users (63.4%) trust CBRT statistics greatly and 30.2% of them tend to trust. Sum of both indicators are 93.6% which can be considered as the confidence level of the statistics.
Besides, only 1.0% of the users indicated that they distrust CBRT statistics greatly (Chart 7). The higher confidence levels are belong to central bank and financial institutions whereas household and other users have lower confidence levels (Table 3).

<table>
<thead>
<tr>
<th></th>
<th>Trust greatly/Tend to Trust</th>
<th>Distrust greatly/Tend to distrust</th>
<th>No opinion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Central Bank</td>
<td>100,0</td>
<td>0,0</td>
<td>0,0</td>
</tr>
<tr>
<td>Financial Institutions</td>
<td>98,1</td>
<td>0,9</td>
<td>0,9</td>
</tr>
<tr>
<td>Students</td>
<td>97,6</td>
<td>2,4</td>
<td>0,0</td>
</tr>
<tr>
<td>Non-financial Institutions</td>
<td>92,8</td>
<td>4,1</td>
<td>3,1</td>
</tr>
<tr>
<td>Academics</td>
<td>92,5</td>
<td>7,5</td>
<td>0,0</td>
</tr>
<tr>
<td>Government</td>
<td>90,6</td>
<td>9,4</td>
<td>0,0</td>
</tr>
<tr>
<td>Media</td>
<td>88,2</td>
<td>5,9</td>
<td>5,9</td>
</tr>
<tr>
<td>Other</td>
<td>84,8</td>
<td>7,6</td>
<td>7,6</td>
</tr>
<tr>
<td>Household</td>
<td>81,4</td>
<td>16,3</td>
<td>2,3</td>
</tr>
</tbody>
</table>

The last section of the survey is about the dissemination services. This section has 8 questions related about release calendar, metadata, accessibility, user support etc. 37.9% of the participants find the “Metadata” of CBRT statistics “partly” sufficient for their purpose and 35.9% stated that it is sufficient. In addition, 23,1% doesn't have any opinion about “Metadata”. As a result, we can state that about a quarter of the users don't use the “Metadata” of CBRT statistics (Chart 8). More than half of the respondents (54,5%) access the statistics they need on CBRT’s website easily and 36,9% access partly easily. Moreover, 6,1% cannot access the statistics easily (Chart 9).
Respondents rated the given statistical services of CBRT website between 1 to 5 where 1 represents “very poor” and 5 represents “very good.” The overall grade of the statistical services of CBRT’s website is calculated 3.9 out of 5 (Chart 10).

Chart 10. Rates of the statistical services

About half of the respondents (48.1%) think that CBRT statistics are presented in a way that is easy-to-understand (Chart 11). 27.9% and 56% of the respondents rated the overall quality of the data and related services provided by CBRT as “very good” and “good” respectively (Chart 12).

Chart 11. Presence in a way that is easy-to-understand.

Chart 12. Overall quality of CBRT statistics and related services

The last question of the survey was an open-ended one where respondents can write their comments and ideas about the CBRT statistics and the related services. 134 respondents
answered this question and these comments are important tools to improve the quality of CBRT statistics.

IV. Conclusion

International organizations such as IMF and EUROSTAT (on behalf of the ESSC) prepared quality assessment frameworks in order to provide a common structure for the qualitative statistics. These frameworks mainly focused on the characteristics, which qualitative statistics have, with covering all of the steps on the institutional level, production process of statistics and outcomes.

User surveys are recommended as a tool to measure the current quality levels of the statistics as well as to obtain requirements and expectations of the users from the statistics. By following the comments and opinions of the users, poor aspects of statistics and related services can be learned so necessary steps can be taken to improve these weaknesses. Moreover, strengths of statistics can be recognized and strategies can be developed to protect them.

CBRT statistics user survey results show that the overall quality of statistics is 4,1 out of 5. Majority of the respondents think that the quality of CBRT statistics better than other domestic official statistics in Turkey and they considered that CBRT statistics are as qualified as the international organizations’ statistics. The highest quality grades were assessed from non-financial institutions and lowest was from household sector. In addition, female users evaluated the quality level of CBRT statistics higher than male users. Only 1,0% of the participants distrust CBRT statistics greatly. The overall quality of statistical services calculated 3,9 out of 5. Users think that “Search facilities” and “Help texts/help facilities” are the weakest aspects of the CBRT website.

After conducting first CBRT statistics user survey, a report was prepared on survey results and shared with the concerning departments within the CBRT in addition to Statistics Department. In 2016, the second user survey will be conducted and the results will be compared with the previous one.

V. References


