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in cooperation with  
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***VADEMECUM  
OF  
QUALITY  
IN  
OFFICIAL STATISTICS***

Materials for external recipients

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## 1. Introduction

The Polish official statistics conducts over 200 surveys divided into 30 subject groups, carried out independently by official statistics or ministers and managers of central offices as well as in the cooperation of the CSO with competent governmental departments. Surveys are carried out both on the base of primary or secondary source of data and on information acquired from administrative systems. These statistical surveys reflect information obligations imposed on Poland as the member of international organizations (UN, IMF, World Bank, OECD etc.), obligations associated with adapting to requirements of the ESS within the European Union and the information demand from the domestic users.

In order to achieve and maintain high-quality statistics and compliance with the fundamental principles of the European Statistical System (ESS), the systematic evaluation and continuous improvement of the statistical processes is of great importance. The quality of statistical processes and products in the official statistics is subjected to continuous improvement. It should be made in continuous and structured way in accordance with the idea of Total Quality Management (TQM).

This paper aims at illustrating the general approach to quality policy of Polish Official Statistics and tools for assessing and measuring the survey quality.

## 2. The quality policy in official statistics

According to article 3 of law issued on 29 June 1995 on official statistics – the official statistics shall provide reliable, objective and systematic information for the society, the state and public administration bodies and economic entities on the economic, demographic and social situation and the environment.

The quality of statistical information decisively determines the success of the mission of official statistics. Commitments to quality are aimed at providing users with high quality information needed for making decision, research purposes and to assess the effectiveness of socio-economic development programs by public opinion.

### 2.1 *Quality standards in official statistics*

„The absolute necessity to ensure high standards of quality statistics has become particularly essential since the early 1990s, especially after signing of the Treaty of Maastricht (February 1992) that created the European Union and determined the economic convergence criteria referring inflation rate, deficit of government finance and interest rates and after the

establishment of the European Central Bank in 1998 and introduction in the beginning of 1999 the common currency- EURO".<sup>1</sup>

Among many documents relating to the quality of statistics, drawn up by the end of the first decade of the 21st century, the special attention deserves:

- **Quality Declaration of the European Statistical System**
- **Leadership Group on Quality Recommendations**
- **European Statistical Code of Practice**

and preceding them:

- **Fundamental Principles of Official Statistics**, adopted by the Statistical Commission at a special UN session on 11-15 April, 1994.

At present, the new version of European Statistical Code of Practice, adopted by the European Statistical System Committee on 28 September 2011, is binding.

### **2.1.1 Fundamental Principles of UN Official Statistics**

The Fundamental Principles of UN Official Statistics are a kind of statistical decalogue - contain 10 principles which each country should respect i.e.: 1) Relevance, impartiality and equal access, 2) Professional standards and ethics, 3) Accountability and transparency, 4) Prevention of misuse, 5) Sources of official statistics, 6) Confidentiality, 7) Legislation, 8) National coordination, 9) Use of international standards, 10) International cooperation.

The rules are addressed to governments and to the official statistics authorities and concern the basic principles of statistics as an information system that is to serve both state authorities and society in the new socio-political conditions. They define common objectives and tasks of the statistical services of all countries and provide them with moral and legal basis for performing a leading role in their own countries and facilitate the development of harmonious international cooperation.<sup>2</sup>

### **2.1.2 Quality Declaration of the European Statistical System**

Quality Declaration of the European Statistical System resulted from activity of a group, established in March 1999 by the then Statistical Programme Committee (SPC) Leadership

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<sup>1</sup> „The basic quality standards in public statistics”- Tadeusz Walczak, GUS

[http://www.stat.gov.pl/gus/5466\\_PLK\\_HTML.htm](http://www.stat.gov.pl/gus/5466_PLK_HTML.htm);

[http://www.stat.gov.pl/cps/rde/xbr/gus/POZ\\_podstaw\\_stand\\_jakosci\\_statyst\\_publicz.pdf](http://www.stat.gov.pl/cps/rde/xbr/gus/POZ_podstaw_stand_jakosci_statyst_publicz.pdf)

<sup>2</sup> “The basic quality standards in public statistics”- Tadeusz Walczak,

[http://www.stat.gov.pl/gus/5466\\_PLK\\_HTML.htm](http://www.stat.gov.pl/gus/5466_PLK_HTML.htm)

Expert Group on Quality (LEG). The declaration was adopted by the SPC in September 2001 and reflected the comprehensive approach to quality in the ESS<sup>3</sup>. The document included:

➤ **The mission of the ESS:**

*„We provide the European Union and the world with high quality information on the economy and society at the European, national and regional levels and make the information available to everyone for decision-making purposes, research and debate.“*

➤ **The Vision of the ESS:**

*„The ESS will be the World leader in statistical information services and the most important information provider for the European Union and its member states. Based on scientific principles and methods, The ESS will offer and continuously improve a programme of harmonized European statistics that constitutes an essential basis for democratic processes and progress in society.“*

➤ **The principles of work and cooperation of ESS members:**

To realize this mission and vision, the members of European Statistical System strive for joint cooperation according to the following principles: user focus, continuous improvement, product quality commitment<sup>4</sup>, accessibility of information, partnership within and beyond the European Statistical System, respect for the needs of data suppliers, commitment to leadership, systematic quality management<sup>5</sup>, effective and efficient processes, staff satisfaction and staff development.

The Quality Declaration of the European Statistical System has been improved and incorporated into the European Statistical Code of Practice making now one integrated document; vision and mission included in the Quality Declaration constitute now the preamble to the CoP, and principles of work and cooperation give it the firm and solid base.

### 2.1.3 Leadership Group (LEG) on Quality Recommendations

Recommendations of the Leadership Expert Group on Quality - a list which includes 21 guidelines and tips concerning:

- Quality of statistical product,
- Relations with respondents and data providers,
- Satisfaction of users of statistics,
- Action programme,

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<sup>3</sup> The ESS is the system supporting the development and implementation of the European Union policy. It includes: Eurostat, the national institutes of official statistics of the EU member states and countries of the European Economic Area (Iceland, Norway, and Liechtenstein).

<sup>4</sup> **Product quality commitment-** We produce high quality statistical information according to scientific methods in accordance with objectivity and confidentiality. We provide information on the main quality characteristics of each product so that the users are able to assess product quality.

<sup>5</sup> **Systematic quality management** – We systematically and regularly identify strengths and weaknesses in all relevant areas, continuously identify and implement improvements where needed. A long-term strategic orientation is vital for the development of the ESS. The long-term effects in all situations must be considered with the more obvious short-term effects.

- Best practices and standardization tools,
- Information system,
- Tools for quality assessment,
- Documentation of the statistics quality ,
- Quality management.

The majority of the LEG recommendations has been already implemented, at least at European level, and is in the course of implementation in Polish official statistics.

Similarly to the Quality Declaration, the Leadership Group on Quality Recommendations make the base of revised version of the CoP.

### 2.1.4 European Statistics Code of Practice

The European Statistics Code of Practice is the result of work on quality strategies in the ESS and the instrument for reinforcing the independence, integrity and accountability of the statistical authorities. It is based on the Quality Declaration and Recommendations of the LEG Group, and also reflects the Fundamental Principles of Official Statistics adopted by the UN Statistical Commission in 1994. The Code was adopted by the then SPC on 24 February 2005 and introduced by the Commission Communication to the European Parliament and the Council on the independence, reliability and responsibility of national and Community statistical authorities on 25 May 2005.

The intention of the authors of the Code was to increase confidence in the statistical authorities by proposing certain institutional and organizational arrangements and improving the quality of statistical data compiled and disseminated by these authorities by means of promotion of the consistent application of best international statistical principles, methods and practices by all producers of official statistics in Europe.

Statistical authorities, comprising the Commission (Eurostat), National Statistical Institutes and other national authorities responsible for the development, production and dissemination of European Statistics, together with governments, ministries and the European Council, commit themselves to adhere to the Code.

Present version of the Code, improved and adopted on 28 September 2011, contains 15 principles which concern: the institutional environment (principles 1-6), statistical processes (principles 7-10), the survey output (principles 11-15).

	<b>Institutional Environment</b>
1	Professional Independence
2	Mandate for Data Collection
3	Adequacy of Resources
4	Commitment to Quality
5	Statistical Confidentiality
6	Impartiality and Objectivity
	<b>Statistical Processes</b>

7	Sound Methodology
8	Appropriate Statistical Procedures
9	Non-excessive Burden on Respondents
10	Cost Effectiveness
	<b>Statistical Output</b>
11	Relevance
12	Accuracy and Reliability
13	Timeliness and Punctuality
14	Coherence and Comparability
15	Accessibility and Clarity

For each of the principles there are so called indicators of good practice (82 indicators) - criteria, whose fulfilment guarantees that the principle is implemented. Additional assistance in the assessment of the principle fulfilment is the publication " Quality Assurance Framework". It contains auxiliary requirements and guidelines concerning activities, methods and tools on institutional and product/survey level.

The CoP is "anchored" in the European law system and aims at the improvement of trust and confidence in the statistical authorities.

The CoP principles together with the general rules of quality management establish the common quality framework in the European Statistical System.

## **2.2 The concept of Eurostat quality**

According to the universal ISO definition, the quality is assessed according to the general characteristics of the item (product or service), which determine the ability of this object to satisfy user expectations. In the case of statistics such evaluation is not easy.

The quality concept of official statistics is based on the European Statistical System definition of the quality and defined on the basis of the following six criteria:

1. **relevance,**
2. **accuracy,**
3. **timeliness and punctuality,**
4. **accessibility and clarity,**
5. **comparability,**
6. **coherence.**

In addition, assessing the quality of statistics, we should consider:

- **costs and respondent burden,**
- **confidentiality, transparency and security.**

### **3. Assessment and monitoring of quality of statistical processes - tools**

Assessment and monitoring of the quality of statistical processes should be done by means of appropriately designed tools for their measurement and evaluation. The authors of surveys have the following tools at their disposal:

1. quality report,
2. quality indicators,
3. self-assessment checklist - Likos and quality checklists,
4. quality reviews.

These instruments are part of a systematic, cyclical process of evaluation, inspection and quality monitoring of the survey. The work, with the use of above mentioned tools, is carried out in the field of the survey, what means in practice, that not all components of the checklists, quality reports or quality indicators are analyzed for each survey.

#### **3.1 The quality report**

The quality report is the analysis of each quality component. Its scope depends on the type of quality report i.e. full or simplified version. This paper refers to the full version of quality report containing all quality components.

The quality report of the survey consists of four parts: administrative information, preliminary comments, analysis of individual quality components and summary.

##### **3.1.1 Administrative information and preliminary comments**

The introduction to the quality report contains basic administrative information about the survey (such as: symbol of the questionnaire, symbol and title of the survey and symbol of domain according to the Program of Statistical Surveys of Official Statistics etc.) and a place for opening remarks - a description of the survey and domain, its history and a brief overview of achieved results. It is also the place where you can specify encountered restrictions while making the report and references to documentation, in particular concerning the methodology.

##### **3.1.2 The analysis of individual components of quality**

The main element of quality report is a part dedicated to analysing the quality of each component, which should include:

- a description of the component
- the measurement of quality,
- proposals how to improve the quality of a given component.

To measure the quality of individual quality components the quality indicators should be used (see section 3.2 quality indicators), which are the integral part of the report.



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### 3.1.2.1 Relevance

“Relevance is the degree to which statistical outputs meet current and potential user needs. It depends on whether all the statistics that are needed are produced and the extent to which concepts used (definitions, classifications etc.,) reflect user needs”.

The purpose of relevance reporting is to describe the extent to which the data are useful and used by the widest possible audience. Therefore, you must compile the information, especially about the users of statistics, their needs and assess the extent to which these needs have been met.

This part of report should be ended with general assessment of relevance of the product, list, if any, the main reasons for lack of relevance and include improvement recommendations.

Conclusions on improvement of the data relevance may refer to the analysis of feedback from users in terms of simplifying the survey e.g. setting priority variables and eliminating variables of limited usefulness to the user, the use of administrative sources and the use of rotation design.

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### 3.1.2.2 Accuracy

Accuracy denotes the closeness of computations or estimates (after collecting, processing, imputation, estimation of data and the like) to the exact or true values. The difference between these two values is the error. Analysis of the quality of precision is based on the analysis of sampling errors and non-sampling errors.

#### Sampling errors

Sampling errors affect only sample surveys due to the fact that the survey does not cover all units of the target population. Data compiled from a sample survey may differ from those values that would be obtained if the same steps were used in the survey to the whole population.

#### Non –sampling errors

While describing non-sampling errors there should be analyzed:

a) **Coverage errors** - are due to divergences existing between the target population and the frame. We can distinguish the following types of coverage error:

- over-coverage – there are units accessible via the frame which do not belong to the target population or they do not exist in practice (e.g. closed down entity, not removed from the REGON register),
- under-coverage – there are target population units which are not accessible via the frame
- multiple listings- target population units are present more than once in the frame,
- incorrect auxiliary information: the auxiliary information about some population units may be inaccurate.

Coverage errors may lead to bias and underestimation of variance as well. These errors are eliminated by updating the sampling frame and update the sample.

b) **Measurement errors** - errors that occur during data collection and cause the recorded values of variables to be different than the true ones. Their causes are commonly categorized as:

- survey instrument: the form, questionnaire or measuring device used for data collection may lead to the recording of wrong values,
- respondent: respondents may, consciously or unconsciously, give erroneous data,
- interviewer: interviewers may influence the answers given by respondents,
- method of data collection;

c) **Processing errors**– they arise between data collection and the beginning of statistical analysis for the production of statistics, when data must undergo a certain processing: data entry, coding, editing imputation and the like.

d) **Non response errors**

- unit non response, which occurs when no data are collected about a designated population unit – the unit did not respond to the questionnaire or did not do an interview
- and
- item non response, which occurs when data only on some but not all the survey variables are collected about a designated population unit.

e) **Model assumption error s**- they arise during the activities associated with the use of statistical models e.g. the choice of model, collecting relevant data and estimation of model parameters, what need to make some assumptions, beginning from the form of a parametric model to the necessary assumptions for estimation. If any of these assumptions is violated, it will also affect the accuracy of the survey.

In this part of the report there should be considered the necessity of:

- a. improvement of the survey frame,
- b. methodology work on improvement of the sample quality and procedures on generalization of results,
- c. work aiming at:
  - improvement of survey guidelines and questionnaire explanations
  - assessment of validity of the assumptions
  - the introduction of more advanced techniques of imputation,
  - improving contacts with the respondent
  - the training of staff.
- d. improvement of electronic forms of data collection.

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### 3.1.2.3 Timeliness and punctuality

#### Timeliness

Timeliness of statistics reflects the length of time between their availability and the event or phenomenon they describe. The analysis of timeliness consists in the assessment of the time lag between the surveyed period and the date of dissemination and is based on

a review of survey schedule, with particular emphasis on the dissemination phase, i.e. the preparation of publications, tables presented in the yearbooks, statistical bulletins, press releases and press conferences.

### **Punctuality**

Punctuality refers to the time lag between the release date of data and the target date on which they should have been delivered, with reference to dates announced in some official release calendar, for instance, laid down by Regulations or previously agreed among partners. The analysis of punctuality is therefore mainly the identification the schedule punctuality of publication (if date of the publication is consistent with the plan of publishing, what is the difference between the real date of publication and the scheduled date fixed in the plan of publishing or formulated in the regulation of the European Commission or otherwise set).

The proposals, aimed at improving the quality of timeliness and punctuality, should examine the possibility of eliminating possible delays in the issuing of publications and feasibility of shortening the time between the end of the survey and publication of results.

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### **3.1.2.4 Accessibility and Clarity**

Accessibility and clarity refer to the simplicity and ease for users to access statistics using simple and user-friendly procedures, obtaining them in an expected form and within an acceptable time period, with the appropriate user information and assistance: a global context which finally enables them to make optimum use of the statistics.

#### **Accessibility**

Accessibility refers to the physical conditions in which users can access statistics: distribution channels, ordering procedures, time required for delivery, pricing policy, marketing conditions (copyright, etc.), availability of micro or macro data, media (paper, CDROM, Internet...), etc.

#### **Clarity**

Clarity refers to the information environment of statistics: appropriate metadata provided with the statistics (textual information, explanations, documentation, etc.); graphs, maps, and other illustrations; availability of information on the statistics' quality (possible limitation in their use); assistance offered to users by the NSI.

The conclusions concerning the accessibility and clarity should refer to the development of modern and fast methods of dissemination of information, for example by increasing the number of web publishing, or development of data warehouse. Emphasis should be put also on the possibility of extending the metadata system, including clear and precise definitions of variables, a description of the survey concept and information on data quality.

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### **3.1.2.5 Comparability**

Comparability aims at measuring the impact of differences in applied statistical concepts and definitions on the comparison of statistics between geographical areas, non-geographical domains, or over time.

There are three main types of comparability of statistics: the comparability over time, geographical comparability and comparability between domains.

### **Comparability over Time**

Inconsistencies over time occur when data collected for a specific reference period are not fully comparable with the data of the following periods. In such cases we say that we have a break in time series. The difference in concepts and methods of measurements between two reference periods should be examined. So in terms of comparability over time the analysis is reduced to investigate whether there were changes in the subjective and objective scope of survey within the analysed period of time (in Poland e.g.: gross salaries since 1999, the changes in the definition of medium and large units, changes in classification of PKD) and how this affects the analysis over time.

### **Geographical Comparability**

The aspect of geographical comparability emphasizes the necessity of comparison of statistics between countries and / or regions in order to ensure uniformity of aggregate data at a given level (international, European and regional). An example of spatial analysis is the presentation of data on Poland in comparison with other countries.

The analysis of geographical comparability should be preceded with examining whether:

- definitions of the variables are based on the same assumptions as the definitions of other countries;
- classifications of activities, territorial division or other classifications: the professions, education levels, etc. are based on the same basis (e.g. European Commission regulations);
- methodological assumptions: the subjective and objective scope of survey has the same basis as defined in relevant regulations (e.g. European Commission).

### **Comparability between domains**

Comparability between domains refers to the industrial sectors, different types of households, etc., and is associated with the possibility of comparing different surveys of similar characteristics in different areas of statistics.

In this part of report there should be noticed the necessity of development of methods ensuring the comparability of data in period of changes in definitions and classifications, etc., and development of calculation methods of data series length used for calculations.

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### **3.1.2.6 Coherence**

Coherence of statistics is their adequacy to be reliably combined in different ways and for various uses. When originating from a single source, statistics are normally coherent in the sense that elementary results derived from the concerned survey can be reliably combined in numerous ways to produce more complex results.

Similarly, as it is in the case of comparability, lack of coherence of statistics derived from various sources, especially of surveys of different character and / or frequency, may result from different approaches, classifications and methodological standards. Hence, the content of the report is similar for these both quality components. The analysis of coherence includes the examination of integration relationship between surveys.

There are several areas that may be subject to assessment of the consistency:

- coherence between preliminary and final outputs,

- coherence between annual and short-terms outputs,
- coherence between surveys of the same socio-economic domain.

In this section of the report we should consider whether there is a need to place information about consistent variables in statistical publication so that the user could see integration relationship between surveys and conduct statistical analyses using information from different sources.

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### **3.1.2.7 Cost and respondent burden**

The analysis of costs and respondent burden, although they are not quality components in the strict sense, is an important element of quality assessment and is contained in the quality report.

An assessment of the costs associated with a statistical product is a complicated task that is why the analysis is suggested to be limited only to direct costs of national statistical institutions. As far as respondent burden is concerned it is difficult to determine it in cash; it is much easier to calculate time spent on completing the questionnaire or giving answers to the interviewer. Commonly used method is to determine the respondent burden as the product of number of received questionnaires and the average time needed for its fulfillment. Time may be estimated on the basis of questionnaire addressed to selected group of respondents or by placing additional question at the end of each questionnaire concerning the amount of time required to provide information and to fill it in.

The quality report on the response burden should contain description:

- of targets for reducing the burden,
- of efforts made to reduce the burden,
- whether the range and detail of data collected by survey is limited to what is absolutely necessary,
- whether administrative and other survey sources are used to the fullest extent possible,
- whether electronic means are used to facilitate data collection,
- whether best estimates and approximations are accepted when exact details are not readily available,
- whether reporting burden on individual respondents is limited to the extent possible by minimizing the overlap with other surveys.

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### **3.1.2.8 Confidentiality, transparency and security**

Confidentiality protection is required by law. The quality report should confirm such arrangements or report on any exceptions. It should also outline the procedures for ensuring confidentiality during collection, processing and dissemination of data, and including rules of hiding individual data in the tables and preventing residual disclosure.

Respondents should be informed of the mandate under which a survey is being conducted, the uses to which the data requested are to be put and the confidentiality provisions as well. The report should also inform about any deficiencies in this area. The comment on the

principles of objectivity and non-partiality while announcement and publication of results is recommended as well as a description of the principles of storing information in databases and their collection through the Internet.

In the report there should also be considered trade-offs between confidentiality and security on the one hand and accessibility on the other.

In this part, the report should define procedures for ensuring security during data collection through the Internet and integrity of the databases.

### 3.1.3 The summary of quality reports

The summary of quality report should contain a description of improvement recommendations and analysis of the trade-offs between the output quality components:

- a) trade-off between accuracy and timeliness;
- b) trade-off between accuracy and relevance;
- c) trade-off between relevance and timeliness;
- d) trade-off between comparability and relevance;
- e) trade-off between comparability over time and comparability over region

bearing in mind that the factors leading to improvement of quality in one component can cause deterioration in others.

### 3.2 Quality indicators

This part describes calculation methods of the standard quality indicators for different quality components recognizing needs of Polish official statistics.

QUALITY COMPONENT	QUALITY INDICATORS	CALCULATION METHOD
<b>Relevance</b>	<b>P1.</b> Rate of available statistics	The ratio of the number of output data elements provided in accordance with a relevant ESS regulation to those required by the regulation
<b>Accuracy</b>	<b>D1.</b> Coefficient of variation (CV)	The standard error of the estimator divided by the expected value of the estimator.
	<b>D2.</b> Unit response rate <sup>6</sup>	The ratio of the number of units for which data for at least some variables have been collected to the total number of units designated for data collection.
	<b>D3.</b> Item response rate	The ratio of the number of units which have provided data for a given variable to the total number of designated units.
	<b>D4.</b> Imputation rate	The ratio of the number of assigned values (data are missing, invalid or inconsistent or have failed edits) for a given variable to the total number of values
	<b>D5.</b> Rate of over coverage	The proportion of units accessible via the frame that do not belong to the target population.

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<sup>6</sup> Obligatory quality indicator in the simplified version of quality report

	<b>D6.</b> Edit failure rate	The proportion of responding units for which an error signal is triggered by a specified checking algorithm
	<b>D7</b> Average size of revisions.	The average over a time period of the difference between a later and an earlier, estimate expressed as the average revision, the average absolute revision, and/or the corresponding relative quantity(ies).
<b>Timeliness and Punctuality</b>	<b>T1.</b> Time lag between the end of reference period and the date of the first/provisional	The number of days from the last day of the reference period to the day of publication of first results
	<b>T2.</b> Time lag between the end of reference period and the date of the final results <sup>7</sup>	The number of days from the last day of the reference period to the day of publication of final results
	<b>T3.</b> Punctuality of publication <sup>8</sup>	Number of days separating a previously announced date of publication and the actual date
<b>Accessibility and Clarity</b>	<b>DP1.</b> Number of subscriptions/purchases of each of the key paper reports	As stated opposite
	<b>DP2.</b> Number of accesses to on-line databases	As stated opposite
	<b>DP3.</b> Rate of completeness of metadata	The ratio of the number of metadata elements provided to the total number of metadata elements applicable
<b>Comparability</b>	<b>PO1.</b> Lengths of comparable time series <sup>9</sup>	Number of reference periods in time series from last break
	<b>PO2.</b> Asymmetries for statistics mirror flows	Discrepancies between data related to flows measured in two ways, e.g. discrepancies between inbound and outbound flows for pairs of countries
<b>Coherence</b>	<b>S1.</b> Number of surveys with consistent characteristics for variables	Number of surveys with consistent characteristics for variables such as: “working” from national accounts, “working” from survey on households, “working” from survey on enterprises
<b>Other quality aspects – respondent burden</b>	<b>OB1.</b> Annual respondent burden in hours and/or financial terms	Number of respondents/questionnaires * average time per respondents/questionnaires, summed overall production rounds of the statistical process within a year
		Respondent burden in hours * average hourly costs to respondents

source: The *ESS Handbook for Quality Reports, 2009 edition* except for “coherence”.

### 3.3 Self-Assessment Checklist for Survey Managers LIKOS and other auxiliary checklists

#### 3.3.1 Self-Assessment Checklist for Survey Managers - LIKOS

LiKoS is the checklist for a systematic quality assessment of surveys in the Polish official statistics.

The checklist is based on the European Self-Assessment Checklist for Survey Managers DESAP and is fully consistent with the quality components of the European Statistical

<sup>7</sup> Obligatory quality indicator in the simplified version of quality report

<sup>8</sup> Obligatory quality indicator in the simplified version of quality report

<sup>9</sup> Obligatory quality indicator in the simplified version of quality report

System. It is a tool helpful in assessing the survey quality by their authors. It can be used to assess the quality of the whole survey (all survey processes) or to prepare assessment diagram. Besides, it enables the simple comparisons of the level of quality over time and across domains.

LiKoS consists of processes as follows:

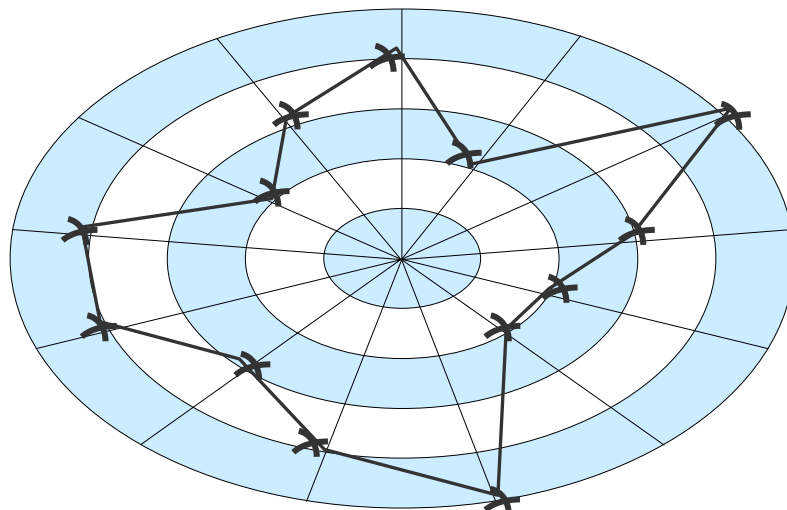
- a) decision to undertake a survey;
- b) survey design;
- c) data collection;
- d) data capture and data processing;
- e) data analysis and output quality;
- f) documentation and dissemination;
- g) improvement cycle.

We can distinguish three categories of questions within each research area:

1. **improvement questions** - questions with numerous response categories, in which the proposed categories of response allow not only to shorten the process of completing the checklist but they can also provide inspiration for solutions to improve the course of the survey process.
2. **assessment questions** – they are placed on blue background. The spatial presentation of the responses to these questions is a graphic profile of quality - assessment diagram (figure below), allowing the identification of strengths and weaknesses of the process.

If you want to achieve comparisons of the quality level of a given survey over time there is no need to go through the whole list but it is enough to concentrate only on the assessment questions.

Fig.1 – assessment diagram



source: The European Self-Assessment Checklist for Survey Managers

3. **open questions** - their aim is to raise awareness of problems in the examined area, what can be useful in developing proposals for improvements.

Working on one's own with LiKoS allows to:

- develop a global view on the process,



- understand one's own role in streamlining the process and the impact of improvements on further stages of survey,
  - develop instructions for improving and carry out basic risk assessment of potential quality problems,
  - carry out simple comparisons of the quality level over time and across different domains.
- The work with a checklist- LiKoS should be a preliminary step before working out surveys quality reports or launching quality review.

### 3.3.2 Quality checklist

Quality checklist is a facultative tool for authors of the surveys focused on solving specific problems. It can be used to analyse deeply all the aspects connected with a statistical process or to identify, recognize and answer problems arising during conducting a survey.

The aim of quality checklist is:

- to make the authors of surveys creative and to inspire them to take actions aiming at quality improvements,
- to draw the survey authors' attention to different stages of statistical process where quality improvements are possible to be implemented.

Quality checklist may concern different issues e.g. assessment of the impact of changes in methods of collecting data on the survey quality, improvements in treatment of non-response, improvements in accuracy, improvements in data comparability and coherence, setting research priorities, reduction of respondent burden, application of administrative sources, providing with regional breakdowns in a statistical survey according to the need of users e.g. across regional cross sections.

Quality checklists based on selected parts of LiKoS quality checklist<sup>10</sup> or created ad hoc and oriented towards identification of specific problems can be used during quality reviews.

Below there are some exemplary questions from the checklists aimed at reducing the respondents burden.

#### **Quality checklist on reduction of response burden - exemplary questions.**

1. *Are all data collected in the survey necessary from the users' point of view?*
2. *Are analyses conducted in this field?*
3. *Are there any variables not used in the study or are they used but in smaller extent in comparison with other variables?*
4. *Is it possible to eliminate certain variables in the future?*
5. *Is it necessary to supplement the survey with new variables in the future?*
6. *Is it possible to reduce the detail of information (data) in specific subject areas?*
7. *Is it possible to reduce the detail of information (data) obtained from the certain groups of respondents?*
8. *Is it possible to reduce survey frequency for the certain scope of data?*
9. *Is it possible to reduce the survey sample without deterioration of data quality?*

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<sup>10</sup> The LiKoS quality checklist includes quality profile and all stages of statistical survey. It is based on ESS quality standard – the DESAP self-assessment checklist for the survey managers.

10. *Are there groups of respondents about which information was not important (significant) for users?*
11. *Is there a problem of re-collecting the same data in different surveys?*
12. *Are there any other statistics in a given subject that can be used?*
13. *Is there a possibility to replace the information collected directly from the responding units by the information from administrative sources and to what extent?*
14. *Are administrative data used in the survey?*
15. *Are any actions taken in order to use/increase the scope of administrative data?*

### **3.4 Quality review**

Quality review is a periodic, planned and documented process of evaluation of survey quality, which aims at determining its strengths and weaknesses and identifying good practices and improvement recommendations.

Quality review is conducted by a team consisting of staff involved in the realization of the given process, and therefore it should be based on the cooperation of these people, a reliable diagnosis of the survey and common search for methods to improve its course.

During the review different methods of work are used, including analysis of documentation, checklists, discussion and, if necessary, consultation with experts.

This enables to make references and comparisons in the conducted analysis, evaluation of the process and to draw conclusions. A set of quality components determined in the ESS quality definition is a criterion for assessing the quality of statistical processes.

Quality review has following functions:

- cognitive - through a detailed description of the process and its evaluation,
- reporting - through information contained in the report,
- normative - through the influence on setting the rules and principles, and through implementing best practices and standards.

The main objective of the quality review is widely understood quality improvement of the statistical processes by:

- conducting analysis of statistical processes,
- making recommendations aimed at streamlining of processes,
- identifying and disseminating good practices.

Quality reviews may have different character that is why the selection of tools used during quality reviews will depend on their type.

The following types of quality reviews can be distinguished:

1. quality reviews of a strategic nature, which may relate to:

- improvement of coherence of surveys within the same or several statistical domains (identification of integration connections)
- prioritization and simplification of the statistical surveys program, by domains,
- the use of alternative sources of information

This type of quality reviews will require the participation of researchers, users, statisticians and the use of specialized tools such as a sheet on the costs and benefits of survey.

2. quality reviews organized on purpose, ad hoc, resulting from the urgent need for example: to improve the method of sampling and generalization of surveys results .
3. standard quality reviews consisting in reviewing the statistical process according to its phases.

Below the guidelines for the standard quality review are presented.

### **3.4.1 The rules of standard quality review of statistical surveys**

#### **The objectives of the quality review**

The main objective of the quality review is widely understood improvement of statistical surveys quality by a systematic, structured assessment of surveys and development of the process of their realization.

The specific objectives of the quality review of statistical surveys are as follows:

- identification of weaknesses of the process (areas for improvement)
- identification of the strengths of the process (good practices),
- determining the degree of compliance of the process with adopted rules, procedures, instructions,
- evaluation of fulfilment of assumed research objectives,
- evaluation of effectiveness and the use of resources,
- making recommendations for improvement of the process, its procedures and rules for its realization,
- streamlining the work of the people carrying out the survey.

The quality review supports the quality management process, increases efficiency and effectiveness of taken actions.

#### **The scope and criteria of quality review**

The quality review deals with statistical processes - surveys. The primary or secondary statistical survey included in the Plan of Statistical Studies is subjected to the assessment by means of a quality review. The review may cover one survey or a group of thematically similar surveys.

Quality review concerns all aspects set out in the ESS definition of statistics quality. The criteria of the evaluation of statistical process are:

- relevance
- accuracy
- timeliness
- accessibility and clarity
- comparability
- coherence

and

- costs and respondent burden
- confidentiality, transparency and security.

The priorities for the assessment of quality process can be determined at the stage of planning of the quality review for each individual survey, including its specificity and current needs.

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## **The organization of quality review**

Activities related to the organization and conduct of quality reviews will include:

- making annual plan of quality reviews,
- training people taking part in the quality reviews in a given year,
- coordination of quality reviews,
- checking formal conformity of reports from quality reviews with the current format,
- arranging and conducting meetings summarizing a series of quality reviews
- monitoring the implementation of the recommendations (the improvement actions) after quality reviews,
- dissemination of good practices.

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## **The course of quality review**

The quality review of one survey is to be carried out within 2-5 working days.

The quality review team consists of: the author of survey, the person from the Methodology, Standard and Register Division or from Statistical Office in Łódź, the person from the Programming and Coordination of Statistical Surveys Department and the survey coordinator. The team elects the chairman. During work the consultation with other workers e.g. system programmer may occur to be necessary. Teams are organized for the purpose of the given review.

Three weeks before the quality review each member of the team fills in, to the best of his knowledge, the checklist LiKoS (or selected parts of it) and prepares, at his/her discretion, the preliminary list of strengths and weaknesses of the process. In addition, the author of the survey provisionally calculates quality indicators.

During the quality review team members present their own versions of filled in checklist - LiKoS with conclusions. They jointly draw a quality diagram, discuss on various issues relating to the survey and work out together a convergent opinion.

At this stage of quality review the analysis of survey documentation is made (among others guidelines, guidelines for the logical and accounting control, survey schedule, opinions of regional statistical offices on the conduct of the survey in their area). Other techniques to assess the quality of statistical process, such as the review of publications, the use of auxiliary checklists, etc., can also be used.

Thanks to participation and commitment of staff responsible for survey in the process of its evaluation, the final recommendations will be clear, fair and generally acceptable.

The results of quality review are:

- filled in (in a whole or in part) the LiKoS list,
- the assessment diagram
- quality indicators and
- quality review report

### 3.4.2 Quality review report

Quality review report is based on the elements of a SWOT analysis (Strengths, Weaknesses, Opportunities and Threats), consisting in the identification of strengths and weaknesses.

The permanent elements of the report are:

- a description of carried out activities aiming at the improvement of quality,
- good practices - all projects, universal processes, sub-processes, actions, practical solutions or methods concerning the realization of the survey which are oriented towards the effective realization of tasks, achievement of intended objectives, efficient use of resources that can be used and put into the practice in other surveys.
- Weaknesses and resulting recommendations.

Weaknesses	Recommendations
Weaknesses - mean deficiencies, "bottlenecks" that should be eliminated. Their identification allows to determine the improvement actions (recommendations).	The recommendations - are the opinions formed by the team. They must be clear, objective (impartial) and precise so that they could be implemented. They should be listed and grouped by topic. Recommendations should also have time frame for their implementation specified.

- The plan of improvement actions which includes: the way and date of the recommendation implementation and the responsible person
- Comments.

After the quality review - a quality review report, together with a completed checklist – LiKoS (the Polish version of DESAP), quality diagram and quality indicators will be forwarded to the management. Authors and coordinators of surveys are obliged to implement the recommendations from the report, whereas the quality coordinators are responsible for monitoring the implementation of the recommendations.

It should be emphasized that the main and the expected outcome of quality reviews is to:

- Implement improvement actions - monitored by the coordinators,
- Disseminate good practices - present achievements, their authors and methods of implementation, examples of their applications as well as benefits resulted from the planned change or modification.

## A DIAGRAM OF THE QUALITY REVIEW PROCESS



source: own study

## 4. Trade-offs between Output Quality Components – and users' needs

The implementation of the mission and vision of official statistics is related to the on-going analysis of users' feedback on published data and their impact on changes in statistical surveys. The official statistics service has a problem – in what way the change of assumptions - the starting conditions of the survey - being a response to the user's needs, such as a change (increase) in the level of detail, frequency and timeliness of data, etc. will affect the quality of statistical output.

Thus, before adapting statistics to the user's needs, apart from the cost analysis, there also should be made a synthetic analysis of trade-offs between quality components taking into consideration "difficult choice areas" where the improvement of one element deteriorate another. Among the many relations there should be mentioned and considered the most important trade-offs between:

- Trade-off between Accuracy and Timeliness - this is probably the most frequently occurring and important of the trade-offs. Improvement in timeliness can be obtained by reducing collection and processing time, in particular by terminating collection earlier, compiling outputs based on a smaller number of responses and/or by reducing the amount of editing. However, this reduces accuracy for example, by increasing the number of non-response.

A compromise situation may be taken by publishing an early set of estimates and then revised and final data. Although the primary estimates are not completely accurate, they are normally more accurate than figures in earlier outputs. In this case, the improvement of timeliness can be achieved at the expense of precision.

- Trade-off between Relevance and Accuracy – One way to improve relevance may be to provide additional breakdowns (increasing the detail of presented data) for example of national totals by geographic region or by economic activity and the like. If the sample is redesigned to support such breakdowns and the overall sample size stays the same, then the sampling errors of the national totals will likely increase - In other words, accuracy will be adversely affected by relevance. The same happens in case of increasing the number of variables. The amount of time available for editing the individual data cells is reduced and the potential for measurement errors increased, again adversely affecting accuracy. Conversely, reducing the number of variables and / or the level of detail, may increase accuracy, but to the detriment of relevance.
- Trade-off between Relevance and Timeliness – Timeliness can be improved by reducing the number of data elements collected and processed and/or by replacing some of those that are more difficult to collect or process by ones that are easier – but it can have negative impact on relevance. On the other hand the improvement the data relevance (the increase of number of data, their detail), can result in a deterioration of their timeliness.
- Trade-off between Relevance and Comparability over Time - The improvement of relevance, in response to user requirements, for example, by changes in the definition of variable and classifications, can cause lack of access to the data series for the studied periods, causing deterioration of comparability over time and across region. On the other hand, the desire to maintain comparability over time may inhibit changes in definitions

and classifications, necessary in order to improve the relevance of the data. Trade-off between Comparability across Region and Comparability over Time - In a similar way, a desire to have greater comparability across the region may cause changes that reduce the comparability over time.

- Trade-off between Relevance and Coherence - Improvements in relevance, by changes in the definition of variable and classifications, in response to user requirements, may reduce the coherence of its outputs. On the other hand, striving for coherence between the outputs from two statistical processes may inhibit the changes needed to increase their relevance for users.

## 5. Summary

The quality assessment of statistical surveys is a comprehensive undertaking requiring involvement of all statisticians of official statistics and it treats conducted statistical surveys as a whole. It is also the implementation of the 4<sup>th</sup> principle: “Quality Commitment” of the European Statistics Code of Practice.

The presented tools are directed towards the identification of the state and condition of surveys and the recognition of factors positively or negatively influencing them. They enable to specify appearing quality **problems**, proposed improvement actions and methods of their realization. Drawn conclusions will constitute main guidelines and trends of quality work in official statistics. The analysis of these records will allow to:

- identify problems and arrange them in a hierarchy (considering the repetitiveness of problems or their quality weight),
- indicate trends of modernization or improvements in statistical surveys processes,
- prioritize planned actions (including quality reviews) and
- optimize work and resources connected with costs and respondents burden reduction.

Similarly, the cooperation, skill-sharing, transfer of knowledge and making results of quality analyses available to everybody forms the base for introducing improvements of the survey quality in the entire system of public statistics. However, all the time we should be aware and remember that the improvement of quality is not a one-time spectacular undertaking, but a systematic and long-term process.