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Systematic quality work in Statistics Norway

During the last decade, both international organisations and National Statistical Institutes (NSI) worldwide have focused on the importance of quality work. A systematic approach to quality has been adopted in many institutes, among them Statistics Norway. This has been based on some basic principles of quality management.

This paper briefly describes the quality principles followed by Statistics Norway. A description of measures, results and some of the plans for future quality work in Statistics Norway follows.

Some of the measures and results in our quality work have already been assessed by Eurostat questionnaires following up the Leadership Group (LEG) on quality recommendations (Eurostat 2005a). The European Statistics Code of Practice (Eurostat 2005b) constitutes a framework which corresponds well with the quality principles adopted by Statistics Norway.

Quality principles

The principles of quality management adopted in statistics in most European countries and in Statistics Norway are inspired by Total Quality Management (TQM). Some NSIs use models that emphasise the link between strategy and quality such as the European Foundation for Quality Management (EFQM). Balanced Scorecard (BSC) has also been introduced in several NSIs.

Since models vary between institutions, and to some extent also over time (sometimes models change but the main content prevails), Statistics Norway and several other NSIs have adopted the neutral concept "systematic quality work". This will be used in the paper denoting the core content of the different quality management models.

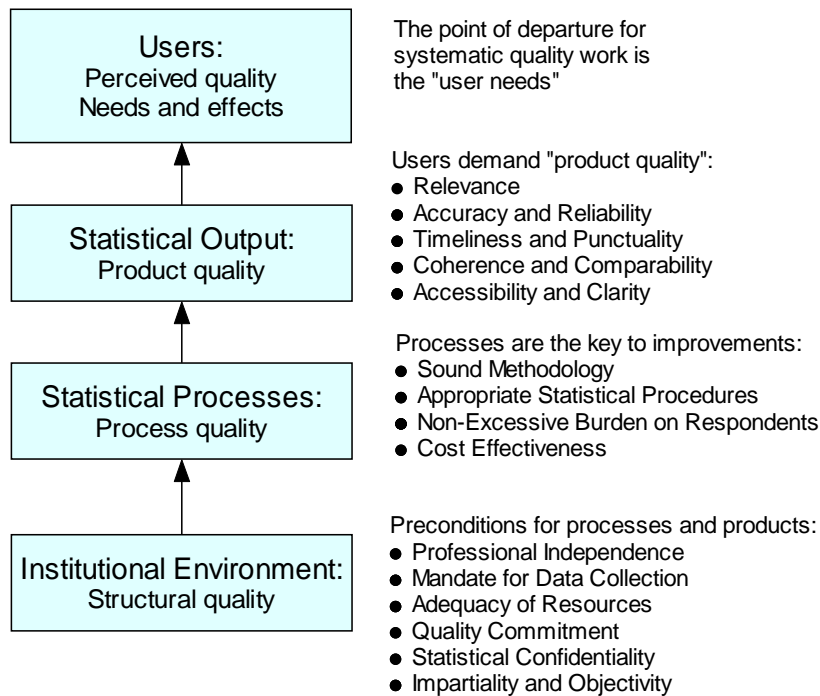
Systematic quality work is characterized by the following principles:

- User orientation: User needs is the point of departure for defining quality in statistics
- Process orientation: Improvements require control of and changes in processes
- Documentation and data: Changes must be based on data about processes
- Participation by all: Project and teamwork is important
- Management and continuity

Documentation of user needs, products and processes is a requirement for assuring and improving quality.

Figure 1 illustrates the link between users, products, processes and conditions that are preconditions for the processes and work in a NSI. In the new European Code of Practice the preconditions correspond to "Institutional Environment". The headings used in the Code of Practice are given as bullet points in the figure.

Figure 1. Model for Total Quality and Code of Practice



The components of product quality for statistics used in Statistics Norway are identical to those recommended by Eurostat (2003), and constitute the part of the European Statistics Code of Practice related to statistical output (see figure 1).

Costs are related to the processes, and must always be taken into account when considering quality. There is a balance between product quality and costs. The response burden is also an issue since it is important for the data providers, who could be regarded as users in this context. The response burden also contributes to the costs of statistics for society.

Systematic quality work comprises tools for the creation of ideas, measuring and documentation of user needs, product and process quality. Statistical methods are used for controlling variation and distinguish natural variation from trends and special causes.

Quality work in Statistics Norway

The purpose of systematic quality work is to improve the quality of statistics and analyses according to user needs, and make production more efficient. This will ensure that trust in the institution is maintained. The work shall contribute to participation and satisfaction for all employees in Statistics Norway.

Existing documentation in English

Systematic quality work was initiated in Statistics Norway 2000. Sæbø, Byfuglien and Johannessen (2003) describe the quality work carried out in Statistics Norway during the first few years with a systematic approach, with emphasis on user orientation, performance indicators, research as quality control and training. An example of a systematic approach to quality assurance in the work with the consumer price index is also discussed.

An updated description is given by Sæbø (2006), who discusses the difference between theory and practice in quality work and quality management in the European Statistical System (ESS) and in Statistics Norway. While it is relatively easy to follow general principles such as independence and integrity in the production of statistics, the practical implementation of systematic quality work and quality management to improve all products and processes, is a greater challenge.

Strategy and quality

Statistics Norway's strategies emphasise quality. Strategy 2007 contains five primary headings, of which one is *Quality in every process*. This comprises the following issues:

- Statistics based on best methods
- Systematic quality assurance of processes and products
- The right expertise
- Prepared for change

A separate strategy has been developed for human resource development.

Measures

Important measures in Statistics Norway's quality work have been:

- Information and training
- Management by performance indicators
- Risk management
- User dialogue, user surveys and service declaration
- Project and teamwork
- "Current best methods" (CBMs) and good practices (i.e. handbooks)
- Staff surveys
- Work on documentation and metadata in general
- International cooperation and advice

These measures fit well into the recommendations of the Eurostat quality LEG, the CoP and our strategies.

Information and training have been central measures. Statistics Norway has trained so called "quality pilots" in several rounds. We now have about 40 active pilots who participate in projects as advisors and coaches in quality and process work. The facilitators do not usually carry out normal project work, but participate in project meetings and teach the team members about quality principles and give advice ensuring that these are followed. For quality improvement projects, techniques for mapping the processes involved are important, and pilots are trained in such techniques and in identifying and measuring critical process parameters. Asking questions like: Who are the users? What do you do, how, why and by whom, is part of their role. Normally, the pilot comes from another area or division in the organisation than the project manager.

Quality work has been included in other training schemes such as training for all new employees and a course in project and teamwork. In total, about 300 new employees and 150 participants in a course for project and team work have been introduced to systematic quality work during the last six years.

Performance indicators are used for monitoring and follow-up by management. Indicators on production, resource usage, quality (e.g. relevance, actuality and timeliness) and staff are also documented in the annual report (Statistics Norway 2007) and reported to the Ministry of Finance. However, we have still not succeeded in the integration of systematic quality management in all planning and follow-up routines. This is partly due to the lack of good and measurable indicators on a more detailed level than our existing performance indicators. However, the Department of IT and Data Collection has used Balanced Scorecard (BSC) as a management tool. Examples of internal and more detailed indicators used by this department are the number of user agreements, projects and innovative initiatives.

A formal method for risk management has been established recently. Considerations of risks are linked to main objectives and major projects.

The user dialogue in Statistics Norway comprises contacts, user groups, courses for users and dissemination. User orientation is particularly visible through the development of ssb.no. In earlier days, Statistics Norway's main products were publications designed to satisfy the needs of users within planning and research in particular. But during the last 10 years we have gradually changed our dissemination policy towards meeting the needs of the broader public, as well as targeting more specialised users. This change has been facilitated by the development of new technology, in particular the Internet. Today all official Norwegian statistics are available free of charge on the Internet, and it is an objective to reach the general public directly or via different public media. For this purpose we have actively recruited journalists to work in Statistics Norway.

User surveys have been carried out and a general service declaration is available on ssb.no.

A large number of projects have had quality pilots, ensuring better user dialogue, precise objectives and good teamwork. Quality thinking has been central in several large development projects, and several existing statistics have been evaluated and improved in projects particularly aiming at this. This comprises several projects linked to the national accounts.

However, the improvement projects have with some exceptions not been selected systematically, for example by size. Projects linked to training schemes have been backed by quality pilots and coaching through systematic follow up in accordance with our project handbook. For other projects and in daily routines this has been done only if the project manager or the management in general has asked for it. Systematic audits have not been carried out, except for external evaluation carried out by the International Monetary Fund (IMF) for parts of the economic statistics. There has also been an external evaluation of our research activities, inventories of our national accounts, and we have recently had an international review of our calculations of emissions of greenhouse gases.

Handbooks have been written on important topics such as publishing and visualisation of statistics, statistical methods, editing, user testing, questionnaire construction, system development and project work. One recent report on non-response should be mentioned particularly, since it is based on common quality principles and tools. Thomsen et al. (2006) study total response rates, refusal rates, non contact rates and number of days used for data collection, with the objective to improve quality and efficiency of statistics production.

There is normally a positive correlation between user satisfaction and staff satisfaction. Staff surveys are carried out annually as a basis for measures in this area.

The work on metadata in Statistics Norway follows a strategy with the objective that metadata should be updated in one place and accessible everywhere. In short, the strategy focuses on establishing a conceptual framework, clear roles and responsibilities, and a stepwise development involving integration and linkage of systems. The work on this is well on course. All statistical releases are followed by a description on the Internet of the purpose, production methods and quality. This system is linked to databases on classifications and variables.

International cooperation on quality comprises participation in the former Eurostat LEG on Quality, now Quality Network. We are co-authors on a Eurostat handbook on Data Quality Assessment Methods and Tools (Eurostat 2007).

Quality is one of the items where Statistics Norway advises countries that are developing their statistical systems.

The systematic quality work in Statistics Norway is the responsibility of the management as a whole, but the Department of Management Support has the coordinating responsibility. This department has been established to put more pressure on quality work and facilitate a more systematic approach to measures for improvements in Statistics Norway. Facilitating the use of developed CBMs is also the responsibility of the new department.

There is an advisory quality network headed by the director of this department. An open but internal forum for quality and project work is important for information and exchange of experiences.

Results measured by indicators

Measuring the effect of a quality scheme is always difficult, since we never know what would be done without a systematic approach. However, there is no doubt that this has contributed to better user orientation and a more effective production of statistics in Statistics Norway.

Productivity estimates indicate an increase in productivity of about 1-2 per cent annually, and the statistical products are often extended without any increase in resources used. And in general, the quality of the products, measured as relevance, timeliness and accessibility, is improving. This is documented in our annual report and in our dialogue with the Ministry of Finance. Performance indicators also show an increase in production volumes (e.g. statistical releases and research papers), and we have been able to keep the response burden at a reasonable level.

Statistics Norway has participated in a general user image study carried out by an independent company. The trust in the institution is high, more than 70 per cent of the public have high or very high confidence in the institution.

The number of hits on our website has increased steadily, reaching 42 million in 2006 excluding hits from search engines. (including these the number is 93 million). Several other indicators on use of our statistics (for example the number of references to Statistics Norway in the media) have also developed in a positive direction.

Plans

This year a system for systematic internal audits of the statistics production will be established. Teams with expertise in methods, IT and statistics will evaluate each set of statistics successively. Such audits and improvements have to be based on data, and several projects to provide more systematic and better data on products and processes have started.

An important measure is to develop and implement good or best practices in common solutions involving several departments in Statistics Norway. This year a project aiming at a common system for data editing has been given priority.

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