



Session 1: Quality assurance frameworks for assessing and improving statistical activities carried out in international organisations

Quality Frameworks: Implementation and Impact

Notes by

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1. Introduction

Eurostat is presently leading a Project to promote the use of quality assurance frameworks within international organisations. More specifically the Project objectives are to:

- foster the use of quality approaches by international organisations;
- improve transparency and clarity on the links between the different existing quality approaches, their respective main emphasises and possible inconsistencies;
- streamline quality reporting requirements between producers of statistics;
- harmonise the formats used for informing users on the quality of statistics;
- define a common set of minimum quality requirements for official statistics;
- share information on good practices, guidelines and quality related information.

It was in this context that I was invited to comment on the impact of quality assurance frameworks (hereafter abbreviated *quality frameworks*). The terms of reference were very general:

Some organisations are using quality frameworks others are not. Does it really make a difference? What is important, the existence of a quality framework, support of top management, the quality of the organisation?

And the constraints on content were minimal: *Please consider these as only ideas for a paper*". Given this licence to modify the terms of reference, I made two extensions.

The first extension was to look at quality frameworks in general, not just those belonging to international statistical organisations. (Here, by *international statistical organisation*, I am referring to the statistical arm of an international organisation.) It does not seem sensible to look at quality frameworks belonging to international statistical organisations (ISOs) in isolation from those belonging to national statistical organisations (NSOs).

The second extension was to supplement the basic question put by the session organisers

- What is the impact on quality of quality frameworks?

by adding some preliminary questions:

- What is a "quality framework"?
- Who are the stakeholders in a quality framework?
- What are the typical uses, costs and benefits of a quality framework?

and some supplementary questions:

- which organisations actually have their own quality frameworks (or, more precisely, which organisations make their quality frameworks available though their website);
- to what extent is it desirable and realistic to aim for convergence of quality frameworks.

The paper contains observations on each of these questions based on a brief review of concepts and practices, hopefully raising some interesting points.

2. What is a “quality framework”?

Characteristic Features

What makes a *quality framework* rather than simply a quality practice? What are the characteristics of a quality framework? There is certainly a need to answer the question, at least roughly, in order to decide what impact a quality framework can have. While the definition does not have to be a precise it must be sufficiently to “know one when you see one”.

The distinguishing characteristics of a quality framework seem to be that:

- it provides an umbrella for quality practices;
- it refers to a range of surveys or an entire survey programme rather than a single survey;
- it covers a range of aspects of survey data output or operations, not just a single aspect;
- it involves a template that can be used for quality assessment.

Some examples of quality frameworks according to these characteristics are:

- UN Principles - provide a (very broad) quality framework;
- ESS quality definition and dimensions - part of a quality framework;
- ESS self-assessment checklist (DESAP);
- IMF Data Quality Assessment Framework (DQAF);
- ISO 9000 – evidently this is a quality framework but of a general nature in the sense that it is not specifically geared to a statistical organisation.

There are many examples of quality frameworks designed and used by NSOs, including for example, the Statistics Canada Quality Assurance Framework, and the Statistics Canada Quality Guidelines.

Scope of Quality Framework

A quality framework may aim to cover a range (or all) parts of the process by means of which statistical data are collected, transformed and output. It may refer to the quality of:

- the product (output data);
- the process - the data collection, transformation and dissemination operations;
- the input data;
- the organisation responsible for the process.

The primary distinction is between *process* (operations) oriented quality frameworks and *product* (data output) oriented quality frameworks. For example:

- the ESS quality dimensions refer exclusively to product quality;
- the DESAP self assessment questionnaire is a checklist for process quality overlaid by the ESS data output quality dimensions;
- ESS Code of Practice aims to include both process and product quality;
- the IMF DQAF might appear at first glance to be output data quality oriented but a great deal of it actually refers to organisational and institution quality. It aims at determining or assuring output quality by measuring process quality.

The distinction between process and product quality becomes an important factor, and a limitation, in terms of the aim for “convergence of quality frameworks”.

Dimensions of Data Quality

Implicit or explicit in all quality frameworks, even those that are process oriented, are the notions of the various *dimensions* (components, aspects, elements) of product quality. The sets of dimensions propounded by NSOs, such as Statistics Canada and Statistics Sweden, and embedded in the ESS quality definition, are all essentially along the same lines, including (generically): relevance, accuracy, timeliness, accessibility, interpretability, coherence/comparability. This raises three points.

First, there is no particular reason why this particular list should not be standardised.

Second, the quality dimensions were invented by data producers rather than data users. In principle, they should be defined by the data users. At a minimum they should be validated by reference to data users.

Has there been feedback from users, for example from user feedback surveys, to justify or question the quality dimensions?

Third, quality can never be considered in isolation from cost, or more generally, performance. They are the two sides of the same coin. So far as I am aware, the first extension of the definition of quality from its original focus purely on accuracy was in the late ‘80s by Ron Fecso at USDA NASS, who proposed four quality dimensions – relevance, accuracy, timeliness and cost. Even if *cost*, or more generally, *performance* is not a quality dimension, it is part and parcel of quality assessment. Performance includes not only the cost to the producer of collecting and disseminating statistical data but also the cost to the initial provider, usually referred to as respondent burden. Relationships between the quality and performance aspects are indicated in the following table

Quality	Performance
Effectiveness	Efficiency
Product	Process
“Doing the right thing”	“Doing the thing right”

Quality indicators	Performance indicators
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A quality framework should always acknowledge performance/cost.

Quality Related Mechanisms and Topics

There are various types of quality related tools, of which quality frameworks are one, including:

- quality management strategies/frameworks;
- quality review mechanisms – including self assessment, peer review (internal), peer review (external), and audit;
- quality monitoring/reporting mechanisms – including quality reports, quality indicators - all based on quality related metadata;
- quality labelling/stamping/declarations;
- quality (best practice) sharing.

There are a number of other topics that are closely related to quality frameworks:

- Total quality management – more than just a framework, covering implementation as well as measurement - ISO 9000, EFQM;
- Data and metadata management – quality management is substantially achieved through metadata management and conversely;
- Programme monitoring and evaluation – quality evaluation on a broad scale;
- Programme audit – evaluation against a set of criteria, which could include a quality framework;
- Management - how does *quality management* differ from *management* generally? The answer is “not very much”, except perhaps that, for a NSO or ISO, quality management focuses on core business functions and outputs, i.e., collecting processing and disseminating data, whereas management is rather broader. Aiming to be a learning organisation, for example, may be a goal under either heading.

The boundaries between the various quality related tools and topics are fuzzy - they overlap one another – which makes it impossible to define precisely for example ,the boundary between a quality framework and programme evaluation. This is not an issue, just an observation.

Type of Quality Framework by Owner and Applier

Three main types of quality framework may be distinguished according to owner and applier:

1. *NSO owned and applied* – a quality framework developed by a NSO for its own purposes, i.e., to be applied/completed by the NSO staff - an example is the Statistics Canada quality framework;
2. *ISO owned and applied* – a quality framework developed by an ISO for its own purposes, i.e., to be applied/completed by the ISO staff – an example is the OECD quality framework;
3. *ISO owned and NSO applied* – a quality framework developed by an ISO for application/completion by NSOs – and example is the IMF DQAF.

The *ISO owned NSO applied* type of quality framework imposes a reporting burden on NSOs. *The goal should be to ensure that such frameworks are viewed by NSOs as useful for their own purposes, in which case they are no longer a reporting burden.*

In principle a fourth type is possible, i.e., an *NSO owned and ISO applied* quality framework. Such a framework would be interesting. It might include for example, questions along the line

- What value does the ISO add to the data provided by the NSO?
- Is every data item provided actually used by the ISO?
- What efforts have been made to harmonise the data items with those in other quality frameworks?
- How does the ISO assure the quality of its outputs?

These questions could be summarised and answered by asking whether the ISO has and applies its own quality framework?

3. Who are the stakeholders, what are the costs and benefits?

Stakeholders

There are three main classes of quality framework stakeholder:

- designers – owners of the framework, responsible for ensuring it is well understood, addresses the main issues, and remains up to date;
- organisational units that apply the framework and are the providers of data in accordance with the framework; and
- users of data provided in accordance with the framework, including the data providers themselves.

The roles of these three stakeholder groups must be explicitly taken into account in developing or merging quality frameworks.

Costs and Benefits

The costs and benefits to organisational units depend upon the role(s) they play.

Designing a quality framework brings benefits to the designers themselves. It usually brings together people from a range of disciplines, which is good for communications as well as for identifying and becoming informed about best practices. It is not necessary to begin from scratch. Quality frameworks developed by other agencies can be a starting point and be adapted to the particular local circumstances. The costs are staff costs. The staff with the sort of skills required to lead the design of a quality framework are usually in great demand for other design work too.

The benefits of completing a quality framework template include:

- increased awareness of quality concepts, components and best practices;
- completion of a systematic quality assessment;
- an indication of potential quality problems and improvement options and priorities;
- a possible means for comparisons of the level of quality over time;
- an indication of the need for additional resources and/or training

The costs are staff time.

Building in Quality

The ultimate target of any quality framework is for it to be built into the organisational structure so that the corresponding quality practices and monitoring procedures are an integral part of routine developmental and operational processes. In a well developed and run statistical organisation this may well be the case. Each unit within the organisation will be responsible for managing quality in its particular domain, and one unit likely have responsibility for promoting quality considerations generally, sometimes in direct contrast to performance and efficiency concerns, which will likely receive constant attention as a result of tight budgets.

In the case of a NSO that is not as well developed or in a state of crisis, the quality framework may be of more explicit importance. It can provide a mechanism for both (relatively major) reengineering and (relatively minor) quality improvements

Conclusion

The organisations that can benefit most from a quality framework are those that are not well developed, or are well developed but in a state of crisis. The quality framework can provide a mechanism for reengineering and quality improvement.

4. Which organisations have their own quality framework?

A partial answer to this question is based on a quick (and as yet incomplete) search of the websites of statistical organisations. Those that reference or detail a quality framework of their own certainly have one. Other organisations may have a quality framework but do not publicise it in the sense that it is not readily located via the website headings or by a website key word search using *quality framework*, *quality management*, *quality assurance*, *TQM*.

National

(to follow)

International/Supranational

(to follow)

5. What are the impacts on quality of quality frameworks?

It is easy to list the possible benefits of quality frameworks but to what extent are these realised in practice? This can be answered only by looking at specific cases.

Statistics Canada Quality Guidelines

The first version of the Statistics Canada Quality Guidelines was produced in 1985. There was a major revision in 1998, which included explicit recognition of the quality dimensions, and the most recent revision is 2003.

There has been a considerable demand for the guidelines and many references to them, suggesting they have been a very useful source of ideas concerning best practice.

Statistics Canada Quality Framework

The Quality Assurance Framework, originally drafted in 1997, describes the measures Statistics Canada takes to manage data quality. The framework links these measures to the six quality dimensions, which are used in reporting on data quality by survey managers in their program reports and by the organisation in its annual report to Parliament. The framework is descriptive and intended for reference and training purposes. It does not impose any new policies or practices on programs, but rather situates existing policies or practices within itself.

Evidently the framework has been of great value and is embedded in organisational policies and procedures.

ESS Self-assessment Checklist (DESAP)

The checklist was developed for the ESS by consortium of NSOs led by German FSO. The name DESAP was derived from its origin in the *development of self assessment programme*. It is intended as a tool for survey managers to support them in assessing quality and considering improvement measures.

Based on feedback from 60 surveys in 10 countries during the course of the ESS Quality in Statistics Programme it was found that the checklist:

- provides systematic measure of statistical products and processes;
- involves relatively low implementation cost and staff burden;
- provides a good opportunity to bring members of the survey team together;

- helps in creation of a quality culture;
- guides priority setting and resource allocation within the office;
- is useful in training new staff.

With few exceptions, the 60 survey managers felt that completing the checklist had been very useful. Participants at the Conference may be able to recount additional experiences with the checklist.

OECD Quality Framework

The OECD quality framework was developed by the OECD Statistical Directorate for use throughout the organisation and to answer questions from users concerning data quality. It aims at setting standards for statistical data production across OECD departments.

The potential benefits of a common quality framework are considerable. First, it provides a systematic mechanism for ongoing identification and resolution of quality problems; second, it gives greatly increased transparency to the processes used by the OECD to assure quality; and third, it reinforces the political role of the OECD in the context of an information society. The framework focuses on improving the quality of data collected, compiled and disseminated by the OECD through an improvement of the organisation's own processes and management. There may also be a positive spillover effect on the quality of data compiled at national level.

For the benefits actually realised – ask Enrico!

IMF Data Quality Assessment Framework

The DQAF is used for comprehensive assessments of countries' data quality, covers institutional environments, statistical processes, and characteristics of the statistical products. The generic (three level) version serves as an umbrella for seven dataset-specific frameworks. The current July 2003 version is a refinement of the preceding July 2001 version reflecting experience and international statistical developments, particularly updated international methodological standards.

The DQAF has become a de facto quality standard.

Australian Bureau of Statistics Statistical Clearing House

The Statistical Clearing House (SCH) is run by the ABS. It was set up in 1996 in response to recommendations from the Small Business Task Force, which reported that year. One of the primary focuses of the Task Force was to reduce the paper burden on small businesses. The ABS took the opportunity to introduce survey quality checks. All Federal Government surveys involving 50 or more business respondents must be approved by the SCH. This applies to surveys conducted by all Federal Government agencies including the ABS. Ongoing surveys are approved periodically. The approval process involves completion of a SCH template that is in effect a quality framework. The results are published on the Internet. They are mapped to six dimensions of quality.

The SCH has most impact on surveys conducted by other agencies, where statistical expertise is much less. It focuses on a mentoring approach, helping the survey managers. In recent years managers of surveys not actually required to seek approval from the SCH are nevertheless approaching the SCH for advice.

In the case of surveys conducted by the ABS, the SCH has less impact. The reason that the ABS has a set of quality assurance procedures embedded in its development and operational processes and the SCH evaluation is essentially simply a reminder of these. Nevertheless, SCH still has some impact. SCH approval of an ongoing survey may be conditional upon certain improvements, which would otherwise be put off, being made in a specific timeframe. It sometimes enables survey managers to justify and secure the resources needed to make such improvements.

The SCH is described in detail in paper presented at Q2006. More information about the SCH is on the website at www.sch.abs.gov.au and from Ms Jo Edwards, ABS.

Conclusion

It is evident from this relatively small sample that quality frameworks serve a range of useful purposes. Every agency should make use of them.

A quality framework does not have to be developed from scratch. There are plenty of frameworks around that can be used without change or readily adapted to local circumstances.

The process of developing or adapting a quality framework itself has benefits.

6. To what extent can quality frameworks converge?

One problem is that not all organisations have recognised the benefits of a quality framework. A second problem is not a lack of available quality frameworks but rather a surplus. The ongoing ESS Project aims to promote the use and **convergence** of international quality frameworks. Here convergence is taken to mean bringing the frameworks into alignment as regards concepts and standardising their content, with the ultimate goal being replacement of separate frameworks by a single one. Evidently there are benefits such as:

- reduction in the burden on NSOs in applying ISO designed quality frameworks;
- making it easier for the ultimate users to understand the data by standardising the types of explanation given concerning their sources and quality.

In the more general context of both NSO and ISO quality frameworks, the benefits of moving towards a smaller number of quality frameworks include:

- standardising terminology for the benefit of all concerned - producers and users;
- promoting current best practice;
- reducing reporting burden.

However, limitations on standardisation are set by the differing objectives, scope and users of the various frameworks. For example:

- as previously noted, the IMF DQAF is actually process oriented, so can never be fully aligned with the ESS definition and dimensions of quality, which are entirely product oriented;
- The ESS DESAP self-assessment checklist cannot be too long or nobody would ever use it, so it cannot have the complexity of a standard ESS quality report.

In addition, standardisation should not lead to stultification of ideas. Circumstances are continually changing and new ideas must be allowed to surface.

In summary, whilst convergence of quality frameworks is a laudable goal, the limitations on the extent to which it can be achieved should be recognised.

The output data quality dimensions should be standardised, recognising that they refer entirely to product quality and not to process quality.

References

Australian Federal Government Statistical Clearing House

<http://www.sch.abs.gov.au/>

IMF Data Quality Reference Site:

<http://dsbb.imf.org/Applications/web/dqrs/dqrsintroduction/>

OECD Quality Framework for OECD Statistical Activities

http://www.oecd.org/document/43/0,2340,en_2825_293564_21571947_1_1_1_1,00.html

Statistics Canada's Quality Assurance Framework

<http://www.statcan.ca/bsolc/english/bsolc?catno=12-586-X&CHROPG=1>

Statistics Canada's Quality Guidelines

<http://www.statcan.ca/bsolc/english/bsolc?catno=12-539-X&CHROPG=1>



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and some supplementary questions:

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Building in Quality

The ultimate target of any quality framework is for it to be built into the organisational structure so that the corresponding quality practices and monitoring procedures are an integral part of routine developmental and operational processes. In a well developed and run statistical organisation this may well be the case. Each unit within the organisation will be responsible for managing quality in its particular domain, and one unit likely have responsibility for promoting quality considerations generally, sometimes in direct contrast to performance and efficiency concerns, which will likely receive constant attention as a result of tight budgets.

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4. Which organisations have their own quality framework?

A partial answer to this question is based on a quick (and as yet incomplete) search of the websites of statistical organisations. Those that reference or detail a quality framework of their own certainly have one. Other organisations may have a quality framework but do not publicise it in the sense that it is not readily located via the website headings or by a website key word search using *quality framework*, *quality management*, *quality assurance*, *TQM*.

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5. What are the impacts on quality of quality frameworks?

It is easy to list the possible benefits of quality frameworks but to what extent are these realised in practice? This can be answered only by looking at specific cases.

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The first version of the Statistics Canada Quality Guidelines was produced in 1985. There was a major revision in 1998, which included explicit recognition of the quality dimensions, and the most recent revision is 2003.

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- guides priority setting and resource allocation within the office;
- is useful in training new staff.

With few exceptions, the 60 survey managers felt that completing the checklist had been very useful. Participants at the Conference may be able to recount additional experiences with the checklist.

OECD Quality Framework

The OECD quality framework was developed by the OECD Statistical Directorate for use throughout the organisation and to answer questions from users concerning data quality. It aims at setting standards for statistical data production across OECD departments.

The potential benefits of a common quality framework are considerable. First, it provides a systematic mechanism for ongoing identification and resolution of quality problems; second, it gives greatly increased transparency to the processes used by the OECD to assure quality; and third, it reinforces the political role of the OECD in the context of an information society. The framework focuses on improving the quality of data collected, compiled and disseminated by the OECD through an improvement of the organisation's own processes and management. There may also be a positive spillover effect on the quality of data compiled at national level.

For the benefits actually realised – ask Enrico!

IMF Data Quality Assessment Framework

The DQAF is used for comprehensive assessments of countries' data quality, covers institutional environments, statistical processes, and characteristics of the statistical products. The generic (three level) version serves as an umbrella for seven dataset-specific frameworks. The current July 2003 version is a refinement of the preceding July 2001 version reflecting experience and international statistical developments, particularly updated international methodological standards.

The DQAF has become a de facto quality standard.

Australian Bureau of Statistics Statistical Clearing House

The Statistical Clearing House (SCH) is run by the ABS. It was set up in 1996 in response to recommendations from the Small Business Task Force, which reported that year. One of the primary focuses of the Task Force was to reduce the paper burden on small businesses. The ABS took the opportunity to introduce survey quality checks. All Federal Government surveys involving 50 or more business respondents must be approved by the SCH. This applies to surveys conducted by all Federal Government agencies including the ABS. Ongoing surveys are approved periodically. The approval process involves completion of a SCH template that is in effect a quality framework. The results are published on the Internet. They are mapped to six dimensions of quality.

The SCH has most impact on surveys conducted by other agencies, where statistical expertise is much less. It focuses on a mentoring approach, helping the survey managers. In recent years managers of surveys not actually required to seek approval from the SCH are nevertheless approaching the SCH for advice.

In the case of surveys conducted by the ABS, the SCH has less impact. The reason that the ABS has a set of quality assurance procedures embedded in its development and operational processes and the SCH evaluation is essentially simply a reminder of these. Nevertheless, SCH still has some impact. SCH approval of an ongoing survey may be conditional upon certain improvements, which would otherwise be put off, being made in a specific timeframe. It sometimes enables survey managers to justify and secure the resources needed to make such improvements.

The SCH is described in detail in paper presented at Q2006. More information about the SCH is on the website at www.sch.abs.gov.au and from Ms Jo Edwards, ABS.

Conclusion

It is evident from this relatively small sample that quality frameworks serve a range of useful purposes. Every agency should make use of them.

A quality framework does not have to be developed from scratch. There are plenty of frameworks around that can be used without change or readily adapted to local circumstances.

The process of developing or adapting a quality framework itself has benefits.

6. To what extent can quality frameworks converge?

One problem is that not all organisations have recognised the benefits of a quality framework. A second problem is not a lack of available quality frameworks but rather a surplus. The ongoing ESS Project aims to promote the use and **convergence** of international quality frameworks. Here convergence is taken to mean bringing the frameworks into alignment as regards concepts and standardising their content, with the ultimate goal being replacement of separate frameworks by a single one. Evidently there are benefits such as:

- reduction in the burden on NSOs in applying ISO designed quality frameworks;
- making it easier for the ultimate users to understand the data by standardising the types of explanation given concerning their sources and quality.

In the more general context of both NSO and ISO quality frameworks, the benefits of moving towards a smaller number of quality frameworks include:

- standardising terminology for the benefit of all concerned - producers and users;
- promoting current best practice;
- reducing reporting burden.

However, limitations on standardisation are set by the differing objectives, scope and users of the various frameworks. For example:

- as previously noted, the IMF DQAF is actually process oriented, so can never be fully aligned with the ESS definition and dimensions of quality, which are entirely product oriented;
- The ESS DESAP self-assessment checklist cannot be too long or nobody would ever use it, so it cannot have the complexity of a standard ESS quality report.

In addition, standardisation should not lead to stultification of ideas. Circumstances are continually changing and new ideas must be allowed to surface.

In summary, whilst convergence of quality frameworks is a laudable goal, the limitations on the extent to which it can be achieved should be recognised.

The output data quality dimensions should be standardised, recognising that they refer entirely to product quality and not to process quality.

References

Australian Federal Government Statistical Clearing House

<http://www.sch.abs.gov.au/>

IMF Data Quality Reference Site:

<http://dsbb.imf.org/Applications/web/dqrs/dqrsintroduction/>

OECD Quality Framework for OECD Statistical Activities

http://www.oecd.org/document/43/0,2340,en_2825_293564_21571947_1_1_1_1,00.html

Statistics Canada's Quality Assurance Framework

<http://www.statcan.ca/bsolc/english/bsolc?catno=12-586-X&CHROPG=1>

Statistics Canada's Quality Guidelines

<http://www.statcan.ca/bsolc/english/bsolc?catno=12-539-X&CHROPG=1>