BRITISH STANDARD

BS 7850-1: 1992

Total quality management —

Part 1: Guide to management principles

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Contents

Foreword

This Part of BS 7850 has been prepared under the direction of the Quality, Management and Statistics Standards Policy Committee.

BS 7850 is published in two Parts as follows.

— *Part 1: Guide to management principles;*

— *Part 2: Guide to quality improvement methods.*

Total quality management assures maximum effectiveness and efficiency within an organization by putting in place processes and systems which will ensure that every aspect of its activity is aligned to satisfy customer needs and all other objectives without waste of effort and using the full potential of every person in the organization.

This philosophy recognizes that customer satisfaction, health, safety, environmental considerations and business objectives are mutually dependent. It is applicable within any organization.

Investment in material things is an accepted and well developed management practice but the application of total quality management primarily involves investment in time and people: time to train people; time to implement new concepts; time for people to recognize the benefits; and time for people to move forward into new and different company cultures. Every organization has to give these commitments if total quality management is to succeed.

This Part of BS 7850 gives guidance to senior management on the establishment of management principles which will maximize an organization's effectiveness.

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Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 8, an inside back cover and a back cover.

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0 Introduction

The objectives of an organization, of which customer satisfaction is a major consideration, should be known and understood by all members of the organization.

This British Standard gives guidance to management on ways to make the organization structure, management system and quality system more effective in meeting organization objectives, by improving and harmonizing the skills of the workforce. Organizations vary greatly in size, objectives and the procedures used and judgement needs to be exercised when using the guidance given.

The guidance shows how everybody in the organization should be aware that they have internal customers and suppliers as well as those external to the organization and that participation by all and leadership from management is essential to promote the full potential of the organization.

The guide emphasizes the need for measurement of performance and analysis to confirm that planning for problem solving has led to quality improvement. In addition, the monitoring of performance and revision of systems should be a continuing activity in which the use of diagnostic tools is advocated.

Investment in people and training are probably the two most important elements in achieving total quality management.

A serious attempt has been made to produce a guide that is not prescriptive but which gives guidance to management so that it can be adapted to suit prevailing objectives and methodology. The objectives of all organizations should include their responsibilities towards society including the health and safety of people within the organization, the customer receiving the product or service and the need to protect the environment. The meaning of the term “customer satisfaction” should be taken in its broadest sense when used in this standard.

1 Scope

This Part of BS 7850 gives guidance on the establishment of management principles, which will maximize effectiveness in meeting organizational objectives. It addresses the formulation of objectives and their implementation throughout an entire organization.

2 References

2.1 Normative references

This Part of BS 7850 incorporates, by reference, provisions from specific editions of other publications. These normative references are cited at the appropriate points in the text and the publications are listed on the inside back cover. Subsequent amendments to, or revisions of, any of those publications apply to this Part of BS 7850 only when incorporated in it by updating or revision.

2.2 Informative references

This Part of BS 7850 refers to other publications that provide information or guidance. Editions of these publications correct at the time of issue of this standard are listed on the inside back cover, but reference should be made to the latest editions.

3 Definitions

For the purposes of this Part of BS 7850 the definitions given in BS 4778 apply together with the following.

3.1
total quality management (TQM)
management philosophy and company practices that aim to harness the human and material resources of an organization in the most effective way to achieve the objectives of the organization

NOTE 1 The objectives of an organization may include customer satisfaction, business objectives such as growth profit or market position, or the provision of services to the community, etc. but they should always be compatible with the requirements of society whether legislated or as perceived by the organization.

NOTE 2 An organization operates within the community and may directly serve it, this may require a broad conception of the term customer.

NOTE 3 The use of this approach goes under many other names some of which are as follows:

continuous quality improvement;

total quality;

total business management;

company wide quality management;

cost effective quality management.

3.2
process
any activity that accepts inputs, adds values to these inputs for customers, and produces outputs for these customers. The customers may be either internal or external to the organization

NOTE 1 Every activity within an organization comprises one or more processes. Figure 1 illustrates a sample process diagram.

NOTE 2 Inputs, controls and resources are all supplied to the process.

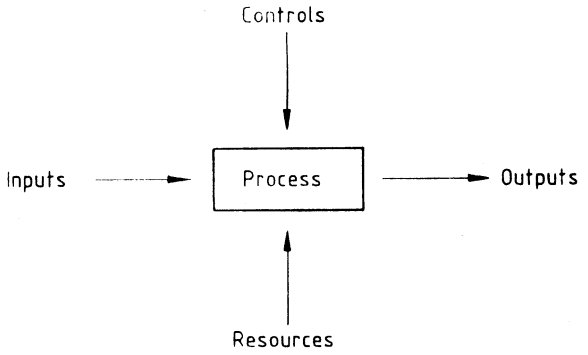

Figure 1 — Simple process diagram

3.3
mission statement
broad statement of main aims of an organization

NOTE The mission statement for a total organization is usually concise and is communicated to every employee. Parts of an organization may also declare their aims by these will be more detailed and specific while still supporting the overall objectives.

3.4
process owner
the person responsible for performing and/or controlling the activity

3.5
customer
any person(s) internal or external to the organization, who receive(s) the output of the process

3.6
supplier
any person(s), internal or external to the organization, who supplies (supply) an input to the process

NOTE The process owner is normally both a customer and a supplier.

Figure 2 illustrates the changing role of the process owner.

3.7
organization
a managed group of persons and resources formed to carry out a function

NOTE The organization could be a commercial enterprise, government body, public service or a charity.

4 Fundamental concepts

4.1 General
The following individual concepts should be considered when applying the principles of total quality management.

4.2 Commitment
The commitment to total quality management by the chief executive is essential, and promotion of this concept to all levels and activities of the organization is fundamental to its success. It should be achieved by individual involvement in accountability for and devotion to continuous improvement with measurable levels of performance.

It is essential that this involves the board, every department, function and process and the active commitment of all to meeting customer needs. In this regard everyone should be aware of his/her individual customer(s) and supplier(s) whether internal or external to the organization.

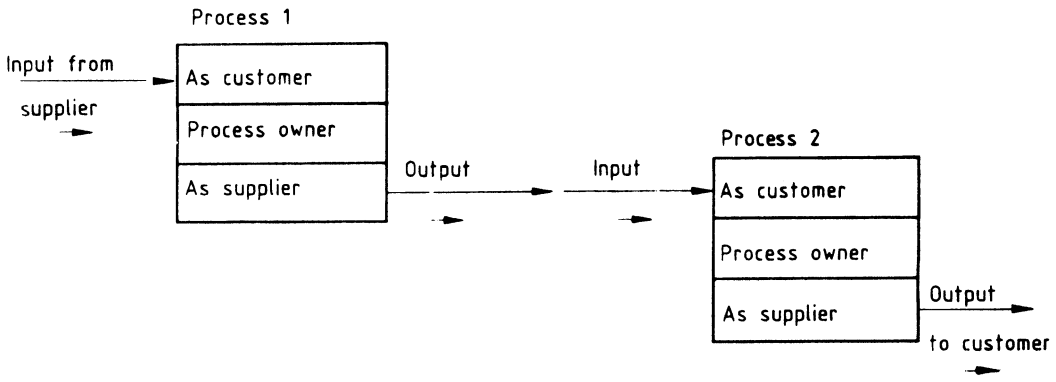

Figure 2 — Changing role of process owner

4.3 Customer satisfaction
Understanding and satisfying customer needs and expectations should be a key objective. Many members of an organization do not have direct contact with the external customer.

4.4 Quality losses
Quality losses are losses caused by the failure to utilize most effectively and efficiently the potential of human, financial and material resources in a process. Some examples of quality losses are as follows:

a) loss of customer satisfaction;

b) loss of opportunity to add more value to:

1) the customer;

2) the organization;

3) society.

c) loss due to waste or misuse of resources:

1) peoples health;

2) property damage;

3) process interruption.

4.5 Participation by all
The total strengths and abilities of all members of an organization should be fully and effectively utilized, and they should be recognized as links in a chain.

4.6 Process measurements
Process measurement should be applied to all organizational activities.

4.7 Continuous improvements
The means of improvement to people and process performances needs to be continually sought, and monitored (see BS 7850-2:1992).

4.8 Problem identification
Provision for identification and resolution of potential and existing problems on a continuous basis is essential.

4.9 Alignment of corporate objectives and individual attitudes
Removal of prejudices and restrictive approval that inhibit the effectiveness of the organization needs continuous attention.

4.10 Personal accountability
Recognition of individual responsibility and authority should be accepted by all.

4.11 Personal development
There should be continuous appraisal, training and development of individuals at all levels.

5 Implementing total quality management

5.1 General
A successful organization will be skilled at developing and applying a range of appropriate systems, improvement tools and techniques.

Although application of any of the techniques referenced will give some incremental improvement, their full potential can only be realized if they are applied and coordinated (see Table 1).

In most organizations, overcoming resistance to change requires particular attention to the following:

a) creating an appropriate organization structure;

b) implementing process management concepts (see **3.2**);

c) systematically measuring performance and recognizing achievement;

d) introducing improvement planning techniques;

e) training.

NOTE See annex A for an example of a typical process for total quality management.

5.2 Creating appropriate organizational structures
Quality management is achieved through the ongoing, incremental improvement of an organization's processes. This invariably creates a need to continually review the appropriateness of the business organizational structures, and change them where necessary.

Changes to the management structure may be necessary in the following areas:

a) the management processes of the organization such as reward or payment, recognition and strategic planning;

b) the methods of resource allocation;

c) the administrative support processes such as secretarial, clerical and purchasing;

d) building and maintaining a human environment that allows the members of the organization to improve quality continually based on mutual trust and collaboration;

e) planned training for all members of the organization;

f) the work processes and procedures of the organization.

Table 1 — Selecting an appropriate tool or technique

Tool or technique	When to select
Data collection form	Gather a variety of data in a systematic fashion for a clear and objective picture of the facts.
Tools for non-numerical data	
Affinity diagram	Organize into groupings a large number of ideas, opinions, issues, or other concerns.
Benchmarking	Measure your process against those of recognized leaders.
Brainstorming	Generate, clarify, and evaluate a sizeable list of ideas, problems, or issues.
Cause and effect diagram	Systematically analyse cause and effect relationships and identify potential root causes of a problem.
Flow chart	Describe an existing process, develop modifications, or design an entirely new process.
Tree diagram	Break down a subject into its basic elements.
Tools for numerical data	
Control chart	Monitor the performance of a process with frequent outputs to determine if its performance reveals normal variations or out-of-control conditions.
Histogram	Display the dispersion or spread of data.
Pareto diagram	Identify major factors and distinguish the most important causes of quality losses from the less significant ones.
Scatter diagrams	Discover, confirm or display relationships between two sets of data.
NOTE These tools are described in BS 7850-2.	

The administrative activities such as typing, finance, purchasing, stores, reproduction, servicing, etc. that may be apparently outside the main stream objectives or only peripheral to the objective should be firmly included as processes and given goals relating to the overall business objectives and their own customer requirements.

5.3 Implementing process management concepts

Whilst the organizational structure adopted will vary from company to company, there is a common need to ensure that management responsibilities for the processes, especially those that flow across organizational boundaries, are clearly defined including those for health and safety and that these processes and their constituent parts contribute to the overall business objectives. Within each process the responsibilities of management and the process owner include the following:

a) defining and agreeing the purpose of each process and its relationship with overall company business objectives;

b) identifying both internal and external customers and determining their needs and expectations;

c) identifying the needs and expectations of the process owner to his/her supplier(s);

d) setting appropriate performance standards for the key activities of the process;

e) initiating a systematic measurement of process performance coupled with the search for improvement opportunities.

The programme for implementation of any changes to systems or procedures should take account of their relative importance.

There can be a natural resistance to change and for this reason new methods for the operations of an organization should be well planned and monitored.

5.4 Measurement of performance

The organization's management should review its existing system of performance measurement and ensure that objective, data-based measurement systems are in place for tracking the performance of all key functions and processes. Newly adopted measures should include the key attributes of the function or process including, for example, cost, time, flexibility and quality; these should be agreed between the process owner and the process customer.

Indicators of process efficiency may be based on labour, capital, and material utilization, scrap, rework, screening, re-adjustment, cycle times, waiting time, lost time[1)], unnecessarily redundant design, impracticable tolerances, excessive stock, and other costs of nonconformance.
See BS 6143-1:1992 and BS 6143-2:1990.

Measures of customer satisfaction may be based on customer surveys, surveys of competing products and services, routine inspections by service personnel, information, sales and service staff, customer complaints and claims, and others.

Existing financial measures such as scrap, reject and replacement costs can be used or measures of time to complete process, or delay time of the process delivery to customer.

Some of these measurement systems may be unfamiliar to the employee(s) and appropriate training and involvement prior to their introduction is recommended.

5.5 Introducing improvement planning techniques

Planning quality improvement, implementing the plan, analysing the results and replanning is a continuous cycle.

It will be necessary to review the existing planning process to ensure that inter-related improvement plans are deployed at all levels of the organization as follows:

a) corporate;

b) department/unit;

c) process;

d) individual.

When initiating this process it is essential to ensure that goals for improvement are agreed and implemented from the top down. Staff commitment to change is maximized when the individuals affected by, or operating, the process or any changes to it are closely involved in the generation and deployment of the improvement plans.

5.6 Training

Training programmes are important in creating and maintaining an environment for quality improvement. All members of an organization, including the highest levels of management should be trained in quality principles and practices and in the application of appropriate methods for quality improvement. This includes the use of quality improvement tools and techniques. All training programmes should be reviewed for consistency with quality principles and practices.

The training of members of an organization should be extended to all. Subjects for training can include the following:

a) management;

b) technical;

c) process;

d) the use of problem solving tools;

e) communication;

f) skills;

g) organization;

h) awareness.

All persons in an organization should receive training to enable them to perform their individual process, to be aware of its relationship to other processes, the part it plays in ensuring customer satisfaction and the objectives of the organization; and to be able to contribute effectively to the continuous improvement programme. Training needs should be reviewed

NOTE See annex A for an example of a typical process of total quality management.

6 Role of supporting techniques

6.1 Quality systems

It is essential that a management system is established to ensure that customer needs are accurately translated, by means of process methods and quality systems activities, into an output that gives customer satisfaction.

NOTE Many organizations benefit from addressing the system elements contained in BS 5750-0.2 and in addition further benefits may be obtained by achieving compliance with BS 5750-1, BS 5750-2 or BS 5750-3.

6.2 Quality improvement

Quality improvement action depends on the identification of one or more situations requiring improvement. Such situations may arise for example from quality cost studies, significant problems arising from customer complaint, manufacture or service processes or health and safety considerations. In these examples, it is usually management who make the identification and initiate action.

[1)] Lost time may be due to accidents or occupational ill health possibly caused by lack of risk control measures.

Individuals and groups should also be encouraged to use problem solving techniques to identify opportunities and actions for improvement in their own work areas on a voluntary basis. It is important to recognize that the techniques can be applied equally to all areas of the business including typing, finance, purchasing, stores, servicing, etc. Often, these improvements will be small ones for which management would not normally fund the resources. In time though, their cumulative effect on the overall business can become very significant.

To make the best use of resources, the priority of an improvement project should be reviewed before it is cleared for action. A logical and systematic process for achieving improvements is desirable for all processes and levels of an organization from corporate to individual, for example, see annex B.

8.1 Analysis and diagnosis tools

Many tools used in the identification, rating, and solving of problems, the improvement of processes and the effective use of resources have been developed and are in use (see Table 1).

These can be used at various stages of a problem solving process and are useful for the following:

a) identifying subjects for improvement;

b) placing subjects in order of priority;

c) identifying and analysing causes of problems;

d) collecting data for analysis;

e) assessing alternative solutions to problems;

f) selecting the optimum solution for action.

Table 1 gives an overview of some of the more commonly used techniques.

Annex A (informative) Example of a typical process of total quality management

A.1 Policy and strategy of the organization

The mission of the organization, its leadership and strategies should be developed by management as follows.

a) *Mission.* Establish a mission statement, corporate objectives, strategy for achieving objectives and a business plan.

b) *Leadership and commitment.* Have visible, sustained commitment starting from chief executive and extending to every member of the business through personal leadership and example.

c) *Divisional objectives.* Establish and maintain the roles, responsibilities and objectives for each level of the organization to support the mission and corporate objectives.

A.2 Management of the organization

Management planning should include the following.

a) *Organization structure.* Establish an effective organizational structure.

b) *Management system.* Establish, audit and keep under review, an effective management system.[2)]

c) *Information system.* Establish an effective planned information system throughout the organization.

d) *Communications.* Establish good communications internally and externally with suppliers and customers.

Communication should be planned both vertically, between manager and staff, through all levels and horizontally between the processes and between the process owners and their suppliers and customers whether internal or external to the organization.

A.3 Improvement of the organization

The following should be considered.

a) *Working environment.* In addition to the physical environment of the work place the relationship between the individual and the organization and other employees should be structured so that each individual, team, department of a process or sub-process is aware of its contribution to the mission statement and the planned methods by which it can effect improvements.

b) *Measurement of performance.* Establish measures of performance of individuals or teams involved in each process related, where possible, to internal or external customer satisfaction.

NOTE The establishment of improvement requires measurement.

c) *Improvement objectives.* Improvement goals should be closely integrated with the corporate objectives, and should be differentiated from implementations of capital intensive projects.

d) *Improvement plans.* Establish plans for improvement of product service or process quality, safety, environmental impact, dependability and customer satisfaction at all levels.

e) *Monitor and review.* Ensure that all the plans, targets and measures throughout the organization complement each other and reflect the overall objectives of the individual process targets and overall objectives of the mission statement, review the results of improvement plans to obtain a measure of their effectiveness.

Annex B (informative) Example of a systematic improvements process

B.1 Identify

Identify any situation where there is an opportunity for improvement

B.2 Evaluate

Define the opportunity for improvement.

Define the process involved.

Gather and analyse the facts.

Define objectives for improvement.

B.3 Plan

Identify the cause(s) of the situation requiring improvement.

Devise possible solutions.

Select preferred solution.

Plan the implementation.

B.4 Execute

Implement the plan.

B.5 Check

Monitor, review and appraise results.

B.6 Amend

Repeat the process if planned solution is not achieving its objectives.

[2)] For guidance on quality systems reference should be made to BS 5750-0.2.

blank

List of references (see clause 2)

Normative references

BSI standards publications

BRITISH STANDARDS INSTITUTION, London

BS 4778, *Quality vocabulary.*

BS 4778-1:1987, *International terms.*

BS 4778-2:1991, *Quality concepts and related definitions.*

BS 4778-3, *Availability, reliability and maintainability terms.*

BS 4778-3.1:1991, *Guide to concepts and related definitions.*

BS 4778-3.2:1991, *Glossary of international terms.*

BS 6143, *Guide to the economics of quality.*

BS 6143-1:1992, *Process cost model.*

BS 6143-2:1990, *Prevention, appraisal and failure model.*

BS 7850, *Total quality management.*

BS 7850-2:1992, *Guide to quality improvement methods.*

Informative references

BSI Standards publications

BRITISH STANDARDS INSTITUTION, London

BS 5750, *Quality systems.*

BS 5750-0, *Principal concepts and applications.*

BS 5750-0.2:1987, *Guide to quality management and quality system elements.*

BS 5750-1:1987, *Specification for design/development, production, installation and servicing.*

BS 5750-2:1987, *Specification for production and installation.*

BS 5750-3:1987, *Specification for final inspection and test.*

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