

Quality Management Using ISO 9000 for Price Indices in the UK

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The UK Office for National Statistics (ONS) is responsible for producing a wide range of inflation measures. These include the Retail Prices Index (RPI) and the UK Harmonised Index of Consumer Prices (HICP), which is used for comparisons across the European Union.

One of the key components of national statistics is a public commitment to the regular quality assurance of outputs to ensure the professional quality of output. In this context ISO 9000 has become an integral part of an ongoing programme designed to improve and maintain the quality of the RPI and HICP. It is now a key element underlying a formal quality management system ISO 9000.

The article reviews the meaning of quality in the context of statistical outputs, the different approaches available to quality management, and the potential these have to improve performance and how the latter can be measured. It describes some of the benefits that have accrued from using a formal system of quality management and takes a critical look at the lessons learnt.

ISO 9000 has been used to refer to the series of International Standards Organisation (ISO) Standards, except where references to specific standards such as ISO 9002 or ISO 9001 (2000) apply.

Key words: ISO 9000; European Foundation for Quality Management quality model; quality management system; documentation; auditing; price collection.

1. Introduction

The UK Retail Prices Index (RPI) and the corresponding Harmonised Index of Consumer Prices (HICP) are widely used macroeconomic indicators. These two statistics combined with other economic data produced by the Office for National Statistics provide a comprehensive picture of the UK economy and when set against corresponding data published by other Statistical Institutes enable comparisons to be made with other countries. In addition, the RPI is used for indexation of welfare benefits and securities and once published can never be revised.

Both indices come under the scope of UK national statistics and one of the key components of the latter is a public commitment to regular quality assurance of outputs to ensure that they meet the high quality standards required to gain public trust and confidence. This will involve a number of activities centred on a rolling programme of quality reviews. In the case of the RPI quality management has focused on ISO 9000 accreditation for the

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monthly production system. As much of the data collection and processing is common to the RPI and the HICP this means that the quality management of RPI production also directly benefits the UK HICP. Thus whilst the focus of this article is the RPI, the conclusions that are drawn also apply to the HICP and have important implications for international statistical comparisons published by such bodies as the statistical office of the European community.

1.1. Definition of quality

Statistical offices are faced with the continuous challenge of providing a wide range of outputs and services to meet user needs. According to the published Framework for National Statistics (2000) the primary aim of UK national statistics is:

- “to provide an accurate, up-to-date, comprehensive and meaningful picture of the economy and society to support the formulation and monitoring of economic and social policies by government at all levels”

One of the objectives of national statistics in pursuit of this aim is:

- “to improve the quality, timeliness and relevance of its service to customers both within government and the wider community”

Thus a key element of quality is customer focus and the effective dissemination of relevant, accurate and timely statistics. In addition it can be argued that it should include effective customer education on the use of such statistics. In these terms success can be measured by the achievement of a high level of satisfaction amongst well-informed users.

In these respects when discussing this topic, it is important to recognize that there are two types of quality issue both contributing to the overall quality of the statistical output:

- statistical quality, based on aspects like accuracy of the estimator and its variance, and the relevance and timeliness of the output;
- quality management systems, like ISO 9000, that focus on processes and their supporting documentation and that contribute more generally to the quality of the output, for example by reducing the risk of errors or the input of sub-standard data.

The International Standards Organisation’s requirements (ISO 1994; ISO 2000) for a quality management system are particularly relevant where an organization

- needs to demonstrate its ability to consistently provide a product that meets customer needs and applicable regulatory requirements – for example, to support the perceived integrity of the Retail Prices Index;
- aims to enhance customer satisfaction through the effective application of processes for continual improvement and the assurance of conformity to customer and applicable regulatory requirements – for example, to drive through improved statistical procedures to improve the quality of the RPI.

Note that in this international standard, the term “product” applies to the product intended for, or required by, a customer and can equally apply to a service.

For the quality management of the RPI a definition was adopted to reflect the view that

the priority area was quality control of the production process itself. The latter was deemed to be an area, which represented high risk given the complexity of the process and the serious implications of an error in the index. Thus for RPI production, quality has been defined as “a process of continuous improvement, systematically evaluated against customer requirements (Office for National Statistics 1997; 1998).” The full quality policy statement is at Annex A.

The performance of these processes can be measured against a combination of four factors of statistical quality: accuracy; timeliness; resource efficiency (including costs and burdens); relevance (Office for National Statistics 1997; 1998).

2. Background to the RPI and the Quality Management Issue

2.1. What is the RPI and how is it measured?

The RPI measures the change in the total cost of an imaginary shopping basket of goods and services on which people typically spend their money. The content of the basket is fixed each January but as the prices of individual products vary over the year so does the total cost. About the middle of every month price collectors from the private sector are sent out into the field and use portable computers to obtain about 120,000 prices for about 600 specified goods and services sold by a variety of shops covering 146 locations throughout the country. These prices are then collated electronically and sent to ONS where they are checked and processed. The prices are then weighted together so that the index reflects the importance of the various items in the shopping basket and in particular the amounts that are spent in different regions of the country and in different shops. The index is published four weeks later on a pre-announced date.

2.2. Quality management: the historical issues

The catalyst for reviewing the quality management of the RPI was the market testing of price collection in 1994 and the award of a contract to a private sector company in 1995. Prior to that date the collection of prices from shops was carried out by staff at local employment offices who in between carrying out their normal duties would visit a purposive sample of shops in their locality once a month and manually collect prices for a range of pre-selected items. The latter was not a contractual arrangement and this was seen as a disadvantage as it did not provide a rigorous discipline for quality control. Anecdotal evidence together with knowledge of private market research activity indicated that the quality and timeliness of the RPI could be improved and increased value for money obtained by contracting out.

It was against this background that ONS took the opportunity to review both methods of service delivery and quality management arrangements.

- Market testing provided an opportunity for establishing user needs and relevant levels of service;
- The ability to improve quality control was to be enhanced by improved documentation (which started with the initial tendering process), better sampling and also computerised data collection;

- Computerised data collection, in particular:
 - significantly increased the scope for auditing of price data in the field at time of collection;
 - facilitated better controls through timely production of management information;
 - reduced the risk of transcription errors.

It will be seen in the paragraphs that follow that the move to computerised price collection underpinned the quality management of the RPI monthly production process (ONS and ABS 2000). The procedures are seen to be as relevant to in-house collection as they are to an out-sourced approach.

3. The Quality Management System

The processes described in 2.1 above have to be carried out to an extremely tight timetable with minimal allowance to deal with any difficulties that may be encountered. In consequence, it is important that the quality management system provides a timely audit trail and that mechanisms are in place to effectively respond to pressing operational problems that may arise. Equally important is the need to ensure that there are adequate controls for less frequent processes such as the annual update of the shopping basket and that quality not only addresses day-to-day operational issues but also the potential for longer-term improvements. Thus underlying the approach adapted to quality management is the conception that quality is about improvement and that it is a continuous process that can readily react to both short-term and long-term issues.

3.1. Overview of the quality management system

The quality management system adopted for the RPI meets the requirements for accreditation according to the International Standard ISO 9000 (1994; 2000). ISO 9000 states that “The supplier shall establish, document and maintain a quality system as a means of ensuring that the product conforms to specified requirements.” The view was taken that whilst ISO 9000 did not set standards or guarantee quality it did provide a readily available framework within which quality could be continually improved. In addition, the fact that it was internationally recognised was seen as an advantage. As far as we know, no other national statistics service has used ISO 9000 standards to drive quality management in statistical processes in the way ONS has done for the RPI.

This structured framework approach was seen as best fulfilling the needs of Consumer Prices and General Inflation division for a model that enables us to regularly and consistently monitor that standards are being maintained and that scope for continuous improvements is being identified. ISO 9000 therefore answers the system and output quality needs. It is also used in conjunction with the European Foundation for Quality Management Excellence Model (EFQM) (see Section 7.2) as a diagnostic tool for organisational improvements and Investors in People (IiP) (see Section 6.3) to ensure that “people quality” issues are addressed.

The Consumer Prices and General Inflation Division (CPGID) is highly regarded within UK central government for its commitment to quality management and in October 2001 was awarded the highly prestigious Beacon Scheme status for demonstrating a commitment to quality under the UK government’s modernising agenda. In achieving this, we

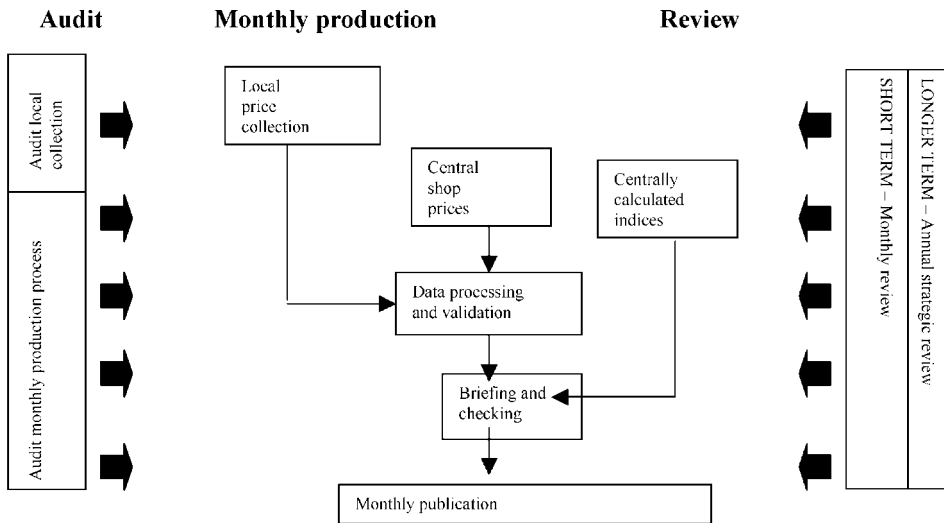
commit ourselves to sharing with other government departments best practice on quality management techniques, not only ISO 9000 and EFQM, but on other models such as Total Quality Management (TQM) (see Section 7.3)/Statistics Sweden 1998) and the Six Sigma.

It should be noted that a deliberate decision was taken to exclude development tasks, such as the annual review of the basket of items priced or the longer-term review designed to improve the methodological underpinning of the RPI. This decision was taken on the grounds that the gains from covering more processes would have been more than outweighed by the loss of focus and the additional challenges and risks associated with concurrently reviewing a number of different, although related and coherent, processes. It is recognised, however, that the effective conduct of development tasks contributes to the quality of the RPI. In principle these should be included in a quality management system and it is for this reason that we aim to apply to the annual review process the same processes used for the monthly production.

In sum, the quality management system covers the monthly production cycle from price collection to index production but not some of the development tasks. However, it does cover an annual review of the system itself. Also covered are staff training and a commitment to investors in people accreditation (see Section 6.3).

An outline of the quality management system is given below.

RPI Quality Management System



Restricting the scope of the ISO 9000 quality management exercise to the processes associated with the monthly production focused the scrutiny on those areas that represented a high business risk and that were either contracted out as a result of market testing or heavily affected by contracting out. This was seen as an advantage given the fact that contracting out had focused on key activities where quality had been identified as a particular concern and where the resulting adoption of handheld computers represented a transformation in data collection techniques. Thus ISO 9000 was seen as providing an

input into a post-evaluation of the benefits of contracting out which was then fed into re-tendering of the price collection contract in 1999.

The quality management system is not restricted, however, to those procedures carried out by the external contractor. As stated above, it covers all aspects of the production process. The controls and checks are equally applicable to a data collection (or other service) that is not outsourced.

3.2. Key features of the RPI quality management system

There are three specific features of the RPI quality management system, which are particularly worth drawing attention to:

- **defining standards.** It is the role of managers to define standards and this can only be done with input from users. This includes defining what is required and how it should be done. It is worth noting that those involved in the production process can provide a useful insight from their detailed knowledge and experience of the production process. Defining standards provides a benchmark for monitoring performance.
- **describing the processes.** To describe the processes requires standardised and quality assured documentation, which is accessible to all. It is required for business continuity and training. At a higher level it can also contribute to considerations relating to organisational structures (see Section 4).
- **producing the evidence.** Audit arrangements need to be in place to ensure that processes are carried out properly and to a satisfactory conclusion as measured against the defined standards (see also Section 5).

We can look at past practice as an illustration of the level of activity associated with these checks and audits and the outcomes. Of the 93 audits carried out in 2001 on different parts of the statistical system for producing the RPI and HICP, 7% required remedial action. In addition, as part of normal diligence and the continuous improvement strategy within the division, 130 ‘Request for Change’ submissions to enhance quality management, were identified by staff working on the production process and implemented by the quality team.

3.3. Priority aspects

The above features underline all aspects of the RPI quality management system. The key aspects of the system are three. Each aspect should be seen as dependent on the others and an integral part of the whole:

- **documentation of the monthly production processes** from the collection of prices to the data processing to publication of the index;
- **auditing** of local price collection and monthly processing;
- **a regularised review system**, which focuses both on the monthly production process and longer-term issues.

3.4. Costs and resources

The quality management system, as described below, took some two years to become fully established from its initial conception to accreditation in June 2000. The total estimated

development cost was between £70,000 and £100,000. The on-going annual maintenance of the system is estimated to be £75,000 at current values. This includes the cost of the Division's Quality Day programme.

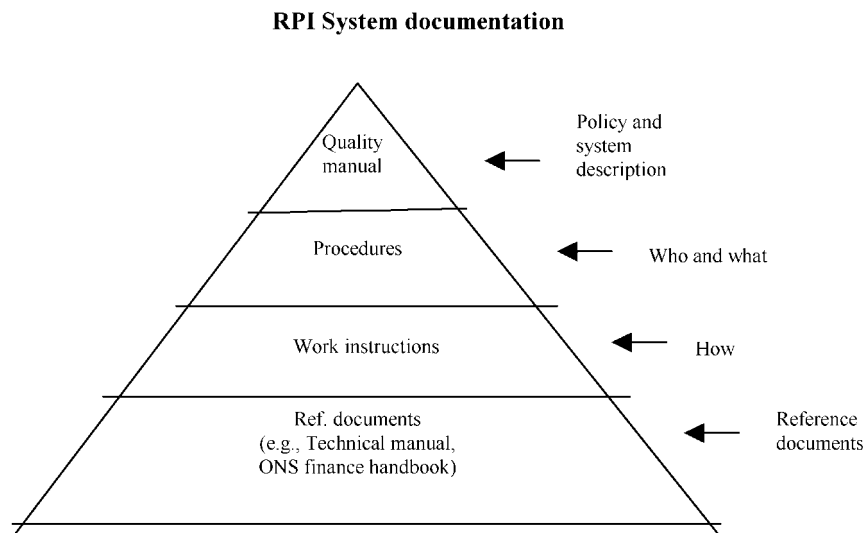
4. Documentation of the Monthly Production Process

4.1. Documentation structure

A key element of the RPI quality management system is that all aspects of the monthly production cycle are not only documented but also quality assured. There are four levels of documentation:

- **the quality manual**, which defines quality in the context of the index and also gives an overview of the quality system including management organisation;
- a description of the **procedures**, in particular the monthly production cycle including division of responsibilities. This increases synergy within the team through the understanding of roles and inter-dependencies;
- **the work instructions** which give precise details of how tasks are to be undertaken;
- **standard reference documents** such as the RPI technical manual.

Documentation includes a quality manual which defines quality policy and provides a general description of the quality management system; a set of procedures that explicitly identify individual responsibilities, thereby increasing team understanding of roles and interrelationships between different team members; and detailed desk instructions describing how individual tasks should be carried out. Also published for the first time is a Retail Prices Index technical manual aimed at users who wanted to know how prices data is collected and aggregated into an index. This is published "print on demand," a cost-effective procedure that accommodates regular updating.



Quality assurance ensures the accuracy, relevance and effectiveness of the documentation and also helps to identify training needs (see Section 6.3).

The concepts applied in defining CPGID's quality management system are compatible with the framework for the European Statistical System (Haworth, Bergdahl, Booleman, Jones, and Madaleno 2001).

4.2. The benefits of documentation

The benefits of good documentation were perceived to be wider than providing useful reference documents for the training and induction of staff. Documentation, especially at a higher level, added to the integrity of the index by giving transparency to methodology and procedures and also added to user understanding. From a management viewpoint it provided an opportunity to introduce a more standardised approach to work in terms of both processes and methodology, and also provided a means of knowledge sharing to assist with staff cover. Just as importantly, the process of documentation itself provided a mechanism for the quality assurance of index compilation processes and methods.

All documents from the technical manual to desk instructions have been produced with the participation of those in RPI production and, as such, the production team possesses responsibility for the process. They are also subject to their own quality assurance procedures.

As already mentioned, the documentation is all held electronically (further detailed in Section 4.3 below), is password protected for controlled editing and conforms to a standard structure. Each document has a version number for audit trailing purposes and to ensure the currency of the instruction. Any hard copy of this documentation carries a time-print of 24 hours, after which it is deemed invalid. This also encourages system users to rely on electronic versions.

Each document contains four main elements: overview, responsibility, procedures and detailed work instructions. This provides consistency in approach and ease of use. A structured approach also further enhances the transparency of the instructions and helps reduce learning curves for new staff by providing step-by-step guidance in a readily comprehensible format. An example of the layout is given at Annex B.

4.3. The use of Lotus Notes

The standard database and information software in ONS is Lotus Notes. The facilities of Notes software include a number of attributes that enables additional tools to be introduced for improved quality management, particularly in the context of documentation production and dissemination and its control. The benefit is seen as threefold:

- **much more efficient production** of documentation as it helps with initial compilation and reduces the need to print and circulate paper copies;
- **better informed staff** because they have immediate electronic access to the latest documentation, including desk instructions with search facility by subject and author;
- **better quality control**, as access to non-authors is restricted to "read only."

5. Auditing of Local Price Collection and Monthly Processing

5.1. *Audit of monthly production process*

A dedicated team within the division's contract and quality management branch reviews each aspect of the monthly production cycle at least annually. These audits focus on a particular area of work and:

- check that operational procedures and controls that are carried out comply with documented procedures;
- check that documented procedures themselves are relevant and effective;
- highlight specific concerns and the action to be taken;
- check that the agreed action has been taken.

The action will often be to amend documentation where it is not clear or to remind staff of the correct procedures, but there may be some instances where the procedures themselves need to be changed or where additional staff training is required. Each action is followed up by the contract and quality management branch to ensure the work has been carried out and a re-audit carried out where considered necessary.

5.2. *Audit of local price collection*

Ten part-time auditors employed directly by ONS undertake the auditing of local price collection. There are two main components: an accompanied check of price collection in the field and a random post-hoc check carried out within two days of the main fieldwork.

5.3. *Accompanied collection*

Each month each ONS auditor accompanies a price collector in one location chosen at random to ensure that the collector is correctly following the procedures and instructions laid down for price collection. This is supplemented by selective visits to any collectors where earlier feedback has caused concern. This arrangement reduces the risks of errors being made. It:

- highlights problems with individual price collectors who may, for instance, require additional training;
- identifies particular problems associated with a particular collection task or special circumstances relating to one particular region or type of shop;
- identifies areas where documentation or training may be inadequate;
- provides information on overall performance to monitor whether the price collection contractor is achieving all the performance targets laid down in the contract.

The arrangements have proved very successful. Each problem that has been highlighted is followed up by appropriate action: for instance revised procedures may be agreed with the contractor or new guidance notes may be issued if there is a general collection difficulty, or additional training of individual collectors may take place. Whilst the central role of the auditor is not one of training, some coaching may be given by the auditor in the field when errors are noticed or if the collector has a query.

More general benefits have accrued which have been of great strategic value for continuous quality improvement. In particular the auditing of local price collection has also raised the general awareness of the need for quality.

5.4. Random post-hoc check

A post-hoc check ('backcheck') involves ONS auditors re-pricing a random selection of 70 uniquely defined price quotes using detailed product descriptions and shop codes in a sample of random locations to see if the error rate is within the 4% allowed in the collection contract and that it is not systematic and thus leading to bias in the index. Like the accompanied collection it also raises awareness to see quality amongst individual price collectors and within the contractor organisation.

Two main quality indicators are monitored:

- performance against the maximum number of incorrect prices allowed in each collection (the 'pass' mark laid down in the contract). Conversely incentive payments are given if the sub-contractor delivers significantly below the maximum error rate;
- a subjective assessment of item description and other associated information required for quality control and monitoring. The product description helps to ensure comparability over time when old products disappear from shop shelves and need to be replaced by the nearest equivalent, and helps to deliver business continuity if a price collector leaves or is off sick and another collector needs to take his or her place.

Other information that is quality assured includes whether a price is a sale price (auditing arrangements allow a greater fluctuation in price, for example, when the previous recorded price was in a sale). This does not, of course, indicate that a similarity in price is considered a legitimate consideration in the selection of the nearest equivalent replacement. On the contrary, price collectors are instructed to disregard similarity in price in the selection as to do otherwise could result in a bias in the index through the reluctance to record true large price changes regarding the products concerned.

The subjective assessment is not included in performance targets as it is more of an art than a science.

Evidence from these checks indicates that, on average, 70% of locations checked have no price failures. The average failure rate is less than 2.5% of all prices checked, well within the target level (see also Section 3.2).

5.5. Computerised data collection

Computerised data collection significantly increases the scope for auditing of price data in the field at the time of collection and prior to receipt at head office. This is a particular advantage given the fact that errors can be difficult to rectify after the event both because it can be costly to send price collectors back to the shop and because prices might change in the intervening period. In addition, re-visits to shops will cause an additional burden on businesses.

6. Reviewing Procedures

Quality is defined as “continuous improvement” (see Section 1.1) and as such it is important that outcomes are reviewed as part of the forward planning process. It is for this reason that short-term and longer-term review procedures have been put in place. These are further described below.

6.1. *Quality days*

Quality days are the central tool for delivery of quality in the short term. A quality day is held at the end of each production cycle and involves elements of self-appraisal, formal review and associated training.

When these days were first introduced they were formal and invariably involved all team members gathered together whether or not the issue being addressed was of particular concern to them. However, feedback from team members has led us to re-evaluate our approach. The days are now far more flexible and include a general session where management gives feedback to staff, including a monthly report on performance covering both the division and the price collection contractors, and where team members have the opportunity to raise particular concerns. Just as important, this is followed by smaller ad-hoc groupings of staff brought together to tackle particular issues of mutual interest. Seminars and presentations are included where appropriate. Thus the style is flexible with staff working either individually, in small teams or as one group but always within a team framework structured in a way that facilitates improvements in relevant aspects of the RPI. Topics covered have included training needs, the compilation of personal development plans, group training programmes, data validation methods, documentation, practical issues arising from improved fieldwork techniques proposed by methodologists.

Another element of quality day involves the production team focusing on quality issues that have arisen in recent months, including a review of the operation of the most recent production cycle. This also includes a forward look at issues arising over the next cycle so that appropriate working arrangements can be put together. Thus the focus is both on learning from past experience, for example to avoid problems repeating themselves, and on anticipating future issues for forward planning.

Action points are recorded and individuals identified to follow them through.

6.2. *The annual planning round*

The longer-term element of the quality review system focuses on a higher-level strategic look at objectives and how they are going to be achieved. This review is conducted as part of the annual planning cycle and addresses not only the quality of outputs assessed against user needs but also the processes by which quality is going to be achieved. The latter is now formally laid down in an annual quality management action plan, which is an annex to the main business plan. The quality action plan will normally incorporate a vision of quality and the processes to be used to achieve it. For instance, the quality plan for the RPI includes a commitment to using monthly quality days to promote quality and to ISO 9000 accreditation. Also included is a forward commitment to a benchmarking exercise and a self-assessment against the excellence model (www.efqm.org).

6.3. *Training and investors in people*

Investors in People (IiP) is an externally recognised national standard that sets a level of good practice for improving an organisation's performance through its people (www.iipuk.co.uk). Its key principle is that businesses cannot succeed in meeting their goals unless they develop their people sufficiently. Therefore there needs to be a two-way link between business plans at every level and training and development plans for the employees who have to deliver the business. The procedure of documentation gone through as part of the quality management system has helped identify training needs and these have been incorporated in the personal development plans of individuals and in group training plans. In addition more effective pre-training and post-training evaluation procedures have been introduced which help to monitor the quality of training and its value against business needs and also provide an important input into quality management. Thus IiP has been used as an effective "quality" tool in the context of the RPI quality management system and ISO 9000. The monthly quality days are an integral part of it. The ONS as a whole became an accredited IiP organisation in 2000.

7. **Other Quality Management Tools**

7.1. *Benchmarking*

Benchmarking is a process of identifying and learning from a survey of best practice. It can be seen as another strategic tool for continuous quality improvement. In 1998 ONS joined a benchmarking network initiated by the Australian Bureau of Statistics and subsequently engaged in a benchmarking exercise of consumer price indices (ONS and ABS 2000). The benchmarking operated within agreed operational guidelines and objectives and focused on a pre-determined set of performance indicators. As the benefits of benchmarking tend to accrue over time it would be premature to attempt to conclude what the full advantages to be gained were. However, the exercise led to the identification of a number of areas for subsequent investigation. It is appropriate at this stage to draw attention to a number of general pointers for the maximisation of benefits:

- the benchmarking provides a useful tool for the initial identification of potential issues;
- direct benefits more often than not accrue from the follow-up action points;
- following-up in greater detail areas of interest identified from the initial benchmarking can pay dividends;
- longer-term benefits include the subsequent opportunity for networking;
- the greater the mutual trust, the better and more productive the relationship and the greater the subsequent benefits;
- hidden objectives and lack of trust will reduce effectiveness;
- financial and management information for benchmarking can be useful in its own right regardless of a comparator;
- beyond a certain point, more time spent on interpretation adds greater value than collecting more hard data (too much detail can confuse and there are diminishing returns).

A detailed evaluation is anticipated in due course.

7.2. *European Foundation for Quality Management Excellence Model*

The European Foundation for Quality Management's Excellence Model (EFQM) is a self-assessment diagnostic tool that ONS uses to improve quality and performance (www.efqm.org). It focuses on general business areas (as opposed to ISO 9000 that focuses on processes) and assesses performance against:

- five criteria covering what the business area does (the enablers: leadership; people; policy/strategy; partnership/resources; process) and
- four criteria covering what the business area achieves (the results: people results; customer results; society results; key performance results).

Evidence based on feedback from focus groups, questionnaires and personal interviews is used to score performance, and a resulting action plan for improvement is introduced which is then included in the business plan.

The excellence model provides an overall framework for ISO 9000 and Investors in People. The self-assessment commenced in January 2001 and the subsequent action plan, to address areas identified for improvement (including communication issues and training evaluation), has now been implemented.

7.3. *Total Quality Management (TQM)*

Total quality management, or TQM, is most closely identified with a management philosophy rather than a highly specified and structured system. The characteristics associated with TQM and the associated quality culture in an organisation have been well publicised and include:

- clearly defined organisational goals;
- strong customer focus;
- strategic quality planning;
- process orientation;
- employee empowerment;
- information sharing;
- continuous quality improvement.

Successful implementation relies on the ability of an organisation to integrate these characteristics into a common organisational structure. We believe we have achieved this with the adoption of ISO 9000 within the context of the strategic use of EFQM, and alongside other initiatives such as benchmarking plus our commitment to Investors in People. The approach we have taken, using ISO 9000, has helped to emphasize and support the TQM philosophy.

8. Evaluation of the Particular Benefits of ISO 9000

There were a number of reasons why it was decided to use a formal quality management system leading up to ISO 9002 accreditation. The ONS experience suggests that working for ISO 9000 accreditation has been beneficial in a number of ways:

- it has given a discipline to reviewing and specifying production procedures and to documenting and quality controlling them;

- it has provided the efficiencies associated with a ready-made model for documentation and quality control and the added trust associated with a well-tested one;
- it minimises the risk of errors by adding effective controls including a framework for the initiation, evaluation and implementation of change;
- it provides a basis for more effective training of experienced staff and the induction of new staff;
- ISO 9000 will increase public confidence in the RPI and HICP.

However, it is also concluded that ISO 9000 accreditation should not be a goal in its own right and that the lessons learnt whilst going through the processes leading up to accreditation were just as important as the accreditation itself.

The accreditation process in itself is both challenging and stimulating. As well as our own staff carrying out internal audits, the system was subject to external audit by our accreditation body. The duration and complexity of an external audit depends on the process concerned, but initially around three days is the norm, with half-day follow-up audits being carried out every six months.

The audit – or the standard itself – does not, however, seek to prescribe that something be done in a certain way, or at a set time. Rather, it ensures that we do what we say we do in the documentation, and that the documentation is an accurate description of what the process actually is. It encourages the maintenance of standards, both those of the ISO standard and those set by our own quality policy. As stated above, it has given a discipline to reviewing and specifying production procedures and to documenting and quality controlling them, and through this has established a cycle of continuous improvement.

Consumer Prices and General Inflation Division achieved ISO 9002 accreditation in June 2000 and completed conversion to a subsequently revised ISO 9001 (2000) standard in December 2002. It should be noted that the structure of the revised ISO 9001 (2000) standard is much closer to other TQM models, including the excellence model detailed above, and covers additional aspects of management, customer satisfaction and communications as well as process control. It therefore provides a more strategic and coherent approach to quality management than its predecessor. Organisations accredited to ISO 9002 standard are required to convert to ISO 9001 (2000) over a two-year period.

9. The Scope for Making More Extensive Use of ISO 9000 and Other Quality Management Techniques.

Both ISO 9000 and the EFQM excellence model have received a great deal of international recognition in recent years. At the same time the use of benchmarking networks has also grown in prominence. It is therefore pertinent to ask whether more co-ordinated use should be made of these and other quality management techniques at a strategic level in fields of statistics where the focus is on international comparability. This is particularly so with statistics such as the Harmonised Index of Consumer Prices, which are compiled for treaty purposes by member states of the European Union following detailed methodological guidelines laid down in European law.

There are five arguments:

- it is paramount that such important non-optional statistics whose production and uses are enshrined in legislation have the full trust of users across the European Union;

- the quality of international comparisons is dependent on the weakest link, thus good-quality statistics from one country may be of little value if not matched by statistics of equally good quality from other countries;
- the potential for misleading analysis and conclusions arising from differences in the application of standard methodology;
- the reduction of empowerment in ensuring the establishment of adequate control processes when production is delegated to member states;
- the limited scope for centralised validation and quality management of decentralised production.

The purpose of this article is not to recommend one particular approach to quality management. Rather it is to encourage a debate about the requirements relating to the production of statistics for the purpose of international comparisons where the scope for centralised quality control is more limited but where difficulties caused by poor quality management can have implications outside the confines of the individual country concerned.

It is also essential to distinguish between international legislation that sets harmonised minimum requirements and more general quality standards where the commitment to such initiatives as ISO 9000 is voluntary. Whilst there is undoubtedly interplay between the two, with the ISO standards helping NSIs to effectively meet minimum requirements of EU legislation, the aims of the two should not be confused. Although a future wider acceptance of ISO 9000 standards might be both effective and desirable, it is doubtful whether such standards can be imposed by EU legislation.

10. Conclusions

Several observations are possible on the basis of experiences of the Office for National Statistics:

- quality management is a continuous process;
- formal quality management procedures such as ISO 9000 can be very effective for production processes such as the compilation of statistics but accreditation should not be a goal in its own right;
- different quality management systems focus on different aspects of quality control and can therefore complement one another – for instance, ISO 9000 for production processes and the excellence model for strategic management of a statistical unit;
- quality management and quality assurance are complementary, and auditing of outcomes is a core element of any quality management system;
- effective quality management (and assurance) techniques applied to local production and supplemented by central quality assurance can enhance the perceived and actual levels of statistical integrity and comparability associated with international statistics;
- quality management involves people as well as processes and helps in identifying training needs.

Consumer Prices and General Inflation Division Quality Policy

Annex A

CPGI Division as a whole has an overall commitment to providing high quality, world-class outputs where quality is defined as:

'A process of continuous improvement, systematically evaluated against customer requirements.'

CPGID also has a commitment to meeting the needs of users. To achieve this we:

- strive for excellence by ensuring that each member of staff understands and is fully committed to the need for quality
- define customer needs clearly by systematically evaluating and reviewing their requirements objectively and by providing back up advice and guidance on how the indices should be interpreted;
- provide value for money through increased efficiency and relevance;
- ensure that all staff are provided with the training and support they need to do the job to a required standard;
- operate within a defined quality management system, ensuring that we meet without fail our own standards through effective decision-making, communication and follow-through;
- seek constant improvements in our services and operations through regular examination of our working practices and procedures.

All those involved in producing the RPI accept this commitment to the quality of the index.



Example of Electronic Documentation

Annex B

Document Control

Ref Code & Version No.	Date Issued	Name of Issuer	Details of Changes
CP 0002.1	20/09/99	Janet Hopkins	Original documentation
CP 0002.2	15/03/00	Graham Tippen	Changes to reflect use of Lotus Notes as controlled copy
CP 0002.3	05/06/00	Graham Tippen	Changes made after Audit 27
CP 0002.4	27/04/01	Sunny Mehmi	Changes made Section 2
CP 0002.5	22/04/02	Graham Tippen	Changes made to reflect that QMS is now available to all staff in Division

The Quality Management System contains a number of procedures, standards, and work instructions required by staff to carry out their work.

Controlled copies of documents are stored on this database. This database has been made available to all staff in the Division:

All amendments to documents are reviewed before they are approved by the Quality Co-ordinator before issue. A central record is kept by the Quality Co-ordinator of the issue of new or revised documents on the database (see Control List of Documents, It is the responsibility of the Quality Co-ordinator to review and keep this list up-to-date). If it

is deemed appropriate or necessary by the Quality Co-ordinator, a copy of obsolete documents is retained for future reference within the Archive Database.

All staff are responsible for ensuring the documents they use are current, and for taking account of any changes of which they are notified. Each document on the database has a reference number indicating the post which holds responsibility for the documentation, which cross references with the person currently in post and therefore holding that responsibility (see CPGID QMS Staff Reference Codes, it is the responsibility of the Quality Co-ordinator to review and keep this list up-to-date). The post holder has responsibility for notifying any changes needed to the documentation to Quality Management Branch. Notification can be by any means but it is recommended that users take advantage of the request to change forms wherever possible. All requests to change forms are held on the Prices & Sales BDB.

3.1. Document control

For each document in the database, the control list of documents (document no. CP 0003) contains details of the latest issue number and the staff who hold responsibility for the controlled copies. If staff have uncontrolled copies of documents they are responsible for ensuring that they use the current version. If staff print copies from the database or from network links, the hard copies are only valid for 24 hours, after which time they should be destroyed. All Lotus Notes documents relating to procedures and work instructions will contain a reminder note, together with the time and date printed, in the footer of each sheet.

3.2. Quality manual

Changes in policies may be needed from time to time. Any suggested amendments should be made in writing (hard copy or electronically) to the Quality Manager. A record of written suggestions should be kept with a note of the action taken.

The Quality Manager (or nominated representative) will discuss the changes with all personnel affected and decide whether existing documentation should be amended.

When the amendments have been made, the existing copy on desktops will automatically be updated within the Notes system. The master document list shall also be updated by the Quality Co-ordinator.

3.3. Procedures

Any suggested amendments to procedures should be made in writing (either hard-copy or electronically) to the Quality Co-ordinator, who will decide whether existing documentation should be amended or a new document written.

If a new document is required the Quality Co-ordinator will nominate a document author who will then produce a draft.

For both new and existing procedures, the document author and the Quality Co-ordinator will agree the changes to be made. When the document author has finalised the amendments they will notify the Quality Co-ordinator.

The Quality Co-ordinator shall then enforce any changes to the database, update the

master document list, and inform the Quality Manager of new documentation or any major procedural changes to existing documentation.

4.1. Work instructions

Any suggested amendments to work instructions should be placed directly on the database via request to change forms if the author of the request has ownership of the document. If the author is not directly responsible for that section, the author should consult with the document owner who can authorise the request.

4.2. Archiving

Archiving will be performed at the discretion of the Quality Co-ordinator. The decision whether or not to archive will be based purely on whether old procedures or work instructions will prove useful in the future. All old quality records that are archived are kept in the division for a minimum of two years on the archive database. After this period, they are reviewed and retained where necessary, depending on individual topic requirements. Any retention requirements for Quality Records differing from this are noted in the relevant procedures. When archiving it is important to ensure the following:

- the document amendment record is completed;
- the control list of documents and responsibilities is updated; and
- an old copy of the documentation is retained on the archive database if deemed necessary.

11. References

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