

Quality Reporting At SORS – Experiences and Future Perspectives

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1. Introduction

Assessment of the quality of official statistics experienced rapid and significant development in the recent decades. If the quality of the statistical products was firstly observed mainly just through the criterion of the accuracy of the estimates, then gradually the broader view to the quality was accepted. Following the developments in the general area of quality assessment, the quality of the product began to be considered thorough the concept of its fitness for use. Taking into account such a starting point, quality of the statistical products has to be evaluated through the multi-dimensional approach, where the accuracy of the results is just one of the observed dimensions. If the quality of the product consists of several dimensions, then all these dimensions must regularly be evaluated and the results of this evaluation must be reported to the users in a clear and transparent way.

There are several (slightly) different definitions of the quality dimensions in the official statistics, coming out of the framework of the (slightly) different approaches of the different statistical organizations. In this paper we only consider the quality assessment and reporting in the framework of the European Statistical System (ESS), where the quality is assessed through six quality dimensions¹. The standardization of the quality assessment and reporting in the ESS began in the late 1990s with the joint work of the Eurostat and the member states. Especially important for the development of the standardized quality reporting was the work of two groups: *Working Group on Assessment of Quality in Statistics* (which began its work in 1998) and *Leadership Group (LEG) on Quality* (1999). The work of the groups resulted in several methodological documents; here we point out just two of them: *Standard Quality Report* and *How to Make a Quality Report* (Working Group Assessment of Quality in Statistics 2003). Another important step toward the standardization was also the definition of the set of standard quality indicators, which were defined and methodologically described through the work of the Task Force on Quality Indicators (Lindén in Papageorgiou 2004).

The Statistical Office of the Republic of Slovenia (SORS) started the systematic work in the field of the quality assessment in 2003, following the directions coming out from the above mentioned European activities and methodological documents. At that time the methodological document *Standard Quality Report* was translated into the Slovene language and on the basis of this document we started to prepare the general framework for the quality assessment of our products

¹ Relevance, accuracy, timeliness and punctuality, accessibility and clarity, comparability, coherence (Working Group Assessment of Quality in Statistics 2003)

and services. To accomplish this work, an internal working group was established. The main results of the work of this working group were the template for the Standard Quality Report and the internal list of quality indicators, which were planned to be the important part of the quality reports. The list of quality indicators was defined with the adjustment of the Eurostat's list, where some of the indicators were omitted and some new were added. On the basis of the work done by the working group the first quality reports were prepared in 2004 and 2005. The need for a systematic action plan appeared after these first successful steps towards the implementation of the quality reporting in the office. The initial action plan assumed the preparation of two kinds of reports: the exhaustive *standard quality reports* (would be prepared every five years) and the shorter *annual quality reports* (would be prepared every year). So far the exhaustive standard quality reports for almost 50 statistical domains have been prepared and annual reports are updated yearly.

The preparation of the quality reports is now a common practice at SORS. In the recent years a lot of our employees were included in the process of the quality report preparation. To get the insight into their experience and their opinion about these activities we launched a short survey, where we asked them how much time they devoted to this activity, what are their general experiences in this field and what improvement would they propose for the future. The results of the survey are presented in the first part of the paper. In the second part of the paper we present some plans for our future activities in the field of quality assessment, which are the results of the survey outcomes as well as the results of the needs for the adjustments in the quality assessment due to the significant changes in the implementation of the statistical surveys in the recent years. The later refers mostly to the more and more popular orientation toward the exhaustive use of administrative and other secondary data in the statistical process.

2. Experiences so far

Selection of the domains which were included in the quality reporting was at the beginning not systematic, was mainly done ad-hoc and there was a small number of reports prepared in early years. These first reports were prepared only for the internal use, while in 2006 we started to publicly release our standard quality reports² on the website. Later on, in 2008 also the annual quality reports started to be regularly published on the website, available also in English³. Along with the public dissemination of the reports the need for more formalized and standardized procedure for selection and preparation appeared.

In order to set priorities which domains will first undertake the exercise of the preparation of reports, the action plan for the preparation and coordination of reports was prepared. The priorities were set to the domains producing short-term statistics indicators; domains including surveys of households and individuals; domains that produce statistical results that are popular with users; domains that have already prepared the report for the purpose of reporting to Eurostat; later on some additional criteria were included, e.g. domains with surveys that have a lot of reporting units. On this basis every year around 10 domains were chosen to prepare the quality report.

The preparation of the reports nowadays follows the standard procedure. At the beginning of the year the appropriate domains are identified and the relevant subject matter statisticians are invited to the workshop where they get familiar with the structure and the content of the report. The workshop consists of the theoretical presentation of the quality assessment activities and the practical part where an example of the already prepared standard quality report is presented, the standard quality indicators are explained and the relevant sources of information are mentioned. The participants are invited to ask questions and thus already solve some issues regarding their own domain. The number of participants in each workshop is intentionally kept low in order to allow

² Standard quality reports (only in Slovene) http://www.stat.si/metodologija_porocila-standardna.asp

³ Annual quality reports (in English) http://www.stat.si/eng/metodologija_porocila-kakovost.asp

enough time for discussion. At the end also the organizational aspects of preparation are presented and the deadlines are set. During the preparation of the reports further assistance is provided by the coordinators.

A couple of years after setting up the system, the need to evaluate it and gain feedback from the involved persons appeared. Therefore a small-scale survey was conducted with the purpose to estimate the burden imposed on the subject matter statisticians and to get their general feedback. The timing of the survey was set before the revision of the already existing standard quality reports will take place (every five years) and along with some other development activities.

The survey took place in December 2009; the questionnaires were sent out by e-mail to those subject matter statisticians that already prepared one type of reports. From around 40 standard quality reports prepared by that time, we obtained answers for 32 domains.

- The results of the survey showed that the burden imposed due to the preparation of quality reports is high, but varies a lot among the employees. Respondents reported from 8 to 200 hours spent on preparing standard quality reports. The maximum was an outlier (the estimation was twice as high as the next highest number) and that is why we did not include it in further calculations. The average time spent was 46 hours, where the most estimates reported from respondents were between 30 and 45 hours. The variation can be explained with the size of the domains, experiences of the subject matter statisticians and in some cases with the fact that several employees participated in the preparation. In such cases we obtained the answer only from one (main) person involved and to overcome the last problem we asked an additional question to estimate how much of the report respondents prepared themselves (estimates were between 50% and 100%). Using this information we calculated weighted time needed to prepare the standard quality report being 57 hours.
- We measured also burden due to the preparation of annual quality reports. Due to the fact that they are much shorter and most of the time only quality indicators are updated, we expected to get much lower numbers. The expectation was confirmed, but the variation was still high. The employees estimated that they needed from 1 to 50 hours to prepare annual quality reports. The average time spent was 17 hours, where most estimates were between 10 and 20 hours.
- For 11 out of 32 domains, the obligation to send the quality report also to Eurostat was reported. For these surveys, respondents had to evaluate to what extent the report that is prescribed to be transmitted to Eurostat is in line with SORS's standard quality report. The obtained answers indicated great discrepancy in this field. The range of values was everything from less than 10% up to 100%, average being around 50%. For more than half of the domains in question the compatibility of both reports was over 50%; however, only for one domain full compatibility was reported – the reason was that Eurostat does not prescribe the format of the report for the domain in question and thus the our standard quality report was sent. On the other hand, we had a bit less than half of the domains in question where it was reported that less than 35% of the content was comparable in both reports. This result should be a matter of concern, since it means a lot of double work for subject matter statisticians.
- Next question was about the calculation of quality indicators for the preparation of the quality report. The results showed a lot of space for improvement in this field. Only for around one quarter of the domains in question, the quality indicators were calculated automatically in the process; for others they were calculated on demand for the preparation of the report. It was encouraging to find out that after the preparation of quality reports for some domains it was reported that they included the calculation in their regular process.
- In order to obtain the views from the employees, we asked two open-ended questions. Employees complained that the reports were too comprehensive and thus caused a lot of additional burden when they had to prepare them along with the regular tasks. Some

problems were reported also due to the standard template, which was in the first place aimed for the domains with classical surveys (the problems of fitting domains using administrative data or calculating price indices were mentioned). Further on respondents complained that the calculation of the costs for each domain should be done on the general office level and they would just take over the data. The unnecessary burden was reported from those who had to prepare Eurostat's quality report and SORS's standard report (in their opinion the overlap of the content should further tried to be maximized).

- On the other hand, the respondents said that the prepared methodological guidance and the template helped them a lot during the preparation. The workshop was mentioned as an example of a good practice that should be implemented in some other relevant cases in the office. Respondents said that the approach we have chosen to prepare the reports is simple and systematic. Regarding their own benefits that they gained from preparation, it is encouraging to see that they declared that the preparation has brought them to think about their own work in a new way. The quality report forced them to more systematically think about the quality of their work and to make a deeper insight into the data they are preparing. Also many subtitles in the template which demand the description of the possible improvement areas made them think about possible improvements, which are in the stress of everyday routine, too many times ignored.

3. Expanding the area of quality reporting

When we started the regular production of the quality reports, our main target was the classical surveys, meaning the surveys where the data are still gathered primarily for statistical purposes, using some kind of survey questionnaires. Since the use of the administrative sources has a long history and is very popular at SORS, we were then soon faced with the surveys which at least partly use administrative data as the direct data source. In these cases the need for the adjustment of some of the approaches, which were obviously tailored for the classical surveys, was pointed out. Therefore one of the main goals of our revision of the quality reporting guidelines is to adjust these approaches, so that they will fit better to the wider definition of the statistical survey. In the process of the revision we will firstly develop the adjusted standard quality report for the surveys which use administrative data and then in the second phase also the standard quality report for the registers and large administrative databases, which are used by several surveys, will be defined.

When considering the quality assessment in the surveys where administrative sources are used, the following important features should be taken into account:

- The data were not collected for the statistical purposes. Therefore the suitability of such data for the purposes of the statistical surveys must thoroughly and systematically be studied. The relevance dimension becomes a crucial part of the assessment in such cases. When assessing the relevance of the used data source, the different aspects must be studied and reported, including: the coherence of the reference period of the data source with the target period of the survey; accordance of the statistical unit used in the data source with the target statistical unit; accordance of the population targeted in the administrative data source with the target population of the survey; coherence of the methodological definitions of the variables taken from the administrative source with the methodological definitions employed in the design of the statistical survey.
- The administrative data are many times determined by the legal world. This means that the administrative data tend to describe the administrative world, the world as it is "de iure", rather than as it is in reality. The discrepancy between the administrative world as described by the administrative data and the "real world" targeted by the statistical survey is hence one of the crucial points when quality of the statistics based on the administrative data is

considered. All such eventual sources of the distortions of the disseminated results should transparently be described in the quality report, if possible supplemented with the quantitative assessment.

- The data collection process of the administrative sources is dislocated from the regular statistical process, which makes the assessment of the measurement errors much more demanding. It is too often wrongly assumed that the administrative data are free of errors or that these errors could be neglected. The truth is that each set of data uses some kind of the collection process, which inevitably produces different kinds of measurement errors. Even if the direct measurement of the measurement errors is not possible, at least some indirect indications of the quality of the input data should be given in the quality report. Usually such indirect indicators (or even direct quality indicators) can only be provided from the authority in charge of the administrative data collection; therefore close cooperation between this authority and the statistical organization is of crucial importance.

As mentioned, SORS defined its own list of standard quality indicators which should be calculated through the statistical process and included in our quality reports. In parallel with the revision of our templates for quality reporting, the list of quality indicators is also being revised. For the cases of administrative or combined data sources some new indicators will be added, while the methodology of some “old” indicators is proposed to be adjusted for the usage in such surveys. Here we provide just two examples of the newly added indicators:

- *Accordance of the reference dates.* The value of the indicator is defined as the difference (in days) between the reference period of the survey and the reference period of the variable in the administrative data source. The indicator should be calculated for the key variables, obtained from the administrative data source. If the value of the variable is obtained from several different sources, the value of the indicator should be calculated for each data source.
- *Rate of coherence of different data sources.* The indicator should be calculated in the cases when the data for the particular variable are obtained by using several different sources and the data for at least part of the observational units are available in all the used sources. The indicator should be calculated according to the formula:

$$I = \frac{1}{k} \sum_{j=1}^K \left(\frac{1}{m} \sum_{i=1}^m \frac{|y_i^0 - y_i^k|}{y_i^k} \right),$$

where we have $k + 1$ data sources, m units with the values in all data sets, $\{y_1^0, y_2^0, \dots, y_m^0\}$ is the set of values in the data source of the highest priority and the $\{y_1^k, y_2^k, \dots, y_m^k\}$ the set of values in the supplementary data source.

Registers (administrative or statistical) are usually used for the purposes of the several different surveys. This is also true for some other administrative data sources which contain information that could be used in different surveys. The quality of these data sources should also be assessed, separately from their specific usage in the particular surveys. Such assessment would again require a completely different approach, with adjusted definition of the quality dimensions. Since many quality aspects of these large datasets (for which the constitution and the maintenance largely depend on the administrative source) strongly depend on the activities of the administrative authorities, the preparation of such quality reports would inevitably require joint work of the statistical organization and the administration authority. At SORS we plan to prepare the methodological framework for this area in 2011, while the specific quality reports for our main registers are planned to be prepared in 2012.

4. Future plans

As we pointed out in section 2, the results of the survey confirmed that the burden imposed to the employees is quite high. We expect that the burden will eventually decrease since for the domains that have already prepared standard quality reports only a thorough revision of the report will be needed every fifth year. On the other hand, the burden will decrease also because over the years the employees will get more familiar with quality reporting standards – due to the regular trainings provided in the office and also because of further demands for quality reporting from Eurostat.

The analysis of the results initiated some changes that will facilitate the preparation of the quality reports. Further work on the quality indicators database (see below) will improve the availability of the indicators that will be calculated in the statistical process itself and not only on demand. The improvement action is taking place regarding the systematic evaluation of the cost of each survey, which will also be available to the employees. Further improvements of compliance with the Eurostat demands for quality reporting for each domain are hoped to be achieved as soon as possible and SORS will continue with the intensive work in that direction. Along with the development of the new template for the administrative data, also the updates to the original template for classical surveys will take place and some improvements suggested in the new *ESS Handbook for Quality Reports* (Eurostat 2009) will be taken into account.

In early 2010 the overall action plan was prepared to identify all the domains that are still due to prepare the quality reports. In total around 100 domains were identified, around half of them have already been included in the quality reporting. The plan foresees that around 50 new standard quality reports will be prepared in the next 2-3 years and the annual reports for all already prepared ones will be regularly updated. Some problems appear with the translation of the annual quality reports due to the cut costs; nevertheless, the annual reports will be further on available in both languages, but with reasonable delay in English.

Improvements in the availability of the quality reports are planned to take place during 2010. At the moment the reports are published on the website in the special corner under the heading Methodologies, but there is a missing link to the released data. In line with the principle “all in one place”, the dissemination of the quality reports will be adjusted and the relevant reports will be shown at the end of the data release, along with other methodological explanations. With this improvement the users will have easier access to the reports, even though we do not expect them to become popular reading. We are aware that the reports are a demanding part of documentation that is mostly appropriate for most experienced and highly motivated users.

One of the key activities planned for the near future is the completion of the database of quality indicators. The construction of the database of quality indicators has in fact a long history at SORS (Zaletel and Seljak 2004), and its very beginnings go back to 2003. At that time the methodological definition of the content of the database was determined and also the prototype of the database was built. However, due to the low priority of this activity in the following years and also due to the lack of the IT human resources, the full implementation, the planned functionalities of the database and its inclusion into the regular statistical process still have not been accomplished.

In its final realization the main role of such a database would be to store all the quantitative quality information for different surveys and for different reference periods in one place. This would enable quick and efficient comparison analyses which would help us to get a more general view over the level of quality in different domains and help us to detect the critical areas where some improvement actions should be carried out. Also such a database would enable easy production of the summary reports where the main quality information through different domains

would be presented. We plan to produce and disseminate such a report once a year. For the following years we also plan to build the application which would produce the annual quality reports (almost) automatically out of the information in the database. This would mean that the whole process should be designed in a way that all the quality information gathered through the process would be firstly inserted into the database and then the quality report would be produced solely on the basis of the data stored in the database.

5. Conclusions

Following the work carried out in the European Statistical System, SORS began to develop its own quality framework in 2003 when the special working group set up the methodological foundations for quality assessment and quality reporting. While in the first years the quality reports were prepared for internal use only, in 2006 the first publicly available reports appeared on our website and from then on the production and dissemination of the quality reports has been regular practice at SORS. Two types of the reports are available: standard quality reports that are prepared every five years and annual quality reports that are prepared every year.

The survey that was carried out among the persons who have so far been included in the preparation of the reports, provided us some feedback experiences which will help us in planning and executing the future activities. Most of the persons found the work caused by the quality report preparation quite burdensome, although the estimated time used for the completion of the report varied significantly among the different domains. In the domains where also the Eurostat quality report is demanded, the problem of double work was pointed out, which clearly indicates that the further work on the harmonization of the concepts and approaches is needed. Besides the troublesome aspects of the quality reports preparation, also some positive consequences were pointed out in the survey. Thus the respondents assessed the organization and execution of the whole process as a good practice that eased their work significantly. Some of them also pointed out that the process of the quality report preparation led to the more systematic consideration about the quality of their work and enabled them a deeper insight into the data they are preparing.

One of the “complains” that was provided in the survey was also referring to the inappropriateness of the existing quality report template for some types of surveys, especially those which are based mostly on the administrative sources. Therefore we started with the preparation of the adopted template for such surveys, along with the adoption of the list of standard quality indicators. Theoretical work in this area has in fact already been completed; we only have to implement these adopted approaches to the “real survey cases”. One of the very important tasks planned for the near future is the completion of our database of quality indicators and its full implementation in the statistical process. The foreseen functionalities of this database would enable better and more efficient analyses of the degree of the obtained quality across domains and through time, enable access to the quality information to the wider set of users and would essentially ease the preparation of the (especially annual) quality reports.

Further challenges remain regarding the dissemination of the quality information. So far most of the resources were devoted to foster the systematic collection of the information about the quality of the data within the office. After the introduction of the quality reporting system focus will gradually have to change. First step will be to improve the strategy of the dissemination of the existent quality reports on the website and to inform the relevant user groups (e.g. participants of the advisory committees, researchers) more intensively about the existence of quality reports. On the other hand the analysis should be performed what kind of information about the quality is really relevant for our users. We expect that some less demanding summaries or key issues on quality should be prepared in future, which would be easy to understand and to access for every single user.

Experiences show that the detailed methodological documentation, prepared template for filling in the quality reports, organization of the workshops and the coordination function for the preparation of reports on one hand facilitate the preparation of quality reports for subject matter statisticians and on the other hand assure standardized form and content of the report. These good practices will be further on taken into account also with broadening the areas covered in the quality reporting system.

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