The Business Improvement Handbook

From ISO 9001 to World-Class Performance

Fourth Edition

Steve Tanner with Mike Bailey

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Steve has worked in the area of performance improvement for over 30 years both as an employed team member and as consultant. Organizations he has worked with cover many industries and include manufacturing (Ford Motor Company, Fujitsu, Unilever, Siemens, ABB, British Aerospace, QinetiQ), financial services (Prudential, HSBC, First Direct, Lloyds, American Express, World Bank), telecoms (Atlantique Telecom, British Telecom, Canar, Etisalat, Mobily, Misr, Orange, PTCL, Qtel, T-Mobile, Ufone, Vodafone, Zantel), central government (HMRC, National School of Government, Highways Agency, Ministry of Defence) and many UK police forces. His areas of specialism include business excellence, benchmarking, process management and performance measurement. Steve has acted as an external assessor for many award processes, such as the European Quality Award, UK Excellence Award and the American APQC Benchmarking Award.

Steve frequently gives presentations and has published many papers, articles and benchmarking reports. His books include Assessing Business Excellence, *The Model in Practice, The Benchmarking Roadmap, Successful Communication at Work, How to Manage and Measure Performance, How to Establish Customer Requirements and Measure Customer Satisfaction*, and a book on sustainability.

At this moment in time Steve is working in the Middle East with a team of recognized experts supporting Etisalat in its vision to be a world-leading telecoms company. This book is dedicated to his Etisalat Group colleagues.

Mike Bailey

Mike is the Director for BSI's Professional Services business in the EMEA region. Mike has extensive experience in the deployment of management systems and business improvement tools and has played a key role in the development of BSI's training and assessment methodology and practice. He was instrumental in introducing Lean Six Sigma as an integrated element of the BSI portfolio.

Introduction

Many organizations aim for world-class performance. The tools they can use to get there – business improvement models and approaches – are the subject of this book.

Business improvement models cover an organization's activities, and when implemented can lead to world-class performance. Business improvement approaches are applied to specific tasks, outputs or areas of activity, and are the building blocks of world-class performance.

Business improvement models evaluate and recognize world-class performance; the most popular are ISO 9001, the EFQM Excellence Model® and the American Baldrige model. Business improvement approaches include ongoing programmes of improvement such as Total Quality Management (TQM) or Six Sigma, and tools that help managers understand the business, such as Balanced Scorecards and the Process Classification Framework.

There is an overlap between business improvement models and business improvement approaches. The differences between them are as shown in Table 1.

Table 1 — Differences between business improvement models and business improvement approaches

Improvement model	Improvement approach
Designed to be holistic covering all the organization's activities	Designed for a specific task or area of activity with an organization
May be used to determine ongoing actions as well as providing measurement against other organizations	Project-based and often subject to a lifecycle with a beginning and an end. Limited comparison to other organizations
Owned by a recognized body, such as EFQM	Related to particular 'schools' such as consultancies or business books
Universal – used by many organizations across the globe	Limited to organizations that choose to adopt the approach
Used as a basis of an award process or external recognition managed by an independent body	In some cases used as a basis of an award in the subject area
Leads to world-class performance	A building block of world-class performance

About this book

The Business Improvement Handbook is for all organizations seeking continuous improvement and will be particularly relevant to enterprises that have achieved registration to ISO 9001 and are looking for ways to take their performance to the next level.

The Business Improvement Handbook will help organizations improve their performance. First published in 2002 under the title *Beyond Registration – Getting the best from ISO 9001 and business improvement*, this version has been fully updated and includes a description of the most popular improvement methods being used by organizations across the world, and compares them with ISO 9001. It demonstrates how ISO 9001 provides support to and is consistent with those models and approaches.

Part 1 describes both ISO 9001 and the latest Baldrige and EFQM Excellence Models®. ISO 9001 can be the starting point for the journey towards world-class performance. It provides the platform for taking the organization forward by achieving control over leadership, customer focus and continuous improvement. Comparison Tables 2 and 3 show how the Baldrige and EFQM Excellence Models® build on the foundations laid by ISO 9001 and indicate potential areas for improvement once registration to ISO 9001 has been achieved.

Part 2 describes leading business improvement approaches and shows how they can deliver improvement. The application, background, principles and methods of each approach are covered, and the relationship with ISO 9001 shown. In this fourth edition, a number of approaches aimed at improving both personal performance and managing sustainability have been included to reflect the ever expanding scope of organization-wide performance improvement.

A glossary explains the terms and abbreviations used in the book, and Tables A.1 to A.3 in Appendix A show where the business improvement approaches can be used to support the requirements of ISO 9001, the Baldrige model and the EFQM Excellence Model®. Sources of further information can be found in Appendix B.

Part 1: ISO 9001 and the business improvement models

The ISO 9001 quality system

Background

The 1980s witnessed an increased use of formal quality management systems amongst business communities around the world. BS 5750 was introduced in 1979 as the standard for quality assurance and was used by organizations as a means to increase accuracy, efficiency and, as a result, competitiveness. Following a revision in 1987, ISO 9001 was issued as an international standard in 1994. The standard has evolved towards a total quality approach and the 2000 version shifted the emphasis to the enhancement of customer satisfaction through 'continual improvement'. It was revised again in 2008 and during its evolution the standard has become a benchmark and, in many cases, the entry criterion for suppliers.

Many organizations have adopted ISO 9001 as a basis for their management system, and a study conducted by the European Centre *for* Business Excellence (EC*for*BE) confirmed that adoption had brought many benefits. The study examined the reasons for adoption and found that the commonest was that customers required it. In one case this led to an additional $6 million of sales, and in another case an additional £15 million. The second most common reason for adoption was the trend in the marketplace; there was a feeling that organizations which achieved registration would have a competitive advantage.

Many organizations, however, have implemented ISO 9001 for the operational advantages that it delivers. One organization researched for the European Centre *for* Business Excellence study attributed £2.9 million savings to the adoption of ISO 9001.

Principles

ISO 9001 refers to eight quality management principles that can be used by top management to lead the organization towards improved performance:

1. customer focus;
2. leadership;
3. involvement of people;
4. process approach;
5. systems approach to management;
6. continual improvement;
7. factual approach to decision making;
8. mutually beneficial supplier relationships.

There is a close match between these principles and the principles that underpin the two business improvement models described in the next section. The Baldrige model has its core values and concepts, and the EFQM Excellence Model® its fundamental concepts of excellence.

Structure

ISO 9001 has a structure with five main requirements:

1. quality management system;
2. management responsibility;
3. resource management;
4. product realization;
5. measurement, analysis and improvement.

It can be represented as shown in Figure 1.

Application

ISO 9001 focuses on the identification and control of processes. Once the processes of a management system have been determined, Deming's Plan–Do–Check–Act cycle (see Figure 2) can be applied to the processes to seek continual improvement. (See 'Kaizen/Continuous improvement' on page 87 for more on Deming's cycle of improvement.)

One significant difference between the application of the post-2000 editions of the standard and the previous version is in the way that third-party assessments are conducted. Under the previous standard there was a risk that an assessment would only focus on a comparison between the detail presented within a series of documented procedures and the activities observed in an organization.

The assessment approach is focused on the need to identify the processes within the organization that contribute to the enhancement of the satisfaction of its customers (see Figure 3). Once established, the assessors then need to test these processes to ensure that they are integrated and effective. This has changed assessments from being 'conformance' audits to being value-adding assessments.

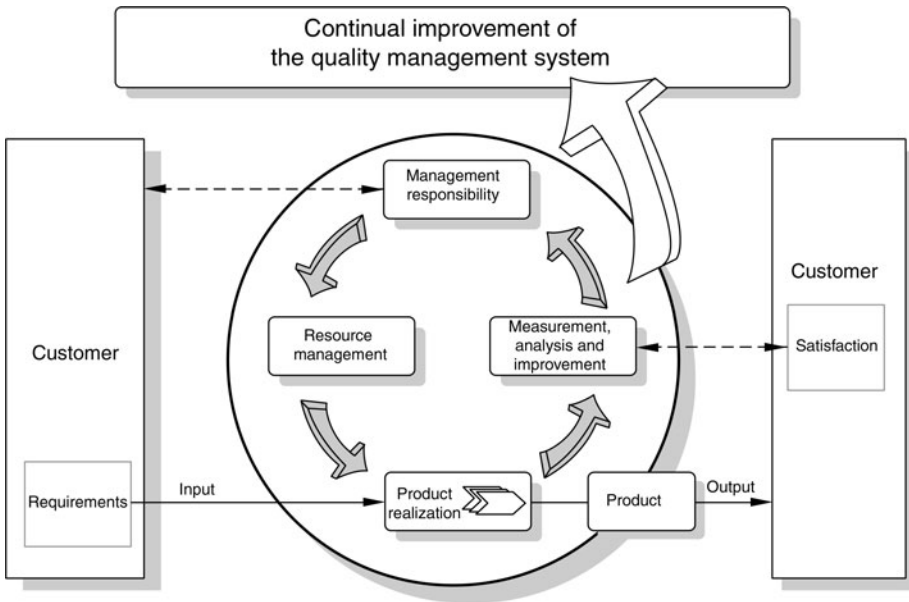


Figure 1 — Model of a process-based quality management system

(source: ISO 9001:2008)

Improvement is achieved through the analysis of factual data:

- objectives establish a focus for the achievement of goals;
- corrective action systems analyse the root causes of problems and prevent recurrence;
- preventive action systems provide the framework with a risk or loss management tool by identifying and preventing potential problems;
- analysis of data generated through monitoring and measuring activities identifies and/or confirms improvement.

Integration of ISO 9001 with actual business practice relies upon senior leaders' commitment. The standard then provides the framework to control and improve the organization's processes relating to many factors, such as human resources, infrastructure, environment, product or service delivery and measurement.

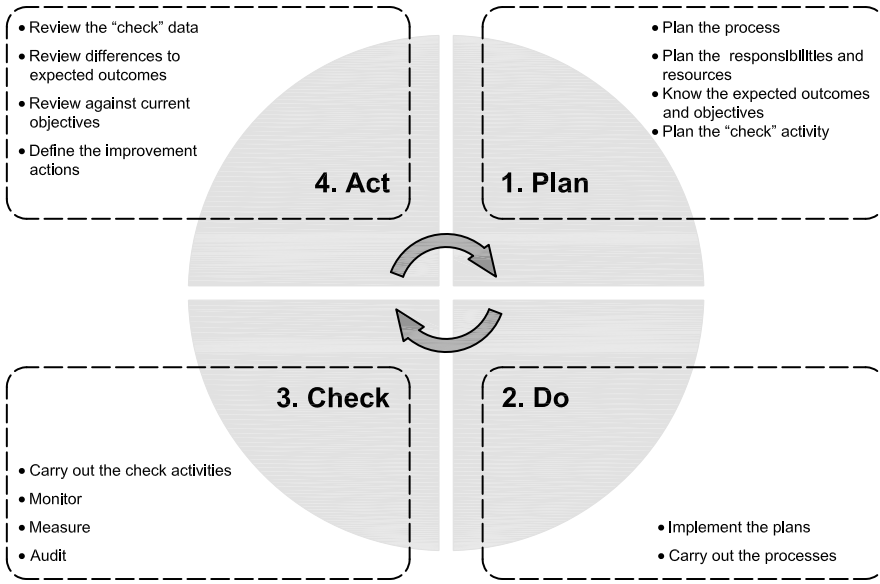


Figure 2 — Plan–Do–Check–Act cycle

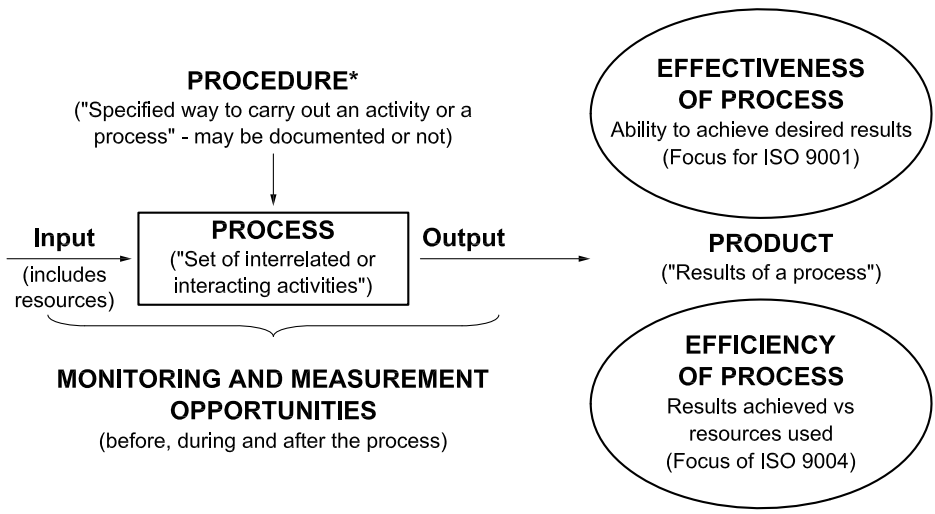


Figure 3 — Basic process approach

**This is the definition of 'procedure' given in ISO 9000:2005. This does not necessarily mean one of the six 'documented procedures' required by ISO 9001:2008*

When used in the spirit intended, ISO 9001 is an excellent control and improvement tool. This 'spirit' has been captured within the eight quality management principles. It ensures that improvement 'gains' are sustained. It directly drives breakthrough improvement and has structured linkages to 'best-practice' approaches to improvement.

Like any framework, ISO 9001 can be used inappropriately. For optimal effect it needs to be implemented with a view to excellence rather than compliance; only then will it work for the business rather than making extra work for it.

Key strengths of ISO 9001

The key strengths of ISO 9001 are as follows.

- It focuses on customers' needs.
- It avoids improvisation and lack of control.
- It is both process and performance focused.
- It provides sustainable improvement.
- It is the accepted world quality management standard.

Well-known business models

This section discusses two business improvement models: the Baldrige model and the EFQM Excellence Model®. The Baldrige model forms the basis of the US award process and is used in many parts of the world heavily influenced by US trade and practices. There are also a number of state awards at a more local level.

The EFQM Excellence Model®, which is used across Europe, is similar to the Baldrige model, and is used as the basis of the annual European Quality Award as well as national quality awards in European countries. Within European countries, there are often regional awards to support the achievement of excellence within geographical regions.

There are other business improvement models from around the world that have not been included here, notably Japan's Deming Prize. This was the first major business improvement framework to be developed and all the others have their roots in this model. The assessment criteria are kept confidential and have not been translated from the original Japanese, so detailed comparisons are difficult. This model has undergone some

revision over the years and now has adopted some of the concepts of the EFQM Excellence Model® and the Baldrige model, such as the focus on sustainability.

The Malcolm Baldrige Award

Background

The Malcolm Baldrige National Quality Award was created by public law in 1987 and led to the creation of a new partnership between government and the private sector aimed at promoting business excellence. The model has three important roles in strengthening US competitiveness:

1. to help improve organizational performance practices, capabilities and results;
2. to facilitate communication and sharing of best practices information among US organizations of all types;
3. to serve as a working tool for understanding and managing performance and for guiding planning and opportunities for learning.

Originally only for private sector organizations, the guidelines have been extended to public and voluntary organizations such as health and education. The popularity of the model within the USA is so great that although there are only around 30–50 applications for the award every year, over 250,000 organizations request copies of the guidelines.

As the Baldrige Award is now well established, researchers have been observing the benefits of the application of the model to organizations. In an extensive study, Hendricks and Singhal (1999) concluded that business excellence 'pays off handsomely' and is a source of competitive advantage. It was noted, however, that it is not a replacement for corporate strategy or a guarantee for success. Recently this work has been repeated with organizations from around Europe that have adopted the EFQM Excellence Model®, with similar results being found.

Core values and concepts

The model is built upon the following set of 11 interrelated core values and concepts:

1. visionary leadership;
2. customer-driven excellence;
3. organizational and personal learning;
4. valuing workforce members and partners;

5. agility;
6. focus on the future;
7. managing for innovation;
8. management by fact;
9. societal responsibility;
10. focus on results and creating value;
11. systems perspective.

These values and concepts are embedded beliefs and behaviours found in high-performing organizations. They are the foundation for integrating key business requirements into a results-oriented framework that creates a basis for action and feedback.

Structure

The 2011–12 Baldrige Award criteria framework consists of seven categories:

1. leadership;
2. strategic planning;
3. customer focus;
4. measurement, analysis and knowledge management;
5. workforce focus;
6. operations focus;
7. results.

The structure can be represented as shown in Figure 4.

Application

Each of the seven categories is broken down giving a total of 17 items. Organizations applying the framework first identify the activities they undertake and then review these against the requirements of each item. This review is termed a 'self-assessment'.

- The strengths and areas for improvement for each item are noted. A number of areas to address aid this analysis.
- A score out of a maximum of 100 per cent is based on two classifications. These are: process and results.
- The process score breaks down into four components: approach, deployment, learning and integration (ADLI)
- The results score also breaks down into four components: levels, trends, comparisons, and integration (LeTCI)
- Categories 1–6 are scored against process and category 7, results, is scored against results.

Figure 4 — Structure of standards production and administration

(source: Baldrige 2011–2012 Criteria for Performance Excellence)

- An overall score is calculated for each of the seven categories, which are then weighted to calculate a score out of 1,000 points. Categories 1–6 carry 55 per cent of the weighting.

Organizations at the start of the quality journey will typically score less than 250 points whereas world-class organizations would score over 800 points.

There are many ways to conduct the self-assessment, from a simple review undertaken by a team of people to the collation of a 75-page report assessed by an independent team. All approaches have their positive and negative points, but it is generally accepted that the production of the report and the use of an assessment team (the approach used in applications for the Baldrige Award) give the most accurate results and quality feedback.

Key strengths of the Baldrige model

The key strengths of the Baldrige model are:

- a strong customer/market focus and strategy focus;
- a people and process focus;

- an integrated systems approach;
- fact-based systems for improving performance;
- a focus on results.

The EFQM Excellence Model®

Background

The European Foundation for Quality Management (EFQM) was founded by 14 chief executives of leading European companies with the objective of enhancing the competitive position of European organizations in the world market. The aims are to:

- stimulate and assist organizations throughout Europe to participate in improvement activities leading ultimately to excellence in customer satisfaction, employee satisfaction, impact on society and business results; and
- support the managers of European organizations in accelerating the process of making TQM a decisive factor for achieving global competitive advantage.

The European Model for Total Quality Management was launched by EFQM in 1991, with the first European Quality Award and European Quality Prizes given in 1992. Since its launch the model has evolved and is now known as the EFQM Excellence Model®.

Research has been conducted into the reasons why organizations adopt the EFQM Excellence Model® and the benefits it brings. A study (EC*for*BE, 1998) suggested that the main reasons for commencing self-assessment are to:

- provide a driver for continuous improvement;
- identify an organization's areas for improvement;
- increase total quality awareness throughout the organization;
- increase the commitment of line management to TQM.

A report conducted by PriceWaterhouseCoopers (2000) concluded that public sector organizations were adopting the EFQM Excellence Model® at an accelerating rate. But the first study to examine the benefits of excellence for public sector organizations found a strong link between organizations that exhibited the features of excellence and the achievement of their objectives (Tanner, 2005). This study also included private sector organizations, and this showed that organizations that had adopted excellence were also able to react to changes in the business environment much quicker.

The X Factor, a research report published by the British Quality Foundation and EC*for*BE in 1998, made a major contribution to the

understanding of the benefits of business excellence to organizations. The research included a review of the submission documents of award-winning organizations and four in-depth case studies, and demonstrated that European and UK award-winning organizations show strong positive trends across a range of financial measures over both three- and five-year periods, even if their performance against their own targets was less satisfactory.

Principles

Truly excellent organizations are measured by their ability to achieve and sustain outstanding results for all their stakeholders – customers, employees, shareholders and the community. This requires a management approach based on eight fundamental concepts:

1. Adding value for customers – excellent organizations consistently add value for customers by understanding, anticipating and fulfilling needs, expectations and opportunities;
2. Creating a sustainable future – excellent organizations have a positive impact on the world around them by enhancing their performance whilst simultaneously advancing the economic, environmental and social conditions within the communities they touch;
3. Developing organizational capability – excellent organizations enhance their capabilities by effectively managing change within and beyond the organizational boundaries;
4. Harnessing creativity and innovation – excellent organizations generate increased value and levels of performance through continual improvement and systematic innovations by harnessing the creativity of their stakeholders;
5. Leading with vision, inspiration and integrity – excellent organizations have leaders who shape the future and make it happen, acting as role models for its values and ethics;
6. Managing with agility – excellent organizations are widely recognized for their ability to identify and respond effectively and efficiently to opportunities and threats;
7. Succeeding through the talent of people – excellent organizations value their people and create a culture of empowerment for the achievement of both organizational and personal goals;
8. Sustaining outstanding results – excellent organizations achieve sustained outstanding results that meet both the short and long term needs of all their stakeholders, within the context of their operating environment.

Structure

The EFQM Excellence Model® consists of five enabler criteria:

- leadership;
- strategy;
- people;
- partnerships and resources;
- processes, products and services;

and four results criteria:

- customer results;
- people results;
- society results;
- key results.

The structure can be represented as shown in Figure 5.

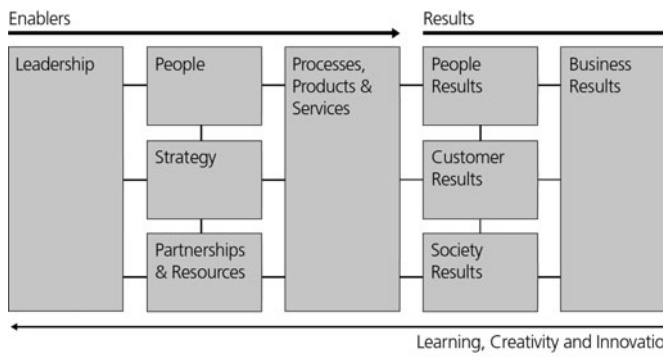


Figure 5 — The EFQM Excellence Model® criteria

Application

The application of the EFQM Excellence Model® is similar to that of the Baldrige model. Each criterion is broken down into a number of criteria parts and each of these has a number of supporting guidance points.

However, the two approaches do vary significantly in their approach to scoring. The EFQM Excellence Model® makes use of a 'Plan–Do–Check–Act' approach entitled RADAR:

- Results
- Approach
- Deployment

- Assessment and Refine.

Like the Baldrige model, there are two elements to the scoring, enablers and results, but unlike the Baldrige model, within each criterion all the criteria parts carry the same weight:

- an overall score is calculated for each of the nine criteria;
- the criteria are then weighted to calculate a score out of 1,000 points;
- 50 per cent of the total weighting is given to the enabler criteria and 50 per cent to the results. (For the Baldrige model this ratio is 55:45 per cent in favour of the enabler equivalent.)

Organizations at the start of the quality journey will typically score less than 250 points out of 1,000, whereas world-class organizations winning the European Award would score over 800 points.

Key strengths of the EFQM Excellence Model®

The key strengths of the EFQM Excellence Model® are:

- a strong business focus and emphasis on business results;
- Balanced Scorecard performance tracking and results;
- the first framework to introduce 'impact on society' concept;
- an enabler-result structure encourages understanding of cause and effect;
- a holistic business excellence model.

Linkages

ISO 9001 has strong linkages to the EFQM Excellence Model® and the Baldrige model, so an organization can use its ISO 9001-registered quality manual as a source of approaches to populate the models.

Example: Linking the Baldrige model and ISO 9001

If a business wanted to make a submission to the Malcolm Baldrige Award, when addressing Baldrige category 3 'Customer Focus', it could also refer to the clause in ISO 9001, 5.2 'Customer focus'.

These examples demonstrate how ISO 9001 provides support for the well-known quality models and that it has a consistent approach. Table 2 and Table 3 take this a stage further by defining the linkages between the different frameworks.

Table 2 — How ISO 9001 and the Baldrige Model compare

Baldrige model criteria	ISO 9001 requirements[1]			
	Management responsibility	Resource management	Product realization[2]	Measurement, analysis, improvement
Leadership	✓			✓
Strategic planning	✓		✓	✓
Customer focus				✓
Measurement, analysis and knowledge management			✓	✓
Workforce focus	✓	✓		✓
Operations focus	✓		✓	✓
Results	✓	✓	✓	✓

1 Only the main linkages are shown.

2 Product realization may be taken to include process management.

Example: Linking the EFQM Excellence Model® and ISO 9001

If a business wanted to self-assess against the EFQM Excellence Model® it could do so against its own application of ISO 9001. Criterion 1 on 'Leadership', for example, can be linked to Clause 5 'Management responsibility' in ISO 9001. At a lower level, criterion part 1a 'Leaders develop the mission, vision, values and ethics and act as role models' maps to Clause 5.1 'Management commitment' and Clause 5.3 'Quality policy' in ISO 9001. (See Table 3)

Table 3 — How ISO 9001 and the EFQM Excellence Model® compare

EFQM Excellence Model® criteria	ISO 9001 requirements[1]			
	Management responsibility	Resource management	Product realization[2]	Measurement, analysis and improvement
Leadership	✓			
Strategy	✓		✓	✓
People	✓	✓		
Partnerships and resources		✓	✓	
Processes, products and services	✓	✓	✓	✓
Customer results	✓			✓
People results				
Society results				
Key results	✓		✓	✓

1 Only the main linkages are shown.

2 Product realization may be taken to include process management.

Part 2: ISO 9001 and the business improvement approaches

Introduction

The business improvement approaches described can be used to support ISO 9001 and other business improvement models. Following Table 4, this section provides:

- a thumbnail description of all the business improvement approaches included (see Table 5);
- a summary table, outlining the factors to consider for the use of each approach;
- an explanation of each business improvement approach.

Each business improvement approach is explained using a common format:

- a table giving guidance on how the approach is best used;
- brief background;
- basic principles;
- description.

Table 4 lists the factors that will guide your choice of a particular approach.

Table 4 — Factors that will guide your choice of a particular approach

Factor	Description	Options
Link to ISO 9001	Where the approach requirements support ISO 9001	1. Management responsibility (MR) 2. Resource management (RM) 3. Process management (product realization – PR) 4. Measurement and analysis (M&A) 5. Improvement (Imp)

Scope of use	Type of organization	Private sector, public sector, third sector, SME
	Industry	Manufacturing or service
	Where the approach may be used	Function, division and/or organization
Degree of change in systems	How much change to the systems and approaches will be encountered day-to-day within the organization on implementation	Large, medium, small
Degree of change for people	The extent to which people will be affected by the change in implementation	Large, medium, small
Level of benefits	How much benefit will be derived from the change	Large, medium, small
Type of benefit	The type of benefit that will be derived from the change	Financial, reputational (customer service, societal), cultural (people)
Level of involvement	How people will be involved in the change	Fully inclusive, inclusive, coercive
Maturity level	Who should use the approach	Beginner, experienced, world-class
Timescale	How long it will take to implement the approach	Less than 3 months, 6–12 months, over 12 months
Level of investment	What it will cost in terms of resource and expenditure	High, medium, low
How to implement	How to get started	Evolution, project or programme

The business improvement approaches

Table 5 — Thumbnail descriptions of business improvement approaches

Approach	Thumbnail description
Balanced Scorecard	A framework for defining performance measures
Benchmarking	Measurement and process improvement based on investigating the approaches taken by other organizations, or even within the same organization
Board performance review	A facilitated self-assessment covering a range of board activities, as well as how well the board works as a team
Business process re-engineering (BPR)	Radically simplifying and eliminating processes throughout an organization to increase productivity and reduce cost
Carbon footprinting	A method to calculate the impact of activities on the environment in terms of carbon emissions
Customer Service Excellence	Designed for use in the public sector, this framework examines areas of importance to customers
Design for Six Sigma	The application of Six Sigma principles to product and service design
Failure Mode and Effect Analysis (FMEA)	A tool for facilitating the process of predicting failures, planning preventive measures, estimating the cost of the failure, and planning redundant systems or system responses to failures
Good practice transfer	Guidelines for ensuring that practices in one area may be successfully transferred to another
High-performance culture	Defines the key components required to enable outstanding levels of performance
Investors in People (IiP)	Effective investment in the training and development of people to achieve organizational goals

Approach	Thumbnail description
ISO 9004	An extension of ISO 9001 expanding the scope to include additional total quality principles. It has not been universally adopted nor has such a well-developed recognition mechanism, which is why ISO 9004 is classified as a business improvement approach
ISO 14001	A standard covering good practice in environmental management
Kaizen/Continuous improvement	Incremental quality improvements through the involvement of people
Kaizen teams	Short duration improvement events that deliver major benefits with minimal investment. Also known as rapid improvement teams
Lean improvement	Providing a way to do more with less: less human effort, less equipment, less time and less space
Lean Six Sigma	A combination of the Six Sigma improvement cycle with Lean improvement techniques
Performance management	A way of ensuring personal objectives are aligned to the organization's objectives, and that individual performance improves through learning
Performance measurement	The identification of areas for improvement by measuring current performance and comparing against desired performance
Process Classification Framework (PCF)	A list of common processes that aids process identification and benchmarking activities
Process management	Improvement through understanding the key business processes that are most in need of improvement
Self-assessment	Reviewing the results, approaches and their deployment using a quality

Approach	Thumbnail description
	model (e.g., the EFQM Excellence Model®)
Six Sigma	Compares process performance against performance capability and empowers people to improve
Statistical Process Control (SPC)	Reduction in waste and improvement in consistency through the reduction in variation
Sustainability	A new business model to take advantage of the impact of activities on the environment
Theory of Constraints (TOC)	A systems approach to quality improvement that identifies and removes 'bottlenecks' in the system
Time-based analysis	A team-based approach that identifies value- and non-value-adding activities with the objective of compressing the time it takes to deliver a product or service
Total Productive Maintenance (TPM)	Using a shop floor approach to build an organization that prevents different types of losses (by ensuring zero accidents, zero defects and zero failures) for the life of the production system
Total Quality Management (TQM)	A managed programme for improving all aspects of an organization through the involvement of its people
Value stream mapping (VSM)	Uses a mapping technique to analyse the time taken to deliver a service or product

How to use the business improvement approaches: summary table

Pages 22-33 contain Table 6, outlining the factors to consider for the use of each business improvement approach. The table is followed by more detailed information on the approaches.

Table 6: Business improvement approaches

Factors	Balanced Scorecard	Benchmarking	Board performance review	Business process re-engineering (BPR)	Carbon footprinting
Link to ISO 9001	✓ MR RM ✓ PR ✓ M&A ✓ Imp	MR RM PR ✓ M&A ✓ Imp	✓ MR RM PR ✓ M&A ✓ Imp	MR RM PR M&A ✓ Imp	MR ✓ RM ✓ PR ✓ M&A ✓ Imp
Scope of use	All types of organization	All types of organization	All types of organization	All types of organization	All types of organization
	Both manufacturing and service	Both manufacturing and service	Both manufacturing and service	Both manufacturing and service	Both manufacturing and service
	Function, division and/or organization	Mainly by function	Organization-wide	Mainly by function	Organization-wide
Degree of change in systems	Large if no measurement is in place already	Large to medium	Small	Large	Medium

Degree of change for people	Large if no measurement is in place already. The change in approach to measurement is likely to change people's behaviour	Large to medium	Small	Large	Small
Level of benefits	Medium	Large	Large	Large	Medium
Type of benefit	Financial and cultural	Financial and reputational	Financial, reputational and cultural	Financial and reputational	Financial, reputational and cultural
Level of involvement	Fully inclusive	Inclusive	Fully inclusive	Best if fully inclusive, but sometimes coercive if external support is used	Inclusive
Maturity level	Any	Experienced and world-class	Experienced and world-class	Any	Beginner and experienced
Timescale	Less than 3 months to establish but over 12 months to fully deploy at all levels	6–12 months	Less than 3 months	6–12 months	6–12 months
Level of investment	Low	High	Low	High, especially when IT system investment is required	Low
How to implement	Project	Project	Project	Project	Project

Factors	Customer Service Excellence	Design for Six Sigma	Failure Mode and Effect Analysis (FMEA)	Good practice transfer	High-performance culture
Link to ISO 9001	✓ MR ✓ RM ✓ PR ✓ M&A ✓ Imp	MR RM ✓ PR M&A Imp	MR RM ✓ PR ✓ M&A ✓ Imp	MR ✓ RM ✓ PR ✓ M&A ✓ Imp	✓ MR ✓ RM PR ✓ M&A ✓ Imp
Scope of use	Designed for public sector but applicable to others	All types of organization	All types of organization	All types of organization	All types of organization
	Primarily service but can be applied to manufacturing	Both manufacturing and service	Mainly manufacturing, but can be applied to service	Both manufacturing and service	Both manufacturing and service
	Organization-wide	Division	Division	Division	Organization-wide
Degree of change in systems	Medium	Medium	Small	Small	Medium
Degree of change for people	Large to medium	Medium	Small	Small	Large
Level of benefits	Large to medium	Large	Large	Large to medium	Large

Type of benefit	Reputational and cultural	Financial, reputational and cultural	Financial and, if applied to customer service-related issues, reputational	Financial and cultural	Financial, reputational and cultural
Level of involvement	Fully inclusive	Inclusive	Fully inclusive	Fully inclusive	Fully inclusive
Maturity level	Any level	Experienced and world-class	Experienced	Experienced	Experienced and world-class
Timescale	Over 12 months	6–12 months	6–12 months	Less than 3 months	Over 12 months
Level of investment	Medium	Medium	Low	Low	Medium
How to implement	Project or programme	Project	Project	Programme	Programme

Factors	Investors in People (IiP)	ISO 9004	ISO 14001	Kaizen/Continuous improvement	Kaizen teams
Link to ISO 9001	✓ MR ✓ RM PR ✓ M&A ✓ Imp	✓ MR ✓ RM ✓ PR ✓ M&A ✓ Imp	✓ MR ✓ RM ✓ PR ✓ M&A ✓ Imp	✓ MR ✓ RM ✓ PR ✓ M&A ✓ Imp	MR ✓ RM ✓ PR M&A ✓ Imp
Scope of use	All types of organization	All types of organization	All types of organization	All types of organization	All types of organization
	Both manufacturing and service	Both manufacturing and service	Both manufacturing and service	Both manufacturing and service	Both manufacturing and service
	Organization-wide	Organization-wide	Organization-wide	Function, division and/or organization	Self-contained function units
Degree of change in systems	Medium	Medium – if ISO 9001 methodologies are in place	Medium	Small	Medium
Degree of change for people	Large	Medium – if ISO 9001 methodologies are in place	Medium – if currently operating an ISO 9001-based system High – if no ISO 9001-based system is in place	Large	Small

Level of benefits	Medium	Medium – where used in isolation Large – when used to provide input into other improvement techniques	Large to medium (in line with system maturity)	Large to medium depending on success of implementation	Large
Type of benefit	Reputational and cultural	Financial, reputational and cultural	Financial, reputational and cultural	Financial, reputational and cultural	Financial and reputational
Level of involvement	Fully inclusive	Fully inclusive	Fully inclusive	Fully inclusive	Fully inclusive
Maturity level	Beginner	Beginner, experienced and world-class	Beginner, experienced and world-class	Beginner	Experienced and world-class
Timescale	The length of time between making a commitment to achieve the standard and being recognized will vary from typically 6 months to 2 years, depending on the extent of development needed in the organization	6–12 months	6–12 months	Over 12 months	Less than 3 months
Level of investment	Low	Medium	Medium, due to training costs	High	Low
How to implement	Programme	Project	Project	Programme	Project

Factors	Lean improvement	Lean Six Sigma	Performance management	Performance measurement	Process Classification Framework (PCF)
Link to ISO 9001	MR RM ✓ PR ✓ M&A ✓ Imp	✓ MR ✓ RM ✓ PR ✓ M&A ✓ Imp	✓ MR ✓ RM PR M&A Imp	✓ MR RM ✓ PR ✓ M&A ✓ Imp	MR RM ✓ PR M&A Imp
Scope of use	All types of organization	All types of organization	All types of organization	All types of organization	All types of organization, although not so applicable to voluntary organizations
	Both manufacturing and service, but people find it easier to apply in manufacturing departments	Both manufacturing and service	Both manufacturing and service	Both manufacturing and service	Both manufacturing and service
	Functions, particularly manufacturing functions, and organization-wide	Organization-wide	Organization-wide	Function, division and/or organization	Function, division and/or organization
Degree of change in systems	Large	Medium	Medium	Medium to small	Not applicable

Degree of change for people	Large	Medium	Large	Medium	Not applicable
Level of benefits	Large	Large	Large	Large	Medium
Type of benefit	Financial, reputational and cultural	Financial, reputational and cultural	Financial, reputational and cultural	Financial, reputational and cultural	Financial, reputational and cultural
Level of involvement	Often coercive to force people to adopt the principles	Inclusive	Fully inclusive	Inclusive	Inclusive
Maturity level	Experienced and world-class	Experienced and world-class	All	Beginner, experienced and world-class	Beginner
Timescale	Over 12 months	6–12 months	Over 12 months	Less than 3 months to get started	Less than 3 months
Level of investment	Medium	Medium	Low, provided there is no major IT system investment	Low	Low
How to implement	Programme	Project	Programme	Project	Project

Factors	Process management	Self-assessment	Six Sigma	Statistical Process Control (SPC)	Sustainability
Link to ISO 9001	✓ MR ✓ RM ✓ PR ✓ M&A ✓ Imp	✓ MR RM PR ✓ M&A ✓ Imp	✓ MR ✓ RM ✓ PR ✓ M&A ✓ Imp	MR RM PR ✓ M&A Imp	✓ MR ✓ RM PR M&A Imp
Scope of use	All types of organization	All types of organization	All types of organization	All types of organization	All types of organization
	Both manufacturing and service	Both manufacturing and service	Both manufacturing and service	Both manufacturing and service, but most success has been with manufacturing units	Both manufacturing and service
	Function, division and/or organization	Division or organization-wide	Function, division and/or organization	Function (particularly manufacturing) and organization-wide	Division and/or organization
Degree of change in systems	Varies, depending on degree of change required	Small	Medium	Medium	Large
Degree of change for people	Varies, depending on degree of change required	Small	Medium	Medium	Large

Level of benefits	Varies, depending on degree of change required	Medium	Medium	Medium	Medium
Type of benefit	Financial, reputational and cultural	Financial, reputational and cultural, once improvements are implemented	Financial, reputational and cultural	Financial, reputational and cultural	Financial, reputational and cultural
Level of involvement	Inclusive	Inclusive	Fully inclusive	Fully inclusive	Fully inclusive
Maturity level	Beginner, experienced and world-class	All, but the approach used will vary depending on the maturity of the organization	Beginner, experienced and world-class	Beginner, experienced and world-class	Beginner
Timescale	It can take over 12 months to get a good understanding of process management and to see the first benefits	Less than 3 months or 6–12 months depending on approach taken	Over 12 months	Less than 3 months	Over 12 months
Level of investment	Depends on improvement method used	Medium to low	High, due to training costs	Medium, due to training costs	Medium
How to implement	Evolution, project or programme	Project	Programme	Programme	Programme

Factors	Theory of Constraints (TOC)	Time-based analysis	Total Productive Maintenance (TPM)	Total Quality Management (TQM)	Value stream mapping (VSM)
Link to ISO 9001	MR ✓ RM ✓ PR M&A Imp	MR RM PR ✓ M&A Imp	MR ✓ RM ✓ PR ✓ M&A ✓ Imp	✓ MR ✓ RM ✓ PR ✓ M&A ✓ Imp	MR ✓ RM ✓ PR ✓ M&A ✓ Imp
Scope of use	All types of organization	All types of organization	Private sector and SME	All types of organization	All types of organization
	Both manufacturing and service, but most success has been with manufacturing units	Both manufacturing and service	Almost exclusively manufacturing	Both manufacturing and service	Both manufacturing and service, but most success has been with manufacturing units
	Function (particularly manufacturing)	Cross-function	Function (particularly manufacturing)	Division or organization-wide	Cross-function and/or division
Degree of change in systems	Medium to small	Large to small	Small	Small	Small
Degree of change for people	Medium	Small	Large	Large	Small

Level of benefits	Medium	Large	Medium	Large to medium, depending on success of implementation	Large
Type of benefit	Financial and reputational	Financial and reputational	Financial and cultural	Financial, reputational and cultural	Financial and reputational
Level of involvement	Inclusive	Fully inclusive	Fully inclusive	Fully inclusive	Fully inclusive
Maturity level	Experienced and world-class	Beginner and experienced	Beginner, experienced and world-class	Beginner	Experienced and world-class
Timescale	Over 12 months	Less than 3 months	Over 12 months	Over 12 months	Less than 3 months
Level of investment	Medium to low	Low	Medium	High	Medium
How to implement	Evolution	Project	Programme	Programme	Project

Balanced Scorecard

How to use

Table 7 – How to use the Balanced Scorecard approach

Factors	Comments				
Link to ISO 9001	MR	RM	PR	M&A	Imp
	✓		✓	✓	✓
Scope of use	• All types of organization • Both manufacturing and service • Function, division and/or organization				
Degree of change in systems	Large if no measurement is in place already				
Degree of change for people	Large if no measurement is in place already. The change in approach to measurement is likely to change people's behaviour				
Level of benefits	Medium				
Type of benefit	Financial and cultural				
Level of involvement	Fully inclusive				
Maturity level	Any				
Timescale	Less than 3 months to establish but over 12 months to fully deploy at all levels				
Level of investment	Low				
How to implement	Project				

Background

This approach has its origins in a one-year research project conducted in 1990 that examined performance measurement in the future. The concern at the time was that performance measurement was essentially financial and that this was hindering organizations' ability to create future economic value.

David Norton, previously the CEO of Nolan, Norton, served as the study leader and Robert Kaplan as the academic consultant. The research study considered innovative performance measurement systems and this led to the publication of a *Harvard Business Review* article in January–February 1992 entitled 'The Balanced Scorecard– Measures that Drive Performance'. Their book, *The Balanced Scorecard*, followed this article in 1996. More recently, Kaplan and Norton's book *The Strategy-Focused Organization* (2001) reinforced the use of the Balanced Scorecard to deliver organizational strategy. Many organizations use the 'Strategy-Focused Organization (SFO)' assessment as a way of improving their approach. Their ambition is often to score highly in the assessment so they enter the 'Hall of Fame', which promotes best-practice organizations. The Hall of Fame includes such companies as Statoil, the Federal Bureau of Investigation, and The Hospital for Sick Children in Canada.

It is important to note that although the Balanced Scorecard was developed based on the observations of private organizations, the principles are equally applicable to public and voluntary organizations. A number of examples are available to reinforce this point.

Principles

The main principle behind the Balanced Scorecard is that traditional financial measures, which tell the story of past events, are now inadequate. In the Industrial Age, long-term capabilities and customer relationships were not critical for success. In the Information Age, there is a need for measures that guide and evaluate an organization's journey to create future value through investment in customers, suppliers, employees, processes, technology and innovation.

The Balanced Scorecard couples the financial measures of past performance with measures of the drivers of future performance. This leads to four perspectives (see Figure 6):

1. Financial perspective: how is the organization doing financially?
2. Customer perspective: who are our customers and what do they think of us?
3. Internal/business-process perspective: how good are we at delivering customer satisfaction and achieving the financial objectives?
4. Learning and growth perspective: what capabilities must we develop longer term?

The concept of 'balance' comes from the need to have representative measures from each perspective, recognizing that the perspectives are also linked.

Over time the Balanced Scorecard has evolved from an approach that simply forces a degree of balance between different measures to one that articulates and deploys an organization's strategy. A feature of the most recent version is that it recognizes the need to develop intangible assets, such as reputation, culture and knowledge systems.

Approach

The starting point for the development of a Balanced Scorecard is referral to the organization's vision and strategy. Once this has been established four questions should be posed, one for each perspective:

1. Financial: to succeed financially, how should we appear to our shareholders?
2. Customer: to achieve our vision, how should we appear to our customers?
3. Internal/business processes: to satisfy our shareholders and customers, which business processes must we excel at?
4. Learning and growth: to achieve our vision, how will we sustain our ability to change and improve?

(Kaplan and Norton, 1996)

It is normal to identify a number of potential measures for the scorecard. The key to the effective use of the approach is to ensure that the measures finally chosen relate to the achievement of the vision and strategy, and that they maintain the 'balance' by including all perspectives.

Several factors are recorded for each measure selected:

- the specific objective;
- definition of the measure,
- target;
- any related initiatives supporting the delivery of the target.

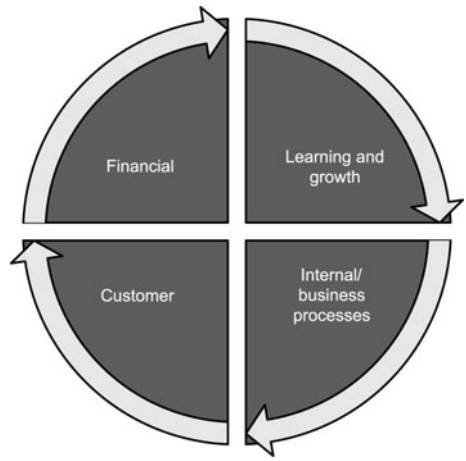


Figure 6 — The four perspectives of the Balanced Scorecard approach

It is also common for scorecards to be cascaded through an organization, with a corporate scorecard supported by divisional scorecards, which in turn are supported by unit scorecards.

Benchmarking

How to use

Benchmarking can take many forms depending on the type of study being conducted. Table 8 gives a view of a general best-practice study.

Table 8 — A view of a general best-practice study using benchmarking

Factors	Comments				
Link to ISO 9001	MR	RM	PR	M&A	Imp
				✓	✓
Scope of use	• All types of organization • Both manufacturing and service • Mainly by function				
Degree of change in systems	Large to medium				

Degree of change for people	Large to medium
Level of benefits	Large
Type of benefit	Financial and reputational
Level of involvement	Inclusive
Maturity level	Experienced and world-class
Timescale	6–12 months
Level of investment	High
How to implement	Project

Background

Benchmarking has become a common term since it was popularized by Xerox in the 1980s. There is a distinction between the word 'benchmark' and the process of 'benchmarking'. In terms of quality improvement, a benchmark is a 'best-in-class' achievement. This achievement then becomes the reference point or recognized standard of excellence against which similar processes are measured.

While a benchmark is a measure, 'benchmarking' is a process of measurement that can contribute to achieving a competitive advantage:

> Benchmarking is the process of continuously comparing and measuring an organization with business leaders anywhere in the world to gain information which will help the organization take action to improve its performance.
>
> (Tanner and Walker, 2002)

The term 'competitive advantage' is not exclusive to private sector organizations. Public sector organizations compete for funding with other departments, and third-sector organizations with other charities.

There are two distinct approaches to benchmarking: competitive benchmarking and process benchmarking.

Competitive benchmarking measures organizational performance against that of competing organizations. It tends to concentrate on the relative performance of competitors using a select set of measures.

Process benchmarking measures discrete process performance and functionality against organizations that lead in those processes. It seeks the best practice for conducting a particular business process after first validating that the performance of that process is world class. Once the best practice is identified and understood, it may then be adapted and improved for application to another organization.

There are several types of benchmarking, ranging from internal benchmarking to worldwide best-practice benchmarking. As a general observation, the wider the scope of the study the longer it takes to complete and the more money it costs, but the greater the level of benefit.

Benchmarking can be highly effective for improving performance. It can be used either as a tool in itself, or as an element of a BPR project. In either case it:

- develops realistic stretch goals;
- establishes realistic action plans;
- encourages a striving for excellence and innovation;
- creates a better understanding of your current position;
- underpins the drive for performance improvement.

Principles

In a similar way to life, over time organizations either continue to change or eventually become extinct. Benchmarking is a way of accelerating an organization's ability to change by learning from others. It aims to provide goals for realistic process improvement and an understanding of the changes necessary to facilitate that improvement. It contains a bias for action that can lead to breakthrough and continuous improvement projects for products, services or processes. The results of benchmarking should be increased customer satisfaction and improved competitive position.

Approach

Benchmarking studies generally follow a five-step process:

1. planning a benchmarking project;
2. collecting data;
3. analysing the data for performance gaps and process enablers;
4. improving by adapting process enablers;

5. capturing the learning so the next benchmarking project is even more effective.

The 'Benchmarking Roadmap' (see Figure 7) shows that there are a number of stakeholders involved in the approach.

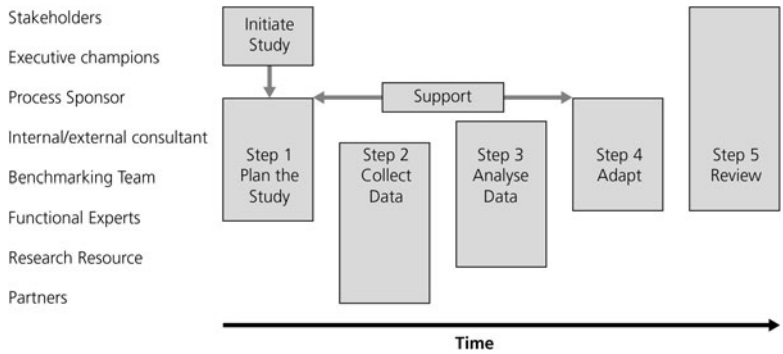


Figure 7 — The 'Benchmarking Roadmap' process

(source: Tanner and Walker 2002)

The first step of the approach is to plan for the study, as benchmarking is a project-based approach. This step includes the need to better understand the organization and the area to be benchmarked. Often organizations do not put enough effort into this step in their eagerness to contact external organizations, causing them many problems further along the process.

Data collection for benchmarking studies can take many forms: telephone surveys, written questionnaires, literature searches, exchange of prepared materials, or site visits. In a full-scale best-practice study there are two rounds of data collection, the first round using remote data collection techniques such as surveys to collect information in order to screen organizations so that only the most valuable ones are selected for study in detail through a site visit.

After collecting the data, the task is to sift through what was found in order to decide on the improvement actions to be taken. It can be like walking into a mechanic's garage with all the parts from several engines lying on the floor. The task is to choose the parts that are going to build an engine that is going to beat all others. This is what happens in the fourth implementation step. A common problem is that organizations do not follow through and implement the changes required to improve

performance. All the excitement is in the early stages when organizations are being contacted and ideas are being exchanged. Implementation is when the work really starts.

A benchmarking study will provide outputs. It should:

- provide a measure that compares performance for the benchmarked process among the target organizations;
- describe the organization's gap in performance as compared to these identified performance levels;
- identify best practices and enablers that produced the results observed during the study;
- set performance goals for the process and identify areas where action can be taken to improve the sponsoring organization's performance. The sponsoring organization is then responsible for implementing the action plan.

Board performance review

How to use

Table 9 — How to use the board performance review approach

Factors	Comments				
Link to ISO 9001	MR	RM	PR	M&A	Imp
	✓			✓	✓
Scope of use	• All types of organization • Both manufacturing and service • Organization-wide				
Degree of change in systems	Small				
Degree of change for people	Small				
Level of benefits	Large				
Type of benefit	Financial, reputational and cultural				

Level of involvement	Fully inclusive
Maturity level	Experienced and world-class
Timescale	Less than 3 months
Level of investment	Low
How to implement	Project

Background

In 2010 the UK Financial Reporting Council produced its *Corporate Governance Code* which sets out standards of good practice for board directors. The code recommends that 'Evaluation of the board of FTSE 350 companies should be externally facilitated at least every three years'. Commentators suggest that smaller companies would also benefit from similar regular reviews.

Principles

Improving organizational performance starts from the top. It is the board that needs to make continuous improvement a priority and demonstrate personal commitment. A regular review of how the board itself operates, and how it could improve, is vital.

The board performance review is a facilitated self-assessment covering issues such as the performance of the board as a team; the balance of priorities between operational and strategic issues; board and committee performance; chair and CEO performance; and an assessment of personal skills within the board. The review provides vital information to allow the board to set priorities for improvement and to track progress.

According to *Good Governance – A Code for the Voluntary and Community Sector* (the Good Governance Code*)* published in 2010, governance is defined as 'The systems and processes concerned with ensuring the overall direction, effectiveness, supervision and accountability of an organisation'. A simpler definition is: 'The corporate responsibility and accountability to all stakeholders in the short and longer term'. Good governance is about meeting the needs of your stakeholders.

Approach

Stakeholders can be considered in four dimensions:

1. Regulators: legal compliance;
2. Customers: value and quality of service;
3. Employees: engagement and satisfaction;
4. Shareholders: use of funds.

Regulatory stakeholders must be satisfied for an organization to be allowed to operate. Because of this, compliance is essential. Thankfully, governance is not just about compliance it is also about performance, and performance is the way in which shareholders and customers are linked, through people and the organizational processes operated. Focusing on performance gets back to the core of why organizations are created in the first place. It is the compelling cause that motivates shareholders, people and suppliers.

The review is completed in five steps:

1. preparation: tailoring questions to fit with the organizational culture and specific needs;
2. data collection: input from each board member, collected confidentially. This can be completed through 1:1 interviews or, preferably, using an online system;
3. analysis: quantitative and qualitative data collated and compared against benchmark figures to provide key messages;
4. review: presentation of the results to the board and agreement on key priorities for improvement;
5. action: delivery of agreed actions.

The core of the approach is the assessment framework. This covers six categories and 26 criteria:

Board performance

1. Values and relationships
2. Corporate governance
3. Strategic planning
4. Risk management and compliance
5. Decision making
6. Board reporting and meetings

Audit and risk committee performance

1. Committee purpose and direction
2. Chairmanship
3. Administration and meetings
4. Outcomes

Corporate governance committee performance

1. Committee purpose and direction
2. Chairmanship
3. Administration and meetings
4. Outcomes

Chair performance

1. Leadership
2. Board oversight
3. General management oversight
4. Board meetings

Peer performance

1. Values and relationships
2. Corporate governance
3. Participation and contribution
4. Behavioural traits

Director skills

1. Strategic positioning
2. Leadership
3. Risk management
4. Direction and management

Performance does not stand still. Good governance practices encourage leaders to continually improve their organizations, and this in turn requires a measurement framework from which to monitor progress. A well-designed framework will link your employees and volunteers behind a common set of objectives, cascaded from the overall mission or core purpose of the organization. Objectives are cascaded down through the organization while measures of progress are aggregated up to provide a concise overview of how things are going for the senior team.

Progress on performance does not just happen; it requires clarity and focus from the leadership which in turn requires the board and chief executive to work well together. Good governance should not be a chore or something that 'has to be done'. It is about compliance (your licence to operate) and about performance (delivering those services that customers value so much). Delivering good governance will deliver lasting benefits to an organization and its people – which is surely enough to motivate any board member.

Business process re-engineering (BPR)

How to use

Table 10 — How to use the business process re-engineering (BPR) approach

Factors	Comments				
Link to ISO 9001	MR	RM	PR	M&A	Imp
					✓
Scope of use	• All types of organization • Both manufacturing and service • Mainly by function				
Degree of change in systems	Large				
Degree of change for people	Large				
Level of benefits	Large				
Type of benefit	Financial and reputational				
Level of involvement	Best if fully inclusive, but sometimes coercive if external support is used				
Maturity level	Any				
Timescale	6–12 months				
Level of investment	High, especially when IT system investment is required				
How to implement	Project				

Background

BPR was popularized in the early 1990s with the publication of Hammer and Champy's best-selling book, *Reengineering the Corporation* (1993). The ideas built on the observation that organizations are sometimes

faced with problems that need urgent attention. These could relate to survival, stakeholder pressure to change or accelerated growth.

Such issues have to be tackled immediately, often with external help that brings expertise, resource and independence from the internal environment that may resist the change. BPR, when used appropriately, may be used by any organization as the methodology to address the problems. With its focus on processes and consideration of people, it is an extremely powerful approach.

BPR is often considered to be a cost-saving exercise. Intelligent re-engineering can also have a marked effect on customer satisfaction, operating flexibly and contributing significantly to the delivery of organizations' objectives. But above all, it solves the problems that initiated the project in the first place.

Principles

As defined by Hammer and Champy, re-engineering is:

> The fundamental rethinking and radical re-design of business processes to achieve dramatic improvements in critical, contemporary measures of performance, such as cost, quality, service and speed.

This definition contains four key words:

1. fundamental: asking the most basic questions such as: 'Why do we want to do this?' and 'Why do we want to do it in this way?';
2. radical: getting to the root of things. It is about reinvention not improvement;
3. processes: focusing on groups of activities and not individual tasks.
4. dramatic: only to be used when a step change in performance is required;

A study of organizations that have undertaken re-engineering highlights four common themes:

1. process orientation;
2. ambition;
3. rule-breaking;
4. creative use of information technology.

These themes underpin the re-engineering efforts.

Approach

BPR is unique in that it is widely recognized that poor change management often leads to failure in delivery of the re-engineering

project. Failure rates have been put at over 80 per cent. In *The Agenda* (2001), Hammer noted that not enough emphasis had been put on the process focus in earlier work, and it is often found that, in the quest for savings, the softer people side of change can be overlooked.

There has also been wide debate on the right approach for BPR. Described here is a six-step approach (see Figure 8), which involves reviewing the current situation, developing a business model that addresses the issues at hand and planning implementation. Implementation itself is handled through the change management approach. This approach combines the hard case for re-engineering with the softer 'people aspects', ensuring that the solution can be implemented with minimum problems. It uses a rigorous analytical method that takes into account the historical, political and cultural context of the work. By concentrating on the few issues that cause the greatest number of problems, the approach produces rapid and focused results.

There is a strong emphasis on team working. Workshops are used to engage as many people as possible and to get buy-in to the changes. The ideas and output are verified throughout the project to ensure that the best solution is developed and that the project stays on track.

Figure 8 — The six-step approach to business process re-engineering

Step 1: Define the project

As with any major project the starting point is the project definition and the mobilization of the project team. One of the first tasks of the project team is to understand the context within which the re-engineering is to be delivered.

This is also the time to engage stakeholders by getting the scope of the work defined and authorized by the senior management team.

Step 2: Review the business baseline

It is important to develop hypotheses relating to the underlying cause of the problem at an early stage. Collect data to ascertain the current state of the area under review by carrying out 'business baselining'. Business baselining is a term used to refer to the level of performance before any

changes are made.The key concept is to focus on 80 per cent of the costs so that time is not wasted searching for small gains.

Conduct process mapping to get a better understanding of the activities within the area. This leads to more detailed cost modelling and the identification of problems and needs.

Step 3: Identify opportunities

So far the activity has been reflective, revolving around the collection of data and formulation of ideas. Now start the process redesign and testing of the hypotheses developed in the previous stage.

A business model that captures the new way of working emerges. Where appropriate, apply investigative or even best-practice benchmarking to develop the business model.

Step 4: Verify the opportunities

Test the derived solution against the problems to ensure that it solves them and meets the needs. At this stage the solution must be verified with the key stakeholders to make sure that it is acceptable.

Reviewing the solution against any benchmarking, if conducted, also provides a valuable test to ensure that the solution will be both effective and efficient.

Step 5: Plan the achievement of the benefits

Once the solution has been tested fully, start planning implementation. Implementation costs need to be identified, which may lead to a revision to the business model that has been developed.

As with any change programme there is likely to be resistance to change. This is only natural. A detailed understanding of both the costs and the benefits allows the case for action to be made.

'Assumption busting' is a particularly simple and effective technique to overcoming resistance to change, particularly if the team resisting the change is engaged in the process. Given a particular implementation problem, the method first identifies the 'rules' that are stopping the change, and then exposes the assumptions behind the rules to see how many can be 'busted' to destroy the rules (see 'Theory of Constraints (TOC)', page 136 for more on assumptions).

As an example, a problem may be that there is a quality control bottleneck that cannot be removed. The rule is that all work must be checked before release, the assumptions being that the operator makes errors and these 'errors' are unacceptable.

Simple measurement can bust both these assumptions. First, measurement could show that errors are very rare. In addition, any 'errors' detected could relate to out-of-date standards, which add no value to the customer. Removing the inspection delivers immediate improvements.

Step 6: Review and report

The final activity is a project report and a project review. This ensures that all the details of the project are recorded and that any learning is captured and shared.

Carbon footprinting

How to use

Table 11 — How to use the carbon footprinting approach

Factors	Comments				
Link to ISO 9001	MR	RM	PR	M&A	Imp
		✓	✓	✓	
Scope of use	• All types of organization • Both manufacturing and service • Organization-wide				
Degree of change in systems	Medium				
Degree of change for people	Small				
Level of benefits	Medium				
Type of benefit	Financial, reputational and cultural				
Level of involvement	Inclusive				
Maturity level	Beginner and experienced				
Timescale	6–12 months				
Level of investment	Low				
How to implement	Project				

Background

The threat to the environment due to the way we live and work has been known for many years, but only in relatively recent times has this become headline news. 'Greenhouse gas emissions', mainly carbon

dioxide, are driving global warming. Global warming causes changes to the climate, higher average temperatures (leading to higher sea levels) and more extreme weather events.

The Industrial Revolution brought a need for fuel, and since that time we have become better at harvesting, transporting and burning the hydrocarbon fossil fuels that contribute to greenhouse gas emissions. What we have not been so good at is minimizing the effect of fossil fuel use on the environment or, even better, avoiding its use completely. Minimizing the use of fossil fuels has three major benefits for an organization. First, there are potential cost-saving benefits as fuel prices are forever on the rise. Secondly, customer opinion is starting to favour organizations that are environmentally friendly. Thirdly, as many organizations have been slow to take advantage of the first two benefits, governments around the world are planning to impose fines on organizations for not reducing their greenhouse gas emissions.

The UK government was the first to set long-term carbon targets backed by legislation through the Climate Change Act 2008. The Act introduced the CRC Energy Efficiency Scheme (formerly the Carbon Reduction Commitment) which will lead to heavier taxes for organizations that fail to reduce their emissions. Performance will be reported in the national press, and many organizations are actually more concerned about the damage to their reputation than the taxes that will be imposed. A major challenge to getting these schemes working, however, is that reducing energy usage often requires an investment, and the benefits from these investments can, in some cases, take more years to repay than is normally acceptable on a business case basis.

Principles

The principles behind carbon footprinting are very simple and apply both to individuals and to organizations. When energy from fossil fuels is used, carbon dioxide is released into the atmosphere. So the starting point for calculating the carbon footprint is often simply to work out how much energy is being used. This can be done through considering utility bills and some other activities such as transport.

However, in practice, owing to the complexity of many products and services, measuring carbon use accurately and consistently can be quite a challenge. For example, there are other contributors to the carbon footprint, such as 'embedded' carbon from components used to manufacture products, or the use of water. As noted below, the source of the carbon is also a consideration with different emission factors for different sources. A private motor vehicle that has just been started has a higher emission factor than one being driven on a rural road or on a motorway. The discussion of such contributions goes beyond the scope of this simple description.

Energy is consumed both directly and indirectly. If you fill your car with fuel or use gas to power the heating then there is a direct usage of hydrocarbons. However, turning a light on, using water to irrigate the lawn or disposing of waste are secondary uses of energy and cause emissions at another place. With the light, you are probably using electricity that was generated from hydrocarbons and the water was purified and supplied to your location using hydrocarbons.

An additional complication is that the amount of hydrocarbon energy used will depend on the source. The carbon value associated with water that has been supplied from a European water treatment plant will be much lower than that supplied from an organization in the Middle East that has used a desalination plant. Desalination plants use much more energy than conventional water treatment plants. To get to a more accurate carbon footprint value, use is made of conversion figures, known as emissions factors, to translate energy usage into a carbon footprint value.

Approach

Measuring a carbon footprint can help identify savings, find more efficient ways of working and target areas for improvement. Often saving is not the main objective; it might be recognition within an industry or among customers/clients. In this case, validation and reporting of findings are important. This is where the established standards and schemes come in to play.

There are a number of established standards providing guidance on carbon footprinting, such as the World Resources Institute (WRI)/World Business Council for Sustainable Development (WBCSD) Greenhouse Gas (GHG) Protocol standards and PAS 2050, and these are particularly valuable for more complex footprinting exercises.

The purpose of this section is to show how an organization (or household) can get started. All one has to do is to follow these six steps:

1.Review last year's utility bills

Organizations use various forms of energy. Gas, oil and coal produce 'direct' emissions on site whereas electricity is purchased and creates 'indirect' emissions elsewhere. Most also use water, which has a direct cost and associated emissions because it has to be collected, purified, supplied and, finally, recycled. Calculate these costs by location over a year because this helps in identifying potential improvement actions.

2.Analyse employee travel patterns

Employee travel can have a major impact on a carbon footprint, as can the mode of transport. It is normally not feasible to analyse everyone's movements and so it is best to take a sample of at least 30 people, randomly selected from each work area, and use this to calculate an estimate.

3.Consider any other costs

Think about where other major emissions may occur. Transport and haulage can often be significant, as can subcontracted activities.

4.Apply the emissions factors

To aid the calculation of the carbon footprint, and to enable comparison and payment of carbon-based taxes and charges, emissions factors are available. For example, every unit of electricity converts to 537 grams of CO_2, and for every mile travelled by private motor vehicle an average of 329 grams of CO_2 is emitted, whereas for the same mile travelled by public bus the figure is 173 grams.

5.Calculate your carbon footprint

Finally, put all the data together to calculate the organization's carbon footprint. Table 12 shows an example footprint for a small service organization.

Table 12 — Example carbon footprint for a small service organization

Type	Quantity	Unit	CO_2factor	CO_2 kg
Electricity – office (heating, cooling, lighting)	125,00	kWh	0.53702	67,127
Personal vehicles – mileage	252,967	Mile	0.3286	83,125
Public transport – train	501,258	Mile	0.0969	48,572
	TOTAL			199 tonnes CO_2

6.Act on the findings

Calculating the carbon footprint is of little value unless action is taken on the result. The obvious action is to set a target for reduction and such actions fall into two main categories: change source and change behaviour.

Changing the source of carbon can be quite simple, for example, moving from fossil fuel-derived energy to renewable energy sources. The mode of transport can also be considered, for example, moving from road transportation to rail transportation, using liquefied petroleum gas (LPG) in place of petrol or diesel in vehicles and/or using low-energy lighting.

Changing behaviours can start with communicating the carbon footprint to staff (or family members). Switching off lights, not leaving computer equipment or other electrical items in standby mode and not wasting water are all simple things that can be done with very little effort, and although all such contributions may seem small, over a lifetime they can make a significant difference.

As noted, the method described above is very simplistic. Defra, the Department for Environment, Food and Rural Affairs, has a document aimed at SMEs on this subject, which offers a more thorough process (see http://www.defra.gov.uk/publications/2012/02/13/pb13310-ghg-small-business-guide).

Customer Service Excellence

How to use

Table 13 —How to use the Customer Service Excellence approach

Factors	Comments				
Link to ISO 9001	MR	RM	PR	M&A	Imp
	✓	✓	✓	✓	✓
Scope of use	• Designed for public sector but applicable to others • Primarily service but can be applied to manufacturing • Organization-wide				
Degree of change in systems	Medium				

Degree of change for people	Large to medium
Level of benefits	Large to medium
Type of benefit	Reputational and cultural
Level of involvement	Fully inclusive
Maturity level	Any level
Timescale	Over 12 months
Level of investment	Medium
How to implement	Project or programme

Background

Charter Mark was the UK government's award scheme for encouraging and rewarding improvement in public services. After 14 years of operation, in 2005 the Herdan review was established to consider the success of the Charter Mark scheme and make recommendations for its future. Not long after commencing the review, the initiative was enlarged to include another review examining a public sector 'Customer Satisfaction Index' and to focus more broadly on improvements in terms of outcomes for citizens as users of public services.

The Herdan review concluded that Charter Mark had been a successful scheme in terms of benefits delivered, but its penetration into the UK public sector had been low. In addition, there was a low level of public awareness about the scheme. The main recommendation was to refocus the Charter Mark scheme to become a diagnostic tool that promotes continuous improvement based on rigorous customer satisfaction measurement. Charter Mark was therefore rebranded and launched as the Customer Service Excellence standard in 2008.

Principles

The UK government wants public services for all that are efficient, effective, excellent, equitable and empowering – with the citizen always

and everywhere at the heart of public service provision. With this in mind Customer Service Excellence was developed to offer public services a practical tool for driving customer-focused change within their organizations.

Customer Service Excellence tests in great depth those areas that research has indicated are a priority for customers, with particular focus on delivery, timeliness, information, professionalism and staff attitude. There is also emphasis placed on developing customer insight, understanding the user's experience and robust measurement of service satisfaction.

Although originally destined for use in the public sector, the Customer Service Excellence standard is applicable to the public, private and voluntary sectors. Although the standard may be applied by using a self-assessment, it is possible to apply for recognition under the standard using one of the many licensed certification bodies. It was also designed to be used as a skills development tool by allowing individuals and teams within the organization to explore and acquire new skills in the area of customer focus and customer engagement, thus building their capacity for delivering improved services.

Approach

The Customer Service Excellence standard has five criteria covering:

1. *customer insight*: the importance of developing an in-depth customer understanding;
2. *the culture of the organization*: ensuring that a customer-centric culture is fully embedded from the leader to the front-line staff;
3. *information and access*: provision of accurate and comprehensive information delivered through the most appropriate channel;
4. *delivery*: how business aims and customer outcomes are delivered, and how problems are managed;
5. *timeliness and quality of service*: promptness of initial contact and keeping to agreed timescales without trading quality to give the best result for customers.

In the standard, each of the criteria is broken down into sub-criteria, and these are broken down further into elements. Guidance notes are provided for each element to support an organization's preparation for an external validation. The breakdown to the sub-criterion level is provided in Table 14.

Table 14 – Customer Service Excellence standard criteria and sub-criteria

Criterion	Sub-criterion
1. Customer insight	• Customer identification • Engagement and consultation • Customer satisfaction
2. The culture of the organization	• Leadership, policy and culture • Staff professionalism and attitude
3. Information and access	• Range of information • Quality of information • Access • Co-operative working with other providers, partners and communities
4. Delivery	• Delivery standards • Achieved delivery and outcomes • Deal effectively with problems
5. Timeliness and quality of service	• Standards for timeliness and quality • Timely outcomes • Achieved timely delivery

Source: Customer Service Excellence standard (2008)

The assessment follows other self-assessment practices (see page 119 ('Self-assessment')). Before conducting the assessment, evidence should be collected that has good *variety* (different types of evidence), wide *scope* (covering the principles of the standard as well as demonstrating deployment at appropriate levels and functions), and *quality* (implying the evidence is based on a solid approach).

For each element of the standard, the evidence is assessed on the four-point scale in Figure 9.

Score	Descriptor
No Evidence	You have no evidence for this element.
Some Evidence	You have little evidence of compliance or what evidence you do have refers to only a small (minor) part of your organization
Partial Evidence	You have some evidence but there are some significant gaps. This could include: • Parts of your organization which are currently not compliant and/or • Areas where the quality of the evidence is poor or incomplete and/or • Areas which have only just begun to be addressed and are subject to significant further development and/or • Areas where compliance has only been in evidence for a very short period of time
Full Evidence	Your organisation has a variety of good quality evidence that demonstrates that you comply fully with this element. The evidence reflects compliance is consistent throughout.

Figure 9 – Customer Service Excellence standard four-point evidence assessment scale

(source: http://www.cse.cabinetoffice.gov.uk/getusingthetool.do)

On its introduction organizations were encouraged to undertake an online self-assessment. This has since been withdrawn and organizations can now seek formal accreditation to the Customer Service Excellence standard, to demonstrate their competence, identify key areas for improvement and celebrate their success.

Design for Six Sigma

How to use

Table 15 — How to use the Design for Six Sigma approach

Factors	Comments				
Link to ISO 9001	MR	RM	PR	M&A	Imp
			✓		
Scope of use	• All types of organization • Both manufacturing and service • Division				
Degree of change in systems	Medium				
Degree of change for people	Medium				
Level of benefits	Large				
Type of benefit	Financial, reputational and cultural				
Level of involvement	Inclusive				
Maturity level	Experienced and world-class				
Timescale	6–12 months				
Level of investment	Medium				
How to implement	Project				

Background

Design for Six Sigma (DFSS) can be described as: the principles of Six Sigma and Lean applied to the design of new products or processes.

The technique is typically used within organizations deploying advanced Six Sigma-based initiatives in relation to:

- physical product design;
- service product design;
- manufacturing process design;
- transactional process design;
- redesign of existing products, services or processes.

Principles

'Traditional' Six Sigma projects focus on improving the performance of existing products or business processes. Existing products or processes are seen as the 'obvious' place to apply these tools, as most organizations have metrics reflecting the COPQ – cost of poor quality.

The DFSS approach is to design quality (i.e. optimum, centred performance, robustness to noise factors, etc.) into the product or process right from the start, where the costs are lowest (see Figure 10).

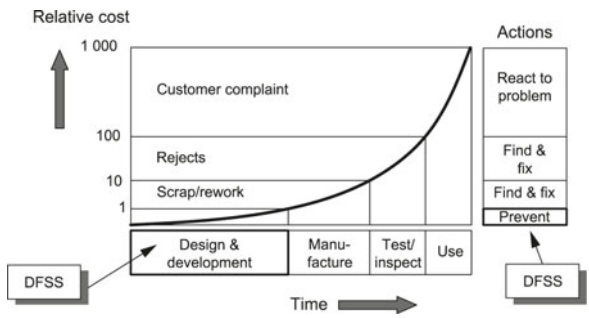


Figure 10 — The cost of change implementation over time

Approach

DFSS operates on the concept of predictive design quality. This includes:

- structured requirements flowing down from well-understood critical to quality parameters (CTQs);
- verified design parameters ascertained from modelling, tolerance analysis, etc.;
- extensive simulation and virtual prototyping;
- the product being *designed* for robust performance and ease of manufacture;
- *low* COPQ;

As such quality is 'designed in' to the product and/or process.

DFSS uses various roadmaps, with the same logical structure as the define–measure–analyse–improve–control (DMAIC) module seen with Six Sigma (page 125), the most popular being *DMADV* and *DMADOV*.

DMADV

- *Define* project goals and customer requirements.
- *Measure* customer needs and CTQs, benchmark competitors.
- *Analyse* the options to meet the customer needs.
- *Design* the detailed product or process.
- *Verify* that the design meets the performance requirements of internal and external customers.

DMADOV

DMADOV recognizes that design is an iterative process, and that it is not always possible to achieve the optimum design first time around.

Thereby it is identical to DMADV, except for an additional phase, *Optimize*. The *Optimize* phase gives a defined element of the process in which to optimize and finalize the design.

Failure Mode and Effect Analysis (FMEA)

How to use

Table 16 — How to use the Failure Mode and Effect Analysis (FMEA)

Factors	Comments				
Link to ISO 9001	MR	RM	PR	M&A	Imp
			✓	✓	✓
Scope of use	• All types of organization • Mainly manufacturing, but can be applied to service • Division				
Degree of change in systems	Small				

Degree of change for people	Small
Level of benefits	Large
Type of benefit	Financial and, if applied to customer service-related issues, reputational
Level of involvement	Fully inclusive
Maturity level	Experienced
Timescale	6–12 months
Level of investment	Low
How to implement	Project

Background

Failure Mode and Effect Analysis was invented by NASA early in the US Apollo space programme. NASA created the tool to alleviate the stress between two conflicting mottos: 'Failure is not an option' and 'Perfect is the enemy of good' (Voltaire, *La Bégueule*). The first meant successfully completing the mission and returning the crew. The second meant that failure of at least some components was unavoidable; the job was to predict them, prevent them when possible, plan for them, and build in the ability to overcome failures.

FMEA is a tool for facilitating the process of predicting failures, planning preventive measures, estimating the cost of the failure, and planning redundant systems or system responses to failures.

Principles

It is possible to analyse processes to determine possible modes of failure and their effects on the performance of the product or operation of the process or service system. FMEA is the study of potential failures to determine their effects. If the results of a FMEA are ranked in order of seriousness, this becomes Failure Mode and Effect Criticality Analysis (FMECA). The primary objective of a FMECA is to determine the features

of process design or operation that are critical to the various modes of failure. It uses all the available experience and expertise, from marketing, design, technology, purchasing, production/operation, distribution, service, etc., to identify the importance levels or criticality of potential problems and stimulate action that will reduce these levels.

The elements of a complete FMECA are:

- *failure mode*. The anticipated conditions of operation are used as the background to study the most probable failure mode, location and mechanism of the process or system and its components;
- *failure effects.* The potential failures are studied to determine their probable effects on the performance of the whole process and the effects of the various components on each other;
- *failure criticality.* The potential failures in the various parts of the process or system are examined to determine the severity of each failure effect in terms of lowering of performance, safety hazard, total loss of function, etc.

FMECA may be applied at any stage of process design, development or operation but since its main aim is to prevent failure, it is most suitably applied at the design stage to identify and eliminate causes. It may be appropriate to divide more complex processes or systems into subsystems, each one being the subject of a separate FMECA.

Approach

Use this tool to:

- understand what can go wrong with a process or a product;
- understand how potential problems will affect customers' perceptions;
- provide suggestions for improvement when you plan to modify or introduce a new process or product. Be systematic in the analysis to make the best use of the tool.

When applying FMEA ensure there is a very thorough understanding of the product or process involved:

- have the product in front of you;
- visit the process;
- revisit the FMEA from time to time;
- review underlying assumptions against reality;
- revise and record any new assumptions.

FMECA pro formas are available, which set out the steps of the analysis as follows.

1. Identify the process or system components, or process function.
2. List all possible failure modes of each component.
3. Set down the effects that each mode of failure would have on the overall function of the process or system.
4. List all the possible causes of each failure mode.
5. Assess the failure modes on a scale from 1 to 10. Experience and reliability data should be used, together with judgement, to determine the values for:

   P: the probability of each failure mode occurring (1 = low, 10 = high);

   S: the seriousness or criticality of the failure (1 = low, 10 = high);

   D: the difficulty of detecting the failure before the product or service is used by the consumer (1 = easy, 10 = very difficult). (See Table 17.)

Table 17 — Assessing the failure modes on a scale from 1 to 10

Value	1	2	3	4	5	6	7	8	9	10
P	Low chance of occurrence					Almost certain to occur				
S	Not serious, minor nuisance					Total failure, safety hazard				
D	Easily detected					Unlikely to be detected				

   Multiply the ratings together: P x S x D = C. C is the criticality index or risk priority number (RPN) for each failure mode. This indicates the relative priority of each mode. When you have determined the value of C for each failure mode, rank the failures accordingly. In this way, the action required against each item can be judged in the light of the ranked severity and the resources available.
6. Indicate briefly on the pro forma the corrective action required and, if possible, which department or person is responsible and the expected completion date.

Table 18 — Example pro forma

Step 1 Process function	Step 2 Failure mode	Step 3 Effect	Step 4 Causes	Step 5 P	S	D	C	Step 6 Corrective action
Clarify request	Misunder-stand request	Wrong assess-ment of time required to repair. Late repair	Lack of inquiry	3	8	5	120	Develop inquiry guide with checklist
Take appoint-ment etc.	Over-booking	Potential delays for customers	Planning not up to date	3	5	3	45	Auto-matic resource planning

Good practice transfer

How to use

Table 19 — How to use the good practice transfer approach

Factors	Comments				
Link to ISO 9001	MR	RM	PR	M&A	Imp
		✓	✓	✓	✓
Scope of use	• All types of organization • Both manufacturing and service • Division				
Degree of change in systems	Small				
Degree of change for people	Small				
Level of benefits	Large to medium				

Type of benefit	Financial and cultural
Level of involvement	Fully inclusive
Maturity level	Experienced
Timescale	Less than 3 months
Level of investment	Low
How to implement	Programme

Background

Despite an ever-growing interest in benchmarking, organizations struggle to implement good practices. What is more, many organizations have difficulty in transferring internal best practices. As William Buehler, senior Vice President at Xerox once put it: 'We can have two plants right across the street from one another and it is the damnedest thing to get them to transfer best practices'.

Yet the benefits of even internal best-practice transfer can be major. Chevron's sharing of good practices on energy use management provided an immediate pay pack of $150 million, with the benefits over a two-year period increasing to over $650 million. Kaiser Permanente's benchmarking of internal good practices cut the time it took to open a new Women's Health Clinic with no costly start-up problems. These are just two of many examples that have been reported.

Work by Szulanski in 1994 examined the reasons why organizations have so much trouble implementing the approaches of others. He found it was not down to turf-protecting, knowledge-hoarding people. It was down to relationship issues, but not those that were caused deliberately.

First, the major challenge was overcoming ignorance on the part of both the 'source' and the 'recipient'. The source did not know the practice was needed, and the recipient that the source had the practice. Secondly, there was an issue with 'absorptive capacity' or, in simpler terms, the resource to implement it. Thirdly, the lack of a good relationship stood in the way of the transfer. Finally, transferring a practice took an unnecessary length of time. The average was 27 months!

Principles

Following the work of Szulanski, and other work on organizational learning, O'Dell and Grayson (1998) defined seven factors that enable effective best-practice transfer. These were as follows.

1. Use benchmarking to create a sense of urgency or find a compelling reason to change. One major benefit of benchmarking is that it allows organizations to see the level of performance that is possible, and this opens leaders' minds to what is achievable.
2. Focus initial efforts on critical business issues that have high pay-off and are aligned with organizational values and strategy. The effort should be focused on putting out the burning fire.
3. Make sure that every plane you allow to take off has a runway available for landing. There is no point creating a compelling reason for change, which is going to address a critical improvement need, only to find that the organization does not have the capacity to deal with the change.
4. Do not let measurement get in the way. 'Paralysis by analysis' is an easy pitfall to fall into. Comparative measures will improve over time, but only if you start to act on them.
5. Change the reward system to encourage sharing and transfer. Real practice transfer is a people-to-people process and usually requires personal generosity or enlightened self-interest. Leadership can help by promoting, recognizing and rewarding people who model sharing behaviour, as well as those who adopt best practices.
6. Use technology as a catalyst to support networks and the internal search for best practices, but do not rely on it as a solution. Use a combination of information technology tools, such as email, 'best-practices databases', internal directories and groupware to support employees seeking knowledge and collaboration across the organization. But, do not rely on the technology tools to create their own market.
7. Leaders will need to consistently and constantly spread the message of sharing and leveraging knowledge for the greater good.

Approach

It is important to develop the culture and to support best-practice transfer. Leaders play a vital role in establishing these. A number of approaches may be used as the mechanism for transferring good practices. The approaches are not mutually exclusive, and many organizations support more than one at the same time. Four such approaches are as follows.

1. *Benchmarking teams*: Benchmarking is the process of identifying, understanding and adapting outstanding practices from organizations, including your own, anywhere in the world.

Benchmarking teams are formed to assess the current state of the organization on a particular process, identify gaps and problems, and then search for best practices outside the company (see 'Benchmarking', page 37).

2. *Best-practice teams*: While benchmarking teams usually have a clear lifespan, with start and stop dates for their study, best-practice teams tend to be an ongoing part of the networking infrastructure of an organization, with a charter to support the transfer and implementation, as well as identification of, practices. These teams are usually composed of managers or professionals with similar responsibilities in different divisions or plants in the company. The teams are usually led by functional experts who act as internal consultants assisting with transfer.
3. *Knowledge and practice networks*: While benchmarking and best-practice teams are often ordained from the top of the organization, knowledge and practice networks emerge as a grassroots response to the break-up of former networks due to downsizing, re-engineering and restructuring. Without stable networks of practitioners and centres of excellence in technical and functional fields, the question becomes 'How do you bring those people together in a virtual organization or community of practice so that expertise can be shared?' Once an organization creates the environment and provides the information technology (such as intranets and email) to support networks, they often emerge.
4. *Internal assessment and audits*: This fourth approach can range in form from internal ISO 9001 audits to internal award programmes. Internal assessments and audits are often part of the ongoing function of internal quality departments. The charter for assessment activities is beginning to include the identification and transfer of best practices.

All these practices have a number of things in common. They develop the capabilities that enable good practice transfer and these capabilities include:

- a process improvement orientation;
- a common methodology for improvement and change;
- the ability to work effectively in teams;
- the ability to capture learning; and
- the technology to support cataloguing and collaboration.

Ultimately, successful transfer of best practices comes back to a personal and an organizational willingness and desire to learn. A vibrant sense of curiosity and a deep respect for, and desire to learn from, others are the real keys.

High-performance culture

How to use

Table 20 — How to use the high performance culture approach

Factors	Comments				
Link to ISO 9001	MR	RM	PR	M&A	Imp
	✓	✓		✓	✓
Scope of use	• All types of organization • Both manufacturing and service • Organization-wide				
Degree of change in systems	Medium				
Degree of change for people	Large				
Level of benefits	Large				
Type of benefit	Financial, reputational and cultural				
Level of involvement	Fully inclusive				
Maturity level	Experienced and world-class				
Timescale	Over 12 months				
Level of investment	Medium				
How to implement	Programme				

Background

Including a section on corporate culture may at first seem a little strange in a book focused on business improvement tools and ISO 9001, especially as many people believe there is not much one can do to change the

culture in the short term. But culture, and in particular the beliefs and behaviours of employees, can mean the difference between success and failure.

A high-performance culture may be defined as one that stimulates individuals to deliver an organization's aims and objectives, and to continually improve performance on a continuous basis. Why does this matter? The answer is simple – to produce better results.

The idea that culture can have a profound impact on organizational success was popularized in Peters and Waterman's bestseller *In search of excellence*. Analysis of financially successful businesses in the USA in the late 1970s and early 1980s had shown that in addition to traditional factors the 'soft' factors grouped under corporate culture were key to an organization's success. Since then there have been many landmark studies, such as Collins and Porras' *Built to last*, which examined successful organizations that had been formed over a period of 50 years and compared these with similar organizations that had not shared similar success. These successful organizations included the likes of Ford, Hewlett-Packard and Walt Disney. One of the many features of these organizations was a set of core values that guided the organization, while at the same time recognizing the need to change over time.

Most, if not all, business models share common underlying beliefs that are related to culture. ISO 9001, the EFQM Excellence Model® and the Baldrige model are all based on the belief that successful organizations need leaders that create a vision and a consistency of purpose, and employees that are highly motivated and work in a consistent way, and that a focus on meeting customers' needs is paramount. Measurement and continuous improvement are also key. These are the building blocks of a high-performance culture, which many organizations seek to achieve.

Principles

The concept of the iceberg is very well known, where physical evidence of the culture sticks above the water whereas the basic beliefs and characteristics are hidden below. The visible part includes both artefacts and behaviours. Good examples of the former are car parking spaces, sizes of offices and dress codes. Insights into the culture can often be gained by examining rituals and stories. One quite amusing story taken from a public sector organization some time ago related to an employee who was assigned to a new location. When he arrived the only available working space was in an office and a couple of days after settling in he was asked what grade he was. The following day when he arrived for work the door had been taken off the office. When he enquired as to why this had happened, he was told it was because at his grade he was not entitled to his own office!

These 'norms' are the rules and standards for behaviour, which are derived from the values of that culture, which are based on the basic assumptions or beliefs of that culture. In the disappearing door example the assumption was that a senior manager needs a quiet and private environment in which to work, whereas a more junior manager does not.

When considering the corporate culture four factors may be considered that demonstrate the close relationship between culture and business improvement techniques (see Figure 11).

Figure 11 — Relationship between culture and business improvement techniques

The corporate purpose establishes the overarching goal of the organization. This could be to provide products and services, serve the public or support a cause. The purpose will dictate the corporate strategy. The corporate purpose will also dictate the way that the organization is structured and the processes that it operates in order to deliver the corporate strategy. All these will be delivered through the organization's people.

Leaders have a particularly important role. First, they will design the organization's structure and establish the processes. Secondly, they will design and decide on the essential framing parameters of the corporate culture, such as the values. Thirdly, they will serve as role models setting an example – positive or not – for the employees and preserving or strengthening the corporate culture as lived. Returning to business improvement models, these are basic requirements of both the EFQM

Excellence Model® and the Baldrige model, and establishing the organization and processes is at the heart of ISO 9001.

Many studies have examined the key factors required to develop a high performance culture. These may be summarized as:

1. Consistency and clarity of direction from leaders;
2. Clear goals and a focus on execution;
3. A passion for delivering customer excellence;
4. Focus on creativity and innovation;
5. Ability to learn;
6. Partnership orientated management style;
7. Tolerance to risk taking to encourage entrepreneurial behaviour;
8. Committed, transparent and independent corporate governance;
9. Focus on sustainable and profitable growth;
10. Fundamental beliefs, attitudes and lived values.

Developing a high-performance culture is equally applicable to the public sector and third sector organizations. The UK government's Improvement and Development Agency (I&DeA) publication *Making performance management work* listed the following.

- Leaders focus on strategic issues, service quality and customers' needs, lead with clear vision and manage by values
- New ideas are constantly sought and tried
- There is an openness to external challenge and a willingness to take (and stick to) tough decisions and tackle difficult problems
- Managers focus a lot of energy and emphasis on setting what is done in the context of the vision and corporate objectives
- Leadership is committed to continuous improvement
- People see a direct connection between what they do and how it benefits the community through a clear performance management framework
- Managers facilitate discussions at meetings on how performance can be improved and invite questions from their employees. Meetings are designed to encourage two-way communication
- Improvement programmes are integrated with other performance management processes – not treated as an add-on
- There is a lot of cross-functional working and interdepartmental communication
- Everyone has a sense of responsibility for the performance of the organisation and accountability for results is clear
- Staff and senior management central to the implementation of review recommendations are involved throughout the review

Both the work in Germany on private sector organizations and the work in the public sector demonstrate that a high-performance culture and business improvement models are synonymous.

Approach

Evolving to a high-performance culture takes time. Current estimates place the time frame between 5 to 10 years, and one could argue that it is a destination an organization never completely reaches. Culture change can be achieved using the basic continuous improvement cycle: *plan* where you want to be, *do* make the changes, *check* how far you have changed, *act* on the findings to change some more. The approach may be broken down into four distinct stages, each with its own set of activities. These are shown in Table 21.

Table 21 — The high-performance culture approach

Stage	Activities
Determining and establishing basic beliefs	Ask: • Who are we? • What do we want? • What do we stand for? • Who fits into our culture? Whom do we need (desired culture)? • How should we organize ourselves to best reach our goals? • How do we interact with each other and with people outside our company? • How do we work? How can we continue to develop? • How can we develop our organization to meet future challenges?
Implementation process	Start: • translating the company's basic beliefs into daily business activities; • communicating the basic beliefs with the help of appropriate and coherent metaphors and examples; • examining processes, management systems and tools (especially in human resource management), and modifying them if necessary; • integrating culture development activities into goal agreements.
Regular examination of the corporate culture	Scanning the environment and critically reviewing the culture in light of changes detected using: • company-wide checks; • review of jointly established goals;

	• meetings with employees; • employee surveys; • management/ leadership behaviour evaluations by employees and colleagues; • on-site visits by members of top management; • customer visits at their place of business; • customer surveys.
Continuous cycle of culture development: maintenance, adjustment and examination	All measures listed under 3, plus: • monitoring by top management; • targeted selection and hiring with regard to relevant aspects of the culture; • conscious efforts at socialization into the company and its culture; • ongoing dialogue; • in strategic partnerships and acquisitions: evaluating the degree of 'cultural fit'; • taking steps to maintain and nurture the desired culture.

Investors in People (IiP)

How to use

Table 22 — How to use the Investors in People (IiP) approach

Factors	Comments				
Link to ISO 9001	MR	RM	PR	M&A	Imp
	✓	✓		✓	✓
Scope of use	• All types of organization • Both manufacturing and service • Organization-wide				
Degree of change in systems	Medium				
Degree of change for people	Large				
Level of benefits	Medium				
Type of benefit	Reputational and cultural				
Level of involvement	Fully inclusive				
Maturity level	Beginner				
Timescale	The length of time between making a commitment to achieve the standard and being recognized will vary from typically 6 months to 2 years, depending on the extent of development needed in the organization				
Level of investment	Low				
How to implement	Programme				

Background

Implemented in 1991, the Investors in People (IiP) framework has developed over 21 years and has grown to be the UK's leading people

management business improvement standard. In 2010 over 7 million employees in over 35,000 organizations achieved the standard, and license agreements are in place in over 20 countries worldwide.

It could be argued that IiP is a business improvement model and not a business improvement approach. We have included IiP as an approach as it does not meet our requirements of a business improvement model. For example, it is restricted in scope, does not enjoy universal adoption and the ability to use it as a way of comparing performance to other organizations is limited. It is a building block of world-class performance.

Research indicates that organizations that have invested effectively in their employees improve organizational effectiveness and service to their customers. Benefits have been shown to include increases in employee productivity, reduction in employee turnover and higher revenues.

The IiP initiative seeks to reward organizations that achieve the standard and it allows them to display the IiP logo. It is even possible to go beyond the standard's requirements, and achieve Bronze, Silver or Gold recognition.

The original standard was based on UK organizations that had achieved a successful payback from investing in people. It has undergone many revisions since first being published, with, in June 2009, a major change being the establishment of an organization's priorities at the start of an external assessment and agreement on which parts of the framework are most relevant to an organization's needs. On 1 April 2010 responsibility for the management of the standard was transferred to the UK Commission for Employment and Skills.

Principles

The IiP standard is built around a business planning cycle and it involves:

- plan – developing strategies to improve the performance of the organization;
- do – taking action to improve the performance of the organization;
- review – evaluating the impact of the performance of the organization.

These three elements are broken down into 10 indicators, and, within these, 39 evidence requirements. The indicators are shown in Figure 12.

An IiP recognizes employees as its most valuable asset and that the development of employees is vital in order to improve service. IiP is open to any organization of any size from any sector.

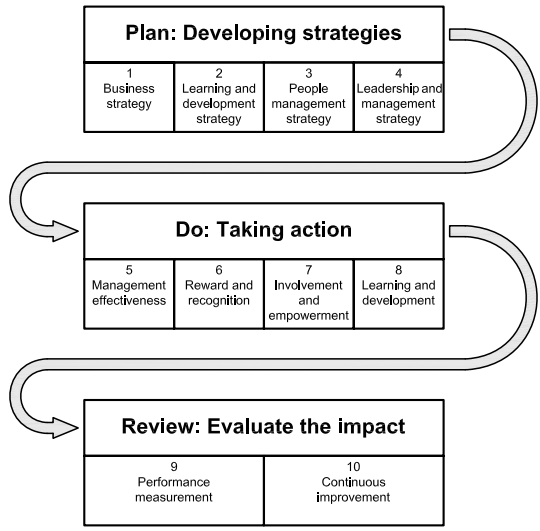


Figure 12 — The business planning cycle

Some large organizations adopt a 'building block' approach towards gaining IiP recognition. This means that they do IiP on a subsidiary, departmental or divisional basis, so that recognition builds up across the organization over a period of two or three years. This approach works best when it is managed within an 'overarching recognition strategy', to ensure that there is a plan for when each part of the organization will be assessed and to ensure that the organization is assessed in a cost-effective way.

Approach

Becoming an IiP involves a number of stages, as follows.

1. *Information gathering*: including finding out more about the standard and its application. This includes deciding which level of recognition to apply for.
2. *Initial self-assessment* to see how the organization measures up against the national standard and identify action to close any gaps.
3. *Meeting the standard*: by developing people and processes as necessary.
4. *External assessment*: once the organization meets the standard it will be formally recognized as an IiP and can publicize this through use of the logo. The assessment itself has a number of stages:

a) *planning meeting* where the assessor is taken through an organization's needs and establishes which parts of the framework are most relevant;
b) *on-site assessment*, which is based around one-to-one confidential interviews with staff;
c) *assessment report* reflecting on the assessment and providing suggested future development work;
d) *continuous improvement feedback* to support improvement activities;
e) *annual visit or discussion* to provide ongoing support.

5. *Reassessment*: organizations will need to decide how often they wish to be reviewed against the standard. There is no minimum or recommended time period between post-recognition reviews, although the maximum is three years. The timing should ensure that continuous improvement becomes an integral part of retaining the standard.

During the assessment, assessors look for:

- effective service planning taking place, involving employees wherever possible;
- effective workforce planning taking place where key training and development issues that will help service delivery are identified at the corporate, directorate and service level;
- all employees getting an effective appraisal where training and development needs are identified in line with business needs;
- training and development, including induction and on-the-job development, taking place;
- all training and development activity being evaluated against its original objectives at the individual, team and organizational level.

When conducting the reassessments, the assessors will check areas where improvement was shown to be necessary at the last assessment, such as:

- communication with employees, both individually and with teams;
- evaluation of training and development at all levels;
- service areas that were shown to be particularly weak at the last assessment;
- full involvement of 'fringe areas', geographical or otherwise;
- effective monitoring of processes, i.e. service planning, appraisal, induction and performance indicators.

The benefits of IiP for the organization are:

- a more systematic approach to training, a clearer focus on training based on business needs, and better value from its training spend;
- improved employee communications and a better understanding of the business among employees;
- a higher level of motivation among the workforce;

- a more skilled workforce;
- lower turnover of staff;
- increased revenue and profitability.

The benefits of IiP for the individual are:

- increased job satisfaction;
- the training and development to enable him or her to do a good job;
- recognition and structured development;
- a greater sense of pride in the organization;
- improved motivation and commitment.

ISO 9004

How to use

Table 23 — How to use the ISO 9004 approach

Factors	Comments				
Link to ISO 9001	MR	RM	PR	M&A	Imp
	✓	✓	✓	✓	✓
Scope of use	• All types of organization • Both manufacturing and service • Organization-wide				
Degree of change in systems	Medium – if ISO 9001 methodologies are in place				
Degree of change for people	Medium – if ISO 9001 methodologies are in place				
Level of benefits	Medium – where used in isolation Large – when used to provide input into other improvement techniques				
Type of benefit	Financial, reputational and cultural				
Level of involvement	Fully inclusive				
Maturity level	Beginner, experienced and world-class				

Timescale	6–12 months
Level of investment	Medium
How to implement	Project

Background

ISO 9004 was first issued with the much heralded launch of the ISO 9000:2000 series of standards. The year 2000 series provided a significant shift of emphasis in the manner quality management was perceived; from compliance focus to more of a customer and business focus.

Originally labelled as the consistent pair, ISO 9004 was designed to assist organizations to take their approach beyond the base requirements of ISO 9001. ISO 9004 has been further developed and now looks to promote *Managing for the sustained success of an organization*.

Principles

ISO 9004 identifies that the sustained success of an organization is achieved by its ability to meet the needs and expectations of all interested parties over the long term in a balanced manner. The standard promotes self-assessment and benchmarking as key elements of an organization's approach to sustainability and goes on to provide a detailed self-assessment tool incorporating a generic scoring matrix.

The principle of going beyond the base requirements of ISO 9001 remains embodied through the encouragement to identify the needs of all relevant interested parties (along with the customer), and the inclusion of references to strategy, financial resources, knowledge, natural resources, innovation and learning.

The defined eight quality management principles are incorporated as the stated basis for the standard and provide a guide for an organization to use as self-assessment, audit or review tools.

The eight quality management principles

1. Customer focus
2. Leadership
3. Involvement of people
4. Process approach

5. System approach to management
6. Continual improvement
7. Factual approach to decision making
8. Mutually beneficial supplier relationships

Approach

ISO 9004 emphasizes the need for the organization's top management to take ownership of, and to drive, the key elements of the system. This should be geared towards ensuring that the current and future needs of relevant interested parties are known and identified. From here the organization's strategy and policy can be formed and deployed. The management should plan for, and provide the resources needed to enable, the strategy to be achieved (this is where financial resources, natural resources and knowledge are referenced), and seek to ensure sustained success and improvement through regular monitoring, measurement, analysis and review activities.

Underpinning the approach is the process-based philosophy embedded within ISO 9001, along with 'Plan–Do–Check–Act' (PDCA).

Key within the monitoring/review phase is the suggested self-assessment tool, based upon comparing the core elements of the standard against a defined maturity model.

The output from the exercise can be designed to suit the needs of the organization and should point to the focus areas that will continue to take the organization towards sustained success.

Table 24 — Self-assessment of key elements — Correlation between key elements and maturity levels

(source: ISO 9004, Table A.1)

Key Element	Maturity Level				
	Level 1	Level 2	Level 3	Level 4	Level 5
What is the management focus? (Managing)	The focus is on products, shareholders and some customers, with *ad hoc* reactions to changes, problems and opportunities.	The focus is on customers and statutory/ regulatory requirements, with some structured reaction to problems and opportunities.	The focus is on people and some additional interested parties. Processes are defined and implemented for reacting to problems and opportunities.	The focus is on balancing the needs of identified interested parties. Continual improvement is emphasized as a part of the organization's focus.	The focus is on balancing the needs of emerging interested parties. Best in class performance is set as a primary objective.
What is the leadership approach? (Managing)	The approach is reactive and is based on top-down instructions.	The approach is reactive and is based on decisions by managers at different levels.	The approach is proactive, and the authority to take decisions is delegated.	The approach is proactive, with high involvement of the organization's people in its decision making.	The approach is proactive and learning-oriented, with the empowerment of people at all levels.
How is it decided what is important?	Decisions are based on informal inputs from the market and other sources.	Decisions are based on customer needs and expectations.	Decisions are based on the strategy and linked to needs and expectations of interested parties.	Decisions are based on the deployment of the strategy into operational needs and processes.	Decisions are based on the need for flexibility, agility and sustained performance.

(Strategy and policy)					
What is needed to get results? (Resources)	Resources are managed in an *ad hoc* manner.	Resources are managed effectively.	Resources are managed efficiently.	Resources are managed efficiently and in a way that takes into account their individual scarcity.	The management and use of resources is planned, efficiently deployed, and satisfies the interested parties.
How are the activities organized? (Processes)	There is a non-systematic approach to the organization of activities, with only some basic working procedures or instructions in place.	Activities are organized by function, with a basic quality management system in place.	Activities are organized in a process-based quality management system that is effective and efficient, and which enables flexibility.	There is a quality management system that is effective and efficient, with good interactions between its processes, and which supports agility and improvement. The processes address the needs of identified interested parties.	There is a quality management system that supports innovation and benchmarking, and which addresses the ends and expectations of emerging, as well as identified, interested parties.

ISO 14001

How to use

Table 25 — How to use the ISO 14001 approach

Factors	Comments				
Link to ISO 9001	MR	RM	PR	M&A	Imp
	✓	✓	✓	✓	✓
Scope of use	• All types of organization • Both manufacturing and service • Organization-wide				
Degree of change in systems	Medium				
Degree of change for people	Medium – if currently operating an ISO 9001-based system High — if no ISO 9001-based system is in place				
Level of benefits	Large to medium (in line with system maturity)				
Type of benefit	Financial, reputational and cultural				
Level of involvement	Fully inclusive				
Maturity level	Beginner, experienced and world-class				
Timescale	Over 9 months				
Level of investment	Medium, due to training costs				
How to implement	Project				

Background

BS 7750 was issued as the world's first standard targeted at helping organizations manage and improve their impact upon the environment. Later adopted internationally as ISO 14001, the methodology uses the 'Plan–Do–Check–Act' management model embodied within the

established quality management standards. ISO 14001 is intentionally designed to be compatible with ISO 9001 and organizations are encouraged to operate quality and environmental systems using an integrated approach (both ISO 19011 and PAS 99 assist organizations to achieve this). The standard is applicable to all types of organizations and as such is designed using a framework as opposed to a prescriptive approach.

Principles

ISO 14001 seeks the commitment of an organization's top management to drive environmental performance. Furthermore, emphasis is placed upon all levels and functions within the organization to secure successful performance improvement.

The process model provided within the standard provides further insight into the principles upon which the standard is based (see Figure 13).

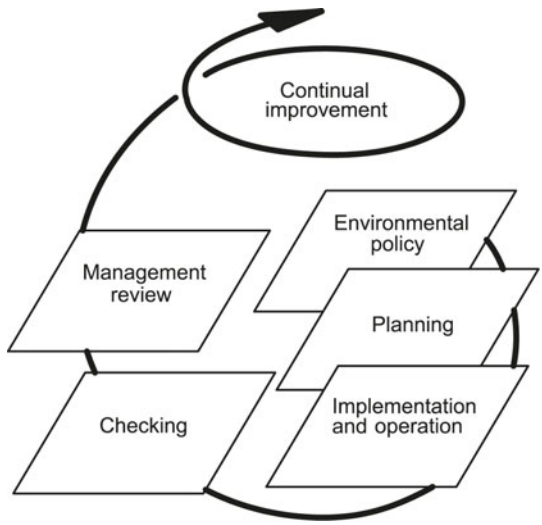


Figure 13 — Continual improvement of the organization's environmental performance is achieved by establishing the policy, deployment of plans and checking and review of the deployment against the intentions of the policy

(source: ISO 14001)

ISO 14001 does not specify levels of environmental performance. Organizations are challenged with establishing their own targets against the background of current performance, stakeholder needs and legislative requirements.

Approach

1. *Environmental policy* – the organization's top management is tasked with establishing the environmental policy that is relevant to the defined scope of its environmental management system. Encouragement is given to focusing the scope of the system on areas where there is obvious benefit in relation to legislation, stakeholder requirements and cost.
2. *Planning* – the aspects of the activities that interact with the environment need to be identified along with the level of impact these aspects have upon the environment. Objectives, targets and performance improvement programmes need to be established to form the basis of the management system. These should be known at all relevant levels of the organization.
3. *Implementation and operation* – with the necessary elements documented, the environmental management system and its purpose need to be communicated and implemented. Responsibilities for implementation need to be identified and the necessary training and awareness exercises deployed to ensure the required level of competence is present.
4. *Checking and monitoring* – consistent with the ISO 9001 approach, relevant checking, monitoring and auditing of the management system needs to be planned and conducted. Where nonconformance is found, relevant corrective actions need to be implemented. For the system to reach a continual level of success, competence within this area is vital.
5. *Management review* – ISO 14001 places responsibility on the organization's top management to formally review the performance of the system and identify the necessary actions to ensure the continual improvement of environmental management and performance.

Kaizen/Continuous improvement

How to use

Table 26 — How to use the Kaizen/continuous improvement approach

Factors	Comments				
Link to ISO 9001	MR	RM	PR	M&A	Imp
	✓	✓	✓	✓	✓
Scope of use	• All types of organization • Both manufacturing and service • Function, division and/or organization				
Degree of change in systems	Small				
Degree of change for people	Large				
Level of benefits	Large to medium depending on success of implementation				
Type of benefit	Financial, reputational and cultural				
Level of involvement	Fully inclusive				
Maturity level	Beginner				
Timescale	Over 12 months				
Level of investment	High				
How to implement	Programme				

Background

Kaizen is the Japanese philosophy of continuous improvement, making simple, small, incremental improvements that are not costly but result in real cost savings, better quality and higher productivity.

Interest in Japanese approaches increased in the 1960s and 1970s, when Western organizations faced new competition from a part of the world that had previously been known for producing cheap goods. Here was a new competitor that was not only lower priced, but also produced goods of higher quality and specification. The 'revolution' had been led by two Americans, Dr Deming and Dr Juran, who at the time received no recognition for their ideas in their country of origin.

Principles

The main principle behind Kaizen is embedded in the Deming Cycle (see Figure 14).

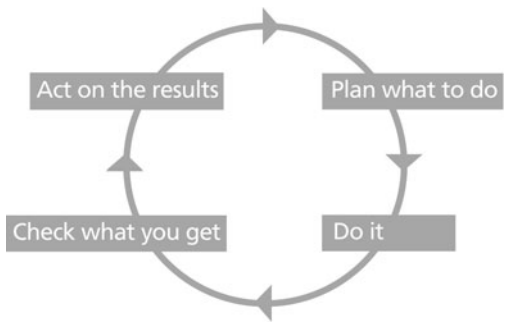


Figure 14 — The Deming Cycle

There are many other principles that support the Plan–Do–Check–Act element of continuous improvement: management, process vs. results, putting quality first and the next process is the customer.

Management

The Japanese believe this comprises two major functions: maintenance and improvement. *Maintenance* refers to activities directed towards maintaining current technological, managerial and operating standards and upholding such standards through training and discipline. Under its maintenance function, management performs its assigned tasks so that everybody can follow standard operating procedures (SOPs). *Improvement* refers to activities directed towards raising current standards.

It is suggested that because of their fascination with innovation, Western managers tend to be impatient and overlook the long-term benefits

Kaizen can bring to an organization. Kaizen emphasizes human efforts, morale, communication, training, teamwork, involvement and self-discipline – a common-sense, low-cost approach to improvement.

Process vs. results

Kaizen fosters process-oriented thinking, since processes must be improved for results to improve. Failure to achieve planned results indicates a failure in the process. Management must identify and correct such process-based errors. Kaizen focuses on human efforts – an orientation that contrasts sharply with the results-based thinking of the West.

Putting quality first

Of the primary goals of quality, cost and delivery, quality should always have the highest priority. No matter how attractive the price and delivery terms offered to the customer, the company will not be able to compete if the product or service lacks quality. Practising a quality-first credo requires management commitment because managers often face the temptation to make compromises to meet delivery requirements or cut costs. In doing so, they risk sacrificing not only quality but the life of the business as well.

Kaizen is a problem-solving process. In order for a problem to be correctly understood and solved, it must be recognized and the relevant data gathered and analysed. Trying to solve a problem without hard data is not scientific or objective. Collecting data on the current status focuses activity and serves as a starting point for improvement.

Once a problem has been identified and corrective action taken, action should be taken to prevent a recurrence. This activity is termed 'mistake proofing' or 'Poka-Yoke' in Japanese. Take an example where a part can be put onto an assembly in one of two ways – the right way or the wrong way. Mistake proofing would involve changing the assembly so that it is only possible to fit the part in the right way.

The next process is the customer

All work is a series of processes, and each process has its supplier as well as its customer. A material or a piece of information provided by process A (supplier) is worked on and improved in process B and then sent on to process C. The next process should always be regarded as a customer. This applies to two types of customers: internal (within the company) and external (out in the market).

Most people working in an organization deal with internal customers. This realization should lead to a commitment never to pass on defective parts or inaccurate pieces of information to those in the next process. When everybody in the organization practises this, the external customer receives a high-quality product or service as a result.

Approach

There are many approaches to implementing Kaizen, each with their individual features. These approaches have several things in common:

- the need to gain management commitment;
- educating all staff in the need for customer focus and for the reduction in process variation;
- process-oriented management;
- problem solving including the use of the seven quality tools.

The seven quality tools are:

1. Pareto diagrams;
2. cause and effect/fishbone diagrams;
3. histograms;
4. control charts;
5. scatter diagrams;
6. graphs;
7. check sheets/tally charts.

In later years the Kaizen principles were extended to develop 'Total Quality Management' (TQM) programmes (see 'Total Quality Management (TQM)' on page 148 for more information).

Kaizen teams

How to use

Table 27 — How to use the Kaizen teams approach

Factors	Comments				
Link to ISO 9001	MR	RM	PR	M&A	Imp
		✓	✓		✓
Scope of use	• All types of organization • Both manufacturing and service • Self-contained function units				
Degree of change in systems	Medium				
Degree of change for people	Small				
Level of benefits	Large				
Type of benefit	Financial and reputational				
Level of involvement	Fully inclusive				
Maturity level	Experienced and world-class				
Timescale	Less than 3 months				
Level of investment	Low				
How to implement	Project				

Background

Kaizen, or continuous improvement, has helped many organizations improve their performance by changing the culture of the organization.

A Kaizen organization will have effective communication, widespread teamwork, a focus on facts and processes, and will be seeking to move forward a little bit every day.

The idea of Kaizen teams has become very popular on the back of the other Japanese approaches, such as Just-in-Time (JiT) and Lean engineering. The approach described here was developed by the Association for Manufacturing Excellence (AME) and is called the 'Kaizen Blitz'. In the UK it has been used extensively in both the public and the private sectors and is more commonly known as rapid improvement teams or rapid improvement events.

Benefits of this approach can include:

- 90 per cent reductions in set-up time in 1 week;
- 20–60 per cent improvements in productivity in 4 days;
- inventories cut in half in only a few days;
- process time reductions of 40–80 per cent;
- walking distance reductions of 40–90 per cent.

Principles

- The Kaizen Blitz is doing, not proposing. This is different from traditional Kaizen approaches such as quality circles.
- Getting dirty together. It is a hands-on process where every team member gets involved.
- The Kaizen Blitz is a low-budget process. A typical budget would be $300–$400. There is no time to get capital equipment in the five days it takes to run the project.
- In the long run, only the simple things work. Complex solutions are hard to maintain and harder to monitor.

During a Kaizen Blitz project/rapid improvement event there are a number of rules, as follows.

1. Be open-minded.
2. Maintain a positive attitude.
3. Reject excuses – seek solutions.
4. Ask 'Why?, Why?' – there are no stupid questions.
5. Take action – do not seek perfection, implement now with the resources at hand.
6. Use all the team's knowledge.
7. Disregard rank – everyone is equal.
8. Just do it!

Approach

The approach builds on other programmes such as TQM and world-class manufacturing. It is a natural next step once the basics of continuous improvement are in place and there is a need for a step change in performance. The approach is also highly focused. The step change is made in a limited scope area (a work location or a cell – not a factory).

In a typical project, a cross-functional, multi-level team of 6–12 members work for 12–14 hours a day for 3–4 days. They rapidly develop, test and refine solutions to problems and leave a new process in place. A key feature is they do not plan, they do not propose, they do.

Kaizen Blitzing is a top-down process beginning with the process owner. The process owner can be at any level, but they will be in charge. It is a team process with core staff from the area being tackled making up the team. The team is brought together at the start of the project and educated in the concepts and tools. Kaizen experts do the training and facilitate the process.

In a landmark research study conducted on Lean improvement for the Scottish Executive in 2006, Evaluation of the Lean Approach to Business Management and its uses in the Public Sector, the study found the advantage of rapid improvement events was that public sector managers found its style of delivery could overcome slow responses by staff to change initiatives. Line managers argued that it provided a faster return for effort, was more visible and did not challenge existing management control styles to the same extent as other techniques. Staff also favoured the approach as they felt engaged in an improvement process that quickly demonstrated potential results, where they had some input.

Lean improvement

How to use

Table 28 — How to use the Lean improvement approach

Factors	Comments				
Link to ISO 9001	MR	RM	PR	M&A	Imp
			✓	✓	✓
Scope of use	• All types of organization • Both manufacturing and service, but people find it easier to apply in manufacturing departments • Functions, particularly manufacturing functions, and				

	organization-wide
Degree of change in systems	Large
Degree of change for people	Large
Level of benefits	Large
Type of benefit	Financial, reputational and cultural
Level of involvement	Often coercive to force people to adopt the principles
Maturity level	Experienced and world-class
Timescale	Over 12 months
Level of investment	Medium
How to implement	Programme

Background

In *The Machine that Changed the World* (Womack, et al., 1991) a wealth of benchmarking data shows that there is a better way to organize and manage customer relations. The study focused mainly on the practices from Japan and, notably, the Toyota Production System.

A follow-up work*, Lean Thinking* (Womack and Jones, 1996), sought to explain the approaches that led to the results. The practices have now spread to Europe and into service industries.

Lean Thinking has its roots in 'systems thinking'. Systems thinking recognizes that simple, logical, step-by-step approaches are an over-simplification of the real world. In reality, even a simple process is contained within a system and the parts of the system will affect the operation of the system.

Take filling a bath as an example of systems thinking (see Figure 15). You turn the tap and water flows from it. This causes an increase in the water

level in the bath and, as the water reaches the desired level, the tap is turned to reduce the flow, to the point when no more water flows from it. This is a simple system.

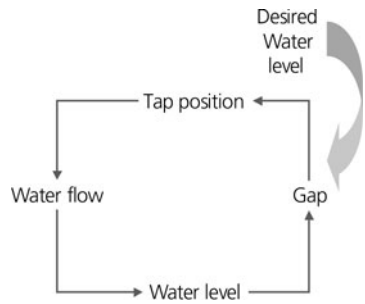


Figure 15 — An example of systems thinking

(source: Senge, 1993)

Principles

Lean improvement is based around five principles, as follows.

1. *Specify value*. First there is a need to define exactly what is meant by value – this is what the customer actually wants (but they may not be expressing this clearly). Value also needs to be defined in terms of the whole product, not just part of it.
2. *Identify the value stream* – the path that the product or service takes.
3. *Flow* – converting from the world of batch and queue is one of the most difficult barriers to overcome.
4. *Pull*. Nothing is produced upstream until a downstream customer asks for it. The key to pull is having a responsive system and not having stocks. The need to prepare for pull also has an effect on how you organize.
5. *Perfection* is all about getting things right first time. Kaizen workshops are held regularly to improve the business. Typically, these last 2–3 days. This does not rule out a radical path to perfection. This is achieved, for example, by reconfiguring the value stream.

The principles build on the idea of Just-in-Time (JiT) manufacturing. Parts are delivered not only at the right time and in the right quantity, but also are synchronized to the customer's schedules so that they match the customer's own product flow, completely eliminating stock held next to the assembly track. A common example is in the manufacture of car seats. As they take up so much space they cannot be stored in the assembly area, and because they vary in colour and trim material from

one vehicle to the next, they need to be delivered in sequence according to the specification of cars passing down the track – typically from a nearby supplier park.

Just-in-Sequence delivery requires effective systems for sharing information between customer and supplier and a high degree of integration between the two operations. The next step is for supplier personnel to be responsible for final assembly on the track – still an unusual arrangement.

Lean improvement uses many unusual terms. Table 29 summarizes the main ones that are used.

Table 29 — Lean improvement terminology explained

Lean term	Description
Flow	The progressive completion of tasks along the value stream, so that a product or service proceeds from design to launch, order to delivery, and raw materials into the hands of the customer with no stoppages, scrap or backflows.
Kaizen	Continuous, incremental improvement of an activity to create more value with less waste.
Pull	A system of cascading a product or service by which nothing is produced by the supplier until the customer signals a need.
Value/Valuable	A capability provided to the customer at the right time at an appropriate price, as defined in each case by the customer.
Value stream	The specific activities required to design, order and provide a specific product (or service) from concept launch to order to delivery into the hands of the customer.
Value Stream Mapping (VSM)	The identification of all the specific activities occurring along a value stream for a product or product family (or service).
Waste	Anything that does not add value to the final product or service.

(Source: Radnor & Walley, 2006)

Approach

Step 1: find a change agent and educate the people who will be involved in the project

It is useful to find a reason for starting the change, by seizing a crisis or by creating one, because the principles of Lean Thinking require people to go against their natural instincts. For example, logic dictates that keeping a stock of finished goods is the only way to protect supply and deliver customer service. In Lean Thinking people have to accept that zero stock is the way forward and will be something new.

Lean principles should be introduced in a controlled and systematic way. The advice is to concentrate on getting the principles introduced in a small way before focusing on the wider strategy.

Step 2: map the value streams

Start by mapping the value streams of one important and visible activity. Then the changes needed can be identified. Make the changes and check the results; only if this is successful should the scope of the programme be expanded.

Step 3: identify non-value-adding activities

A key concept of Lean improvement is the removal of non-value-adding activities, or waste. There are eight identified forms of waste:

1. *overproduction*: making more, earlier or faster than required by the next process;
2. *inventory waste*: any supply in excess of a one-piece flow (make one batch and move one batch) through the service process, whether it is unprocessed work, work in process or completed work. Inventory is not an asset, but a cost or waste;
3. *defective work*: work requiring inspection, sorting, scrapping or reworking;
4. *over processing*: extra effort that adds no value to the service from the customer's point of view;
5. *waiting*: idle time waiting for such things as workforce, materials, equipment, measurement or information;
6. *people*: not fully using people's mental and creative skills and experience;
7. *motion*: any movement of people, tooling and equipment that does not add value to the service;
8. *transportation waste*: transporting work around the office.

Step 4: change the organization

Change the organization to support the value streams. Some organizations reorganize themselves by product family and value streams

to achieve this, rather than by function. As there will be a high level of change, a Lean promotion function may be created to give the programme focus and support. This can be part of the growth strategy.

As people will be affected by the change, dealing with them at the outset of the programme will be key to the programme's success. It is also important to remove those who attempt to slow down the programme.

The approach is considered to be a programme and not a project, as improvements are always being sought. The advice is that 'When you have fixed something, fix it again'. It is also acceptable to take two steps forward and one step back, but 'No steps forward is not ok'.

Although first developed in manufacturing, Lean has become a powerful improvement tool in the public sector. Research for the Scottish Executive in 2006 found a number of tangible outcomes including:

- improving customer waiting times to first appointment in the health sector from an average 23 to 12 days;
- improving service performance in failure demand from 82 per cent to 15 per cent in four weeks;
- improving processing times by two thirds in one local government department;
- achieving more work in less staff time;
- bringing services up to a standard;
- improvement of customer flow time for patients of 48 per cent;
- reduction in staffing of 105 employees and of £31 million budget saving in 10 months.

There was also a range of intangible outcomes delivering benefits to the customer, the organization and the staff, which can be summarized as:

- process change to speed up the process;
- culture change to focus on customer requirements and encourage joined-up working;
- greater focus on prevention rather than correction of errors;
- support for the development of a culture of continuous improvement;
- greater understanding of the whole system and how it fits together;
- better understanding of the needs of the customer;
- improved performance measurement and use of data to manage performance;
- greater staff satisfaction and confidence in themselves and the organization.

Lean Six Sigma

How to use

Table 30 — How to use the Lean Six Sigma approach

Factors	Comments				
Link to ISO 9001	MR	RM	PR	M&A	Imp
	✓	✓	✓	✓	✓
Scope of use	• All types of organization • Both manufacturing and service • Organization-wide				
Degree of change in systems	Medium				
Degree of change for people	Medium				
Level of benefits	Large				
Type of benefit	Financial, reputational and cultural				
Level of involvement	Inclusive				
Maturity level	Experienced and world-class				
Timescale	6–12 months				
Level of investment	Medium				
How to implement	Project				

Background

Although Lean and Six Sigma developed separately, in recent years there has been a coming together of these two methodologies in an attempt to create a business solution that includes the best of each methodology.

Effective Six Sigma training programmes have always contained elements of Lean Thinking and Lean Tools, even if they were not specifically identified as Lean Tools.

Lean Six Sigma works on the principle that Lean is much more than just smoothing out process flow just as Six Sigma is much more than a defect reduction programme. They each have a major contribution to make to the improvement of any business and by combining them under one heading the opportunity is there to make significant improvements.

Principles

Lean Six Sigma is a disciplined approach to total business improvement where an organization can incorporate all of the best around the principles of the Toyota Production System, JiT and value flow, together with the best of data analysis and statistical analysis.

Lean is about the elimination of waste in a process, which can include defects and errors, whereas Six Sigma is about the reduction and control of variation within a process, which can include workflow and workplace management.

The key attributes of each approach combine to provide a powerful and tested improvement tool, as follows.

Six Sigma:

- is a systematic approach to process improvement;
- has processes that can be related to design, manufacturing or administrative functions;
- involves the use of statistical tools and techniques to analyse and improve processes;
- is the relentless pursuit of variability reduction and defect elimination.

Lean:

- always defines *value* from the customer's perspective;
- identifies the *value stream (and component activities)* needed to take a product (or service) from customer request to completed delivery;
- ensures product or service 'activity' *flows* through the value stream without any delays;
- uses *pull* scheduling so that a product is made or a service is provided only when the customer wants it;
- strives continuously to eliminate all forms of *waste* from the processes involved.

Approach

Lean Six Sigma is based around the define–measure–analyse–improve–control (DMAIC) process that has been within Six Sigma from its inception (see Figure 16).

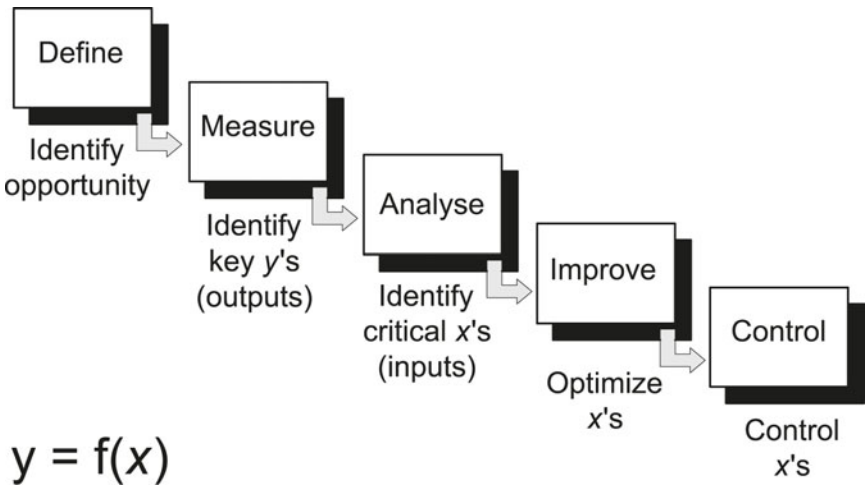


Figure 16 —The define–measure–analyse–improve–control (DMAIC) process within Six Sigma

The key to Lean Six Sigma is that the Lean Tools are then placed into this process where they have the primary effect.

Typical Lean Tools involved are:

- *takt time* – the rate at which product has to be made to satisfy customer requirements;
- *cycle time* – the time it takes the operator to go through all of the work required at that step;
- *lead time* – the time it takes one part to go through the whole process;
- *value-added time* – time spent adding value (from the customer's perspective);
- *value stream mapping* – specialized process mapping which looks at material *and* information flows from supplier to customer for a specific product family;
- *5S* – a system used to establish and promote workplace orderliness;
- *visual controls* – the visual workplace should make obvious to anyone how work flows through the process;

- *line balancing* – in conjunction with takt time, this is used to balance the amount of work each person does, ensures that work in process (WIP) is minimized, and ensures there is minimum risk of any delays;
- *Kaizen* – means 'continuous improvement' in Japanese;
- *Kanban* – literally meaning a sign or signal, this is used to regulate the flow of parts through the process; nothing moves unless there is an appropriate signal;
- *cellular manufacture* – processes are organized in product-related, close-proximity groups (instead of in process-related blocks). Typically U-shaped cells are used, enabling single-piece flow and maximum flexibility in utilizing people.

These tools and techniques are incorporated into the DMAIC process as appropriate. A basic overview depicting the implementation and flow of a typical DMAIC based project is shown in Figure 17.

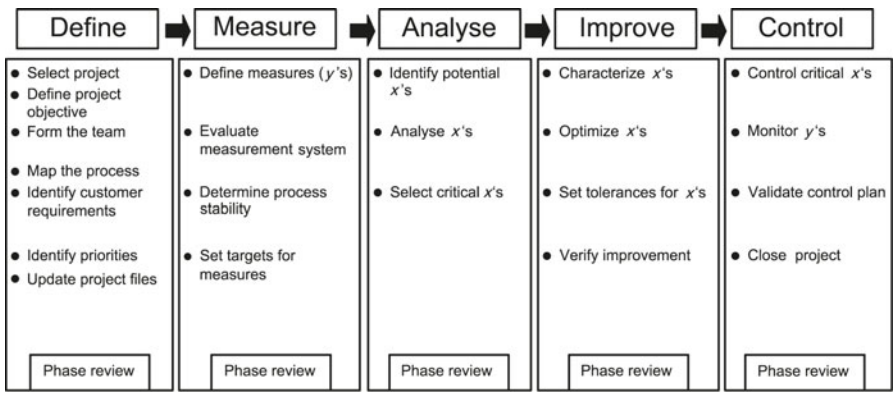


Figure 17 — Transactional Improvement Process

Performance management

How to use

Table 31 — How to use the performance management approach

Factors	Comments				
Link to ISO 9001	MR	RM	PR	M&A	Imp
	✓	✓			
Scope of use	• All types of organization • Both manufacturing and service • Organization-wide				
Degree of change in systems	Medium				
Degree of change for people	Large				
Level of benefits	Large				
Type of benefit	Financial, reputational and cultural				
Level of involvement	Fully inclusive				
Maturity level	All				
Timescale	Over 12 months				
Level of investment	Low, provided there is no major IT system investment				
How to implement	Programme				

Background

Performance management is closely linked to several other techniques in this book, in particular: performance measurement, Balanced Scorecard, and high-performance culture. Many organizations become confused between performance management and performance measurement.

Performance management is a technique to manage the performance of individuals, whereas performance measurement manages the performance of the organization. Once an organization has created its Balanced Scorecard, setting its direction, performance management is used to communicate to individuals what they have to achieve.

A lot has been written about the pros and cons of performance management, or management by objectives as it is sometimes known. It is a process that most staff try to avoid as much as possible as the focus is often too much on the end of the process – the performance appraisal – and not enough on the start, which is where the employee plans what they will achieve over the course of the next period in order that the organization can deliver its objectives.

Performance management has been around for many years, but, as mentioned above, in Europe the focus has mainly been on the end of the process. Western organizations started to realize the real power of the technique when studying the Japanese manufacturing approaches. They found that the Japanese used a technique called 'catch-ball'. This is when the personal objectives of the senior leaders are passed to middle managers, who pass their objectives to the managers, who pass to the supervisors, who pass to the operators. Crucially the 'ball' is then passed back up the chain with individuals committing to a level of performance for the year. When the ball gets back up to the top, all the objectives should add up. If they do not, then there is going to be a problem.

A good performance management system will deliver efficiencies and create a performance culture in the organization. It will:

- deliver consistent high performance across the organization to maximize stakeholder value;
- support the acquisition of talent with the desired behaviours to drive high-performance culture;
- enable a mechanism for continuous feedback and review, consistently recognizing and rewarding high performance, and dealing with poor performance in a constructive way.

Principles

An effective performance management system will adopt a number of principles. These may be summarized as follows.

'Line of sight' objectives setting

All personal objectives should be linked to an organizational objective. This is referred to as 'Line of sight', so that every individual knows how

their performance is going to impact the success of the organization. To do this it is important that the business planning cycle and performance management cycles are aligned.

Objectives that measure contribution and not just activity

The most common advice when setting objectives is to make them SMART. This translates to:

- Specific, so there is no ambiguity;
- Measurable, so they can be evaluated;
- Agreed, so they are not enforced;
- Realistic, so they are achievable;
- Time-bound, so they do actually get delivered.

This is good advice, but there is something that is even more important. This is that the effort actually delivers a benefit to the organization so the focus should be on outcomes and not activities. A simple example illustrates the point. An employee manages a leadership development programme and he proposes an objective that meets the SMART criteria: that two 2-day leadership development programmes involving 50 leaders are run over the course of a year.

However, these programmes may be of no value whatsoever to the organization. A much more powerful objective would be to increase the result in an annual employee engagement survey by a certain amount. This is an outcome. It could take one, two or three leadership development programmes, but at the end of the year a difference would have been made to the organization.

Full engagement at all stages of the process

There is one government organization that used to operate a process called 'Confidential Performance Review'. At the end of every year, an employee's performance was rated by their manager. The rating was never disclosed to the employee, and no discussion took place on either what should be achieved or what was achieved. This approach may have been valuable from an administration perspective, but it was valueless in terms of delivering or improving performance.

Without full engagement there will be no commitment to the personal objectives at the start of the process, and so the desire to achieve will be half-hearted. The worst-case scenario is where objectives are 'given' to individuals. They feel no ownership and often the objectives they 'agree' to are lower in expectation than the ones they would have proposed themselves. The individual also knows a lot more about their own job than their manager. They would certainly have given it much more thought.

Engagement during all the performance reviews is also important if the individual is going to accept feedback and reflect on their performance in order that they can do even better next year. Individuals should be encouraged to make a careful assessment of their strengths and areas of improvement as the first step of any review. This moves the performance review from 'appraisal' to 'analysis'.

Focus on learning, not on a rating

With more and more organizations linking performance to reward, one problem with performance management systems can be that they focus too much on the award part and not as much on learning and development. Strong support for learning initiatives to ensure the development of skills and competencies required to achieve the desired future performance is important. When a performance review leads to some form of rating, and then this rating is used to pay bonuses or make promotion decisions, it is not surprising that employees are unreceptive to feedback and fight for the highest rating possible. For this reason many organizations decouple appraisals from development planning, making the former a once a year event and the later a continuous process.

It is not just about what is achieved, it is about how it is achieved

Anyone can be a 'slave-driver' focused on the job in hand as opposed to the welfare of the people. Dictatorial leadership has been used, for example in times of war or when there is a desire for total control, but such an approach is unsustainable and, as history has shown time and time again, leads to a downfall.

It is common practice for organizations to rate employees in two dimensions: achievement of objectives (results) and leadership style (approach). The latter assessment can sometimes be against the organization's values, or 'the way we do things around here'. These could include teamwork, providing support, and open and honest communication.

The most popular method of conducting leadership-style assessment is through 360-degree feedback. This does need a mature culture where leaders in particular are receptive to feedback, and this can depend on the national culture as well as the organization's culture. In cultures that look up to elders, people find it difficult to accept feedback from junior staff. If the organization is not ready for 360-degree feedback, then other techniques, such as self-assessment, are available to encourage reflection.

Open and transparent communication

Ensuring transparency in communicating goals and desired performance levels is important. Ideally, visual communication, where an employee displays their objectives openly, should be used, particularly at the senior levels. This is an excellent opportunity for a leader to show role model behaviour.

Communicating the consequences of poor performance is also important. If employee A works their socks off and employee B does very little, then employee A is going to feel very aggrieved and may not put the same level of effort in in following years. General Electric was infamous for having the 10 per cent policy, where the 10 per cent poorest performers were exited from the company. This approach is not advocated as all it does is instil fear throughout the organization, but it is important for poor performers to understand that the organization demands improvement.

Approach

The performance management cycle is extremely simple, having just three main elements: performance planning, performance review and performance evaluation. These are shown in Figure 18.

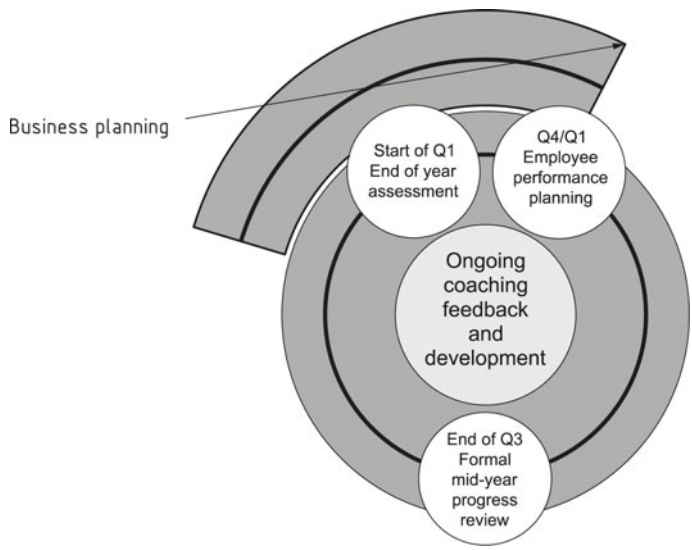


Figure 18 — The performance management cycle

At the start of the year or, even better, towards the end of the previous year, employee performance planning should commence, where every individual proposes and agrees their objectives, ensuring that all objectives are aligned to the business plan. Alignment takes time, but unless this is achieved there is a risk that the whole process will be ineffective.

Personal development sits at the heart of the process and it should be a continuous process. Employee performance planning also provides an opportunity to update individuals' personal development plans. Once the objectives for the coming year are agreed, consideration should be given to the development support required to ensure the objectives are achieved. The spirit of the performance management process should be enabling achievement, not punishing failure.

Reviews of achievements against objectives should be conducted throughout the year. Good practice dictates that formal reviews should be held either once a quarter, or at least once during the year. This not only allows the personal development plans to be reviewed, as business plans are often not static due to changes in the organization or priorities, but also provides an opportunity to realign personal objectives to current needs.

The final step in the performance management process is the end-of-year performance review. This activity meets three main needs. It:

1. provides feedback on performance to see how the employee is doing;
2. provides systematic judgements to support salary increases and promotions, or demotions and terminations;
3. is increasingly being used as a method of coaching and counselling.

Although employees often dislike being reviewed, there is just as much resistance from managers. Managers:

- do not like to criticize subordinates;
- often lack the skill needed to handle interviews;
- mistrust the validity of the appraisal instrument.

Successful performance reviews require a partner relationship between manager and employee, with the employee initiating the process. The manager should build on strengths and not focus too much on weaknesses. There must also always be a commitment to action, and this normally involves both parties.

Performance measurement

How to use

Table 32 — How to use the performance measurement approach

Factors	Comments				
Link to ISO 9001	MR	RM	PR	M&A	Imp
	✓		✓	✓	✓
Scope of use	• All types of organization • Both manufacturing and service • Function, division and/or organization				
Degree of change in systems	Medium to small				
Degree of change for people	Medium				
Level of benefits	Large				
Type of benefit	Financial, reputational and cultural				
Level of involvement	Inclusive				
Maturity level	Beginner, experienced and world-class				
Timescale	Less than 3 months to get started				
Level of investment	Low				
How to implement	Project				

Background

It is often said that it is impossible to manage what cannot be measured. And organizations often have very poor performance measurement systems.

A performance management framework (PMF) is a mechanism for managing an organization through the identification of a number of critical measures and monitoring the current and planned performance.

Often based on a Balanced Scorecard approach (see page 34), the measures are developed from the organization's mission and critical success factors. The approach is of benefit to all organizations and has been used successfully in both private and public organizations of varying sizes.

The main benefits are as follows.

- The approach links strategy with action and gives a simple view of performance status. The management summary may be understood at a glance.
- All stakeholder interests are represented and minimal effort is needed to collect performance data.
- The design of the PMF allows easy access to detail as needed when the performance is reviewed.
- Management decisions are made with more confidence and debates are fact-based as opposed to being fact-free.

Principles

Traditionally, performance measures and indicators have been derived from cost accounting information, and often based on outdated and arbitrary principles. It is now recognized that an organization must measure its performance by more than just financial measures, and this is at the heart of the principle behind the Balanced Scorecard.

There are also two fundamental performance measurement types:

1. *outcome measures* (sometimes known as 'lag indicators'), which show the performance of an organization against what it must achieve to meet its mission, and where the organization wants to be in the future; and
2. *driver measures* (sometimes known as 'lead indicators'), which show the performance of the organization's processes, how the outcomes will be achieved, and how the organization is performing now.

Poor performance of the drivers will lead to the outcomes not being achieved, so the business will fail to meet its objectives or mission.

In the cycle of never-ending improvement, measurement plays an important role in:

- capturing the goals of an organization in terms that people can understand;

- defining the role that people will play in achieving these goals;
- tracking progress against organizational goals;
- identifying opportunities for improvement;
- comparing performance against internal standards;
- comparing performance against external standards.

Approach

Many organizations are using the Balanced Scorecard, yet many are struggling to make it work for them. There are many examples of performance measurement systems that frustrate improvement efforts. Various problems include systems that:

- produce irrelevant or misleading information;
- track performance in single, isolated dimensions;
- generate financial measures too late, e.g. quarterly, for mid-course corrections or remedial action;
- do not take account of the customer perspective, both internal and external;
- distort management's understanding of how effective the organization has been in implementing its strategy;
- promote behaviour that undermines the achievement of the strategic objectives.

A key to success is understanding that performance measurement is more than simply building a Balanced Scorecard. The performance management system has many elements that need to be taken into account. The Balanced Scorecard, or a similar tool such as the Performance Prism, plays a vital role, but there are other elements to a successful approach as shown in Figure 19.

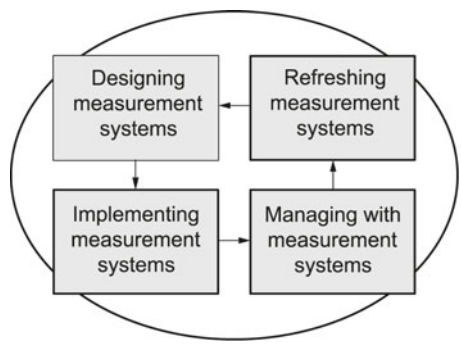


Figure 19 — A model for a successful performance measurement system

(source: Tanner and Oakland, 2005)

The critical elements of a good performance measurement system are:

- leadership and commitment;
- full employee involvement;
- good planning;
- sound implementation strategy;
- measurement and evaluation;
- control and improvement;
- achieving and maintaining standards of excellence.

Process Classification Framework (PCF)

How to use

Table 33 — How to use the Process Classification Framework (PCF) approach

Factors	Comments				
Link to ISO 9001	MR	RM	PR	M&A	Imp
			✓		
Scope of use	• All types of organization, although not so applicable to voluntary organizations • Both manufacturing and service • Function, division and/or organization				
Degree of change in systems	Not applicable				
Degree of change for people	Not applicable				
Level of benefits	Medium				
Type of benefit	Financial, reputational and cultural				
Level of involvement	Inclusive				
Maturity level	Beginner				
Timescale	Less than 3 months				

Level of investment	Low
How to implement	Project

Background

The American Productivity and Quality Center (APQC) was founded in 1977 as a non-profit organization working with business, labour, government and academia to improve productivity, quality and the quality of working life. Its main aim is to improve American productivity through the transfer of knowledge and best practices. APQC's focus is primarily in the field of benchmarking.

The Process Classification Framework (PCF) was developed by APQC and its member companies as an open standard to facilitate improvement through process management and benchmarking, regardless of industry, size or geography. It is a universal tool, and is particularly useful for newcomers to process management. The PCF organizes operating and management processes into 12 enterprise-level categories, including process groups and over 1,000 processes and associated activities. The PCF and associated measures and benchmarking surveys are available for download and completion at no charge from the Open Standards Benchmarking Collaborative (OSBC) website at http://www.apqc.org/OSBCdatabase. In addition to the generic version, the Process Classification Framework is available in 11 industry specific versions, including Automotive, Banking and Education.

Principles

When benchmarking, organizations often have problems identifying the processes to target in partner organizations, as processes are often named differently and have different scopes from organization to organization. The PCF was developed as a simple form of 'translator' so that areas of interest could be identified during benchmarking activities.

Approach

The main aims of the approach are to:

- encourage organizations to see their activities from a process rather than a functional viewpoint;
- encourage 'out of the box' thinking, where processes from different industries are adopted to advance an organization;

- help organizations to understand their processes better;
- help organizations to reach out across industry boundaries to communicate and share information;
- classify information in various forms.

The framework covers 12 top-level processes and is split into two sections:

1. five 'operating' processes;
2. seven 'management and support' processes.

Each top-level process breaks down into a number of sub-processes, which are themselves subdivided into a number of lower-level processes. The top-level processes are shown in Figure 20.

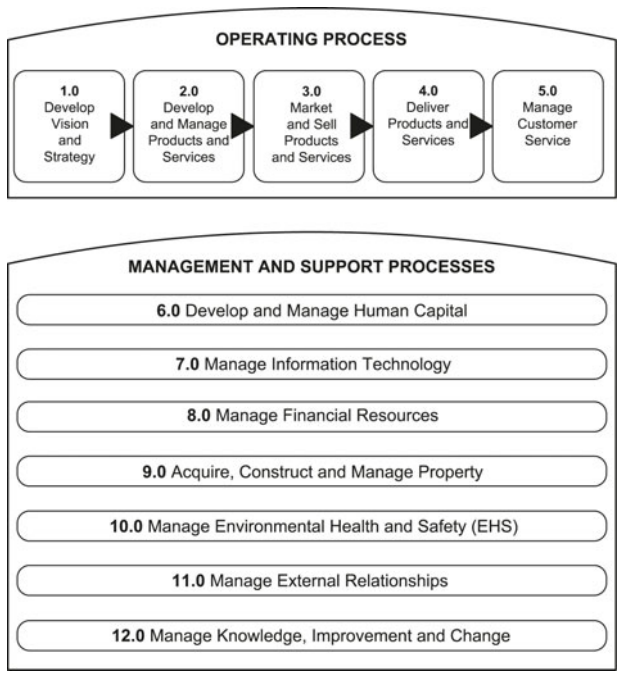


Figure 20 — Top-level processes of the Process Classification Framework (PCF)

By breaking down an organization's activities into a number of common processes, it is easier to compare 'like for like' areas and to see where

processes vary significantly. Beginning with Version 5.0.0, the PCF uses a numbering scheme that differs from previous versions. The cross-industry framework and the industry-specific frameworks collectively form a library of process elements for the OSBC. Each process element is referred to by two numbers: a number used to locate the content within that particular framework (in the format 1.2.3.4) and a serial number used to uniquely identify the process element across all of the various OSBC frameworks (beginning with 10000). The interpretation is shown in Table 34.

Table 34 — Classification of process elements in the Process Classification Framework (PCF)

Category	The highest level within the PCF is indicated by whole numbers (e.g. 8.0 and 9.0)
Process group	Items with one decimal number (e.g. 8.1 and 9.1) are considered a process group
Process	Items with two decimal numbers (e.g. 8.1.1 and 9.1.2) are considered processes
Activity	Items with three decimal numbers (e.g. 8.3.1.1 and 9.1.1.1) are considered activities within a process

For example, the process element '1.2 Develop business strategy (10015)' is uniquely identified by the serial number '10015' and the hierarchical reference number '1.2'. In industry-specific frameworks, any process element identified as '10015' will have the same scope and definition, but may be labelled differently.

Although designed for benchmarking activities, the PCF is a valuable aid to identifying an organization's processes for other purposes. These include process analysis as part of continuous improvement or business process re-engineering (BPR) activities, and identifying process interfaces within and across departments. It is a valuable aid when preparing an ISO 9001 system.

Process management

How to use

Table 35 — How to use the process management approach

Factors	Comments				
Link to ISO 9001	MR	RM	PR	M&A	Imp
	✓	✓	✓	✓	✓
Scope of use	• All types of organization • Both manufacturing and service • Function, division and/or organization				
Degree of change in systems	Varies, depending on degree of change required				
Degree of change for people	Varies, depending on degree of change required				
Level of benefits	Varies, depending on degree of change required				
Type of benefit	Financial, reputational and cultural				
Level of involvement	Inclusive				
Maturity level	Beginner, experienced and world-class				
Timescale	It can take over 12 months to get a good understanding of process management and to see the first benefits				
Level of investment	Depends on improvement method used				
How to implement	Evolution, project or programme				

Background

Process management lies at the heart of all the business improvement models. It involves selecting, understanding, improving and continuously monitoring the performance of an organization's processes. Applicable to

all organizations, process management is often a difficult area to implement without expert advice and support.

By mastering the management of critical processes it is possible to increase both effectiveness and efficiency, bringing higher stakeholder satisfaction and lower costs, and often leading to the delivery of an organization's strategic objectives.

Process management also gives many other internal benefits, typically:

- enhanced team working;
- better communication across functional areas;
- greater flexibility;
- increased staff satisfaction.

Principles

There are several principles to process management and these relate to the way that processes are designed and operated. All processes have a purpose, receive inputs and, through a number of activities, transform the inputs into something more valuable in the form of outputs:

- *process purpose*: what it is designed to achieve;
- *inputs*: what the process transforms. They can be physical objects, such as iron bars, or information;
- *outputs*: can also be either physical objects or information, such as the cost of the service;
- *added value*: when the work on the information or physical objects is complete, it must become more valuable to one of the stakeholders.

There are other factors that play a part in a process:

- *controls*: the conditions under which the process must be operated. They may be external, such as health and safety legislation, or internal, such as procedures or performance measures;
- *resources*: the inputs that do not change during the operation of the process. People, equipment and information are all forms of resources;
- *process capability*: a measure of what the process may achieve. Take the process of hand-folding a piece of paper. A piece of A4 paper cannot be folded more than about eight times and it takes at least five seconds to perform the operation.

Approach

This approach is split into five phases (see Figure 21).

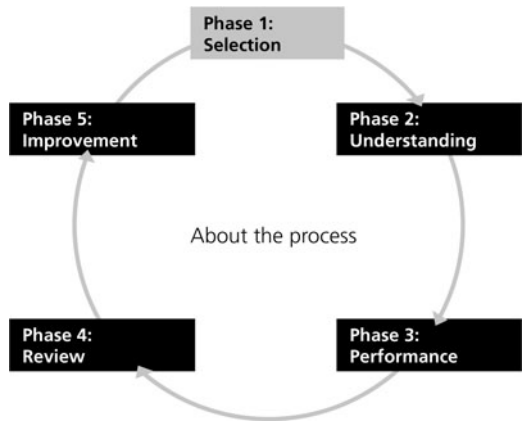


Figure 21 — Process management cycle

Phase 1: process selection

Agree a small number of business-critical processes upon which to focus. This is often achieved by considering the strategic objectives of the organization and identifying those processes that have a major impact on their achievement, and/or those that have most opportunity for improvement.

Phase 2: process understanding

Define the selected process or processes. This involves agreeing the purpose of the process, its scope, inputs, outputs, controls and resources. These factors are contained in the ICOR nomenclature; see Figure 22.

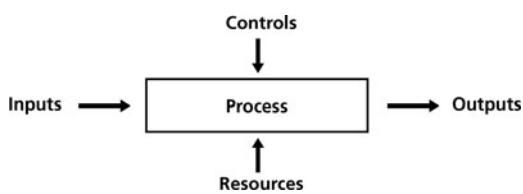


Figure 22 — ICOR Diagram

Phase 3: process performance

Research and gather historical performance data in preparation for the review of the performance of the process. This includes both factual and perceptual data as well as targets and benchmarks.

Phase 4: process review

Review the actual performance of the process against the targets and any external comparisons in order to establish improvement priorities. A target provides a measure of performance against planned performance, and a benchmark provides a measure of performance against potential performance.

Phase 5: process improvement

Select the most appropriate method for delivering the process improvement. This could be a continuous improvement approach or a re-engineering approach if a step change is required.

Self-assessment

How to use

Table 36 — How to use the self-assessment approach

Factors	Comments				
Link to ISO 9001	MR	RM	PR	M&A	Imp
	✓			✓	✓
Scope of use	• All types of organization • Both manufacturing and service • Division or organization-wide				
Degree of change in systems	Small				
Degree of change for people	Small				
Level of benefits	Medium				

Type of benefit	Financial, reputational and cultural, once improvements are implemented
Level of involvement	Inclusive
Maturity level	All, but the approach used will vary depending on the maturity of the organization
Timescale	Less than 3 months or 6–12 months depending on approach taken
Level of investment	Medium to low
How to implement	Project

Background

The growth of self-assessment can be traced back to the earliest of the quality awards, the Deming Prize. This award promotes the need to review activities prior to the examination for the award.

The goals of TQM – customer satisfaction, continuous improvement and organizational excellence – are dynamic targets. They do not have a pre-fixed level. An organization must, therefore, be able to assess its current total quality performance against its past performance. This requires a rigorous self-assessment process and a suitable TQM framework to do it with. Thousands of organizations across the world are now using self-assessment on a regular basis. Self-assessment is not only a means of measuring continuous improvement; it also provides an excellent opportunity for integrating TQM into normal business activity.

To compete in today's aggressive business environment, organizations must deliver ever greater value to their customers. Increasingly, leading organizations are turning to business improvement models to help them achieve their goals. The principles behind these models are simple – an organization will be profitable and grow if its products and services meet its customers' existing requirements as well as anticipate customers' future requirements. Products and services delivered through business processes must be continuously reviewed and improved by well-motivated and trained staff. This may be viewed as a business 'health check'.

Principles

Staff need to be actively involved in process improvement activities in order to improve the organization's effectiveness, efficiency and responsiveness. Self-assessment involves people in the regular and systematic review of their processes and results.

The process of self-assessment offers an organization an opportunity to identify clearly its strengths and improvement opportunities. It also enables an organization to focus valuable improvement resource where it is most effective, as well as enabling the progress of TQM programmes to be monitored.

Approach

There are many ways to conduct a self-assessment and the actual way chosen will depend on the objectives. There are essentially seven basic approaches, which are summarized in Table 37. In each case, evidence is collected using a quality model such as the EFQM Excellence Model® or the Baldrige model as a guideline. There is also the option to take a 'hybrid' approach where a mixture of the approaches is used.

Table 37 — Seven basic self-assessment approaches

Approach	Description	When to use
Discussion group	Group meeting where a facilitator leads a discussion on the approaches taken and the performance of the organization, using the quality model	In the early stages when senior managers have not experienced the full benefit of the approach. Very useful tool for communicating the principle and for gaining involvement
Software-based questionnaire	Completion of a questionnaire, collecting the input through a software program that leads to a scoring profile and feedback. Can be used by an individual, or in a team situation where a team reaches consensus on the response before it is entered into the program	A team of senior managers with little prior knowledge of the quality model may use a software program such as BQF's Snapshot Plus, which is based on the EFQM Excellence Model®. It also provides information about approaches in other organizations. This is a good method to get a senior team on board and establish commitment to some

		early improvement action
Surveys and questionnaires	Collection of people's perception through the completion of a survey or a questionnaire. A typical questionnaire would have 100 questions	To get wide involvement in the self-assessment process throughout all levels of the organization. Quick and simple to use although perceptions have to be cross-checked with reality
Interviews	A facilitator collects self-assessment information by interviewing individuals (e.g. managers) and groups (e.g. work-level focus groups)	When senior manager time is at a premium or when visiting a manager's place of work to collect information can enhance the self-assessment. The focus groups are normally used to compare managers' perceptions of the current situation with the perceptions of other staff
Matrices	The organization's current position is established by comparing evidence (and/or perceptions) against a number of statements, each with its own score. These statements are designed around scoring criteria. There may be 5–10 statements per criterion	This approach is very simple and easy to perform. Its main advantage is that it is based on the scoring systems for the quality models, so it addresses the philosophy of business excellence as opposed to conformance to the criteria
Pro forma	Completion of the self-assessment by collecting evidence on a pre-prepared form. There is normally one page for every criterion. The form also completes the assessment for the criteria by having a space for 'strengths', 'areas for improvement' and the score	A natural progression from the simple techniques, when the organization has started to recognize the benefits of self-assessment. The approach takes longer but returns higher-quality feedback and a more accurate scoring profile

Award style	The self-assessment mirrors the application for a quality award, which would require the compilation of a 75-page submission document. Trained, experienced, external assessors may be used as part of the extensive approach. It may also include site visits to clarify and verify the 'application'	Most suitable for organizations with at least three years' experience of conducting self-assessments. Although it is resource-intensive and can take six months to complete, this method provides feedback highly suited for use in both strategic and business. planning. It also allows a more accurate comparison with other organizations

Source: Porter and Tanner (2003)

It should be noted that these approaches vary in a number of ways:

- the level of involvement of the managers and staff;
- the data collection methodology (e.g. the balance between perceptions and facts);
- the time taken and level of resource required;
- the accuracy of the 'score';
- the richness of the feedback.

Despite these variations, there are basically eight steps in the self-assessment process (see Figure 23).

1. Choose a framework

The framework or quality model on which the assessment is based will depend on a number of things, but the framework is likely to be the Baldrige model, EFQM Excellence Model® or a hybrid model specific to an organization. The assessment could also be based on ISO 9001, now that its perspective is one of assessment rather than audit.

2. Form the assessment team

As with any project, the selection, motivation and education of the project team members will be key to its success. It is also important for the team to take ownership of the project plan.

3. Collect the information

This step will vary enormously depending on the approach taken. Table 37 above gives guidance on the best approach for a given situation.

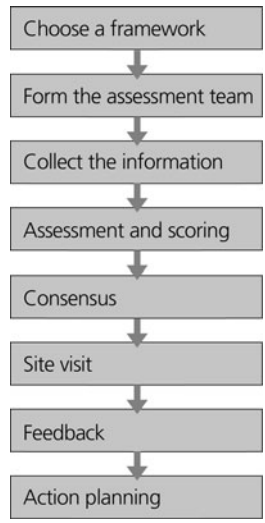


Figure 23 —The eight steps of the self-assessment process

(source: Porter and Tanner, 2003)

4. Assessment and scoring

The level of sophistication of this step will also be dependent on the approach. At one extreme, with the simple scoring approaches, people will be asked: 'What do you think the score should be?' At the other extreme, with an award-style assessment, an independent assessor team may spend up to two days critically examining the evidence. The same applies to the identification of the 'strengths' and 'areas for improvement'.

5. Consensus

Consensus is when a group meets to agree on the feedback from the assessment. With approaches such as the discussion group and matrices, the consensus is often an integral part of the process. With the other approaches there is likely to be a separate session to agree the assessment.

6. Site visit

This step is most appropriate for approaches such as the award-style assessment. After assessing the submission document and reaching consensus, the assessors may conduct a site visit to clarify and verify what they have read in the submission. It is normal for the feedback to be modified and the self-assessment re-scored on the basis of the visit's findings.

This step is particularly appropriate if an independent team has conducted the assessment. It is also valuable when there is a need to improve the accuracy of the feedback – there is nothing better than seeing the organization in action.

7. Feedback

The final output from the assessment will be feedback, normally in the form of a feedback report. This is a record of the self-assessment and will form the basis of the action planning. A typical feedback report will contain a summary of the main findings from the self-assessment, detailed 'strengths' and 'areas for improvement', and a scoring profile.

8. Action planning

The output of the self-assessment is normally used in two main ways:

1. to compile an improvement plan based on the 'areas for improvement'. This improvement plan may or may not be integrated into the business planning process;
2. for strategic planning purposes. The self-assessment provides information that may be used by the senior managers to support the strategic decisions that are taken.

A general observation is that the more experienced an organization is with self-assessment, the more likely it is to use the feedback for strategic purposes. There is high risk in making strategic decisions on limited information, and only experienced organizations tend to invest the time and effort needed into the more resource-intensive self-assessment approaches that deliver information of high quality.

Six Sigma

How to use

Table 38 — How to use the Six Sigma approach

Factors	Comments				
Link to ISO 9001	MR	RM	PR	M&A	Imp
	✓	✓	✓	✓	✓
Scope of use	• All types of organization • Both manufacturing and service • Function, division and/or organization				

Degree of change in systems	Medium
Degree of change for people	Medium
Level of benefits	Medium
Type of benefit	Financial, reputational and cultural
Level of involvement	Fully inclusive
Maturity level	Beginner, experienced and world-class
Timescale	Over 12 months
Level of investment	High, due to training costs
How to implement	Programme

Background

Six Sigma has been used the world over and many organizations testify to its pivotal role in their success. Well-known examples of Six Sigma organizations include Motorola, General Electric, Honeywell, ABB, Lockheed Martin, Polaroid, Sony, Honda, American Express, Ford, Lear Corporation and Solectron.

The Motorola Company developed Six Sigma as a concept and aim. Motorola defined Six Sigma as 'a measure of goodness -- the capability of a process to produce perfect work'. Motorola had a goal of improving all products and goods, as well as services, by an order of magnitude (e.g. a factor of 10) within five years. This provided an important focus on the improvement rate and, in particular, that simply 'better' may not be sufficient, but that the critical issue is being *sufficiently better expeditiously*. Six Sigma clearly focused resources at Motorola, including human effort, on reducing variation in processes: manufacturing, administrative and all other processes.

Motorola launched the Six Sigma programme in 1987 and signs of significant success quickly became apparent. From 1987 to 1997, Motorola achieved a fivefold growth in sales, with profits climbing nearly 20 per

cent per year, cumulative savings at $14 billion and stock price gains compounded to an annual rate of 21.3 per cent. Motorola was also cited as the first winner of America's Malcolm Baldrige National Quality Award in 1988.

Principles

The Six Sigma strategy is a disciplined methodology for improving organizations' process capability. It is based on extremely rigorous data gathering and statistical analysis to identify sources of variation and ways of reducing them.

Sigma is a statistical measure related to the capability of the process, that is, its ability to produce non-defective products/units/parts. In statistical jargon, sigma is a measure of process variation referred to as the standard deviation and Six Sigma implies the occurrence of defects at a rate of 3.4 defects per million opportunities (DPMO) for defects to arise.

It is possible to calibrate the 'cost of quality' or, more accurately, the 'cost of poor quality' (COPQ) with the sigma level at which processes perform. Six Sigma performance levels are generally considered to be world class, with the COPQ being less than 1 per cent of sales. Compare this to the lower sigma performance levels:

Sigma level	*COPQ range*	*DPMO rate (%)*
3	66,807	25–40
4	6,210	15–24
5	233	5–15

The main focus of Six Sigma is on defect reduction. But the benefits of such a reduction are manyfold, including improved customer satisfaction, reduced operating costs and increased efficiency.

Approach

The Six Sigma breakthrough strategy involves a define–measure–analyse–improve–control (DMAIC) methodology, which is applied to an organization's key business processes.

Phase 1. Define

Define the scope and goals of the improvement programme in terms of customer requirements and the process that delivers these requirements. The process to be improved is to be defined in terms of its inputs, outputs, controls and resources.

Phase 2. Measure

Measure the current process performance – input, output and process – and calculate the sigma metric for both short- and longer-term process capability.

Phase 3. Analyse

Identify the gap between the current and desired performance, prioritize problems and identify their root causes. This phase may also include benchmarking the process outputs, products or services against recognized benchmark standards of performance. Depending upon the performance gap found, the organization will decide whether to improve or redesign the existing process.

Phase 4. Improve

Generate the improvement solutions to fix the problems and prevent them from recurring, so that the required financial and other performance goals are met. The organization will need to find new ways to do things to the quality, cost and time standards required by the performance improvement goals.

Phase 5. Control

Implement the improved process in a way that 'holds the gains'. Standards of operation will be documented in systems such as ISO 9001 and standards of performance will be established using techniques such as Statistical Process Control (SPC). After a 'running-in' period, calculate the process capability again to establish whether the performance gains are being sustained. Repeat the cycle if further performance shortfalls are identified.

Applying Six Sigma means that efficient, often statistical, techniques are used in a systematic way to reduce variation and improve processes. There is a focus on results, including customer-related ones, that lead to enhanced marketplace performance and hence improved bottom-line financial results. Appropriately configured and deployed Six Sigma programmes may be highly consistent with the results orientation underlying various international quality awards, such as the European Excellence Award and the Malcolm Baldrige National Quality Award.

Building a Six Sigma culture and infrastructure

A key feature of a successful Six Sigma culture is the creation of an infrastructure that supports and resources performance improvement. Six Sigma programmes involve major investment and must deliver bottom-line results. There are ten key features that characterize a successful Six Sigma culture:

1. committed leadership;
2. strategic alignment;
3. a cadre of change leaders;
4. customer and market focus;
5. bottom-line benefits;
6. process approach;
7. obsession with measurement;
8. continuous innovation;
9. organizational learning;
10. continuous reinforcement.

Six Sigma training

Key to the successful implementation of a Six Sigma programme is an effective approach to training. There are several variations of the Six Sigma training structure, which are described briefly below.

Champion training

Typically, a two- or three-day training course, which provides the nominated senior management with a sound understanding of how Six Sigma works and the benefits it can deliver.

Black Belt training

The Black Belts will be the improvement project managers. Normally a full-time role within an organization, the Black Belt will be supported by a number of nominated Green Belts. Provided with four weeks of training spread over four months, the Black Belt will gain knowledge of an abundance of improvement techniques and understand how, and in which situations, to utilize them.

Green Belt training

Green Belts form part of the improvement team and can be provided with two weeks of training spread over two months.

Master Black Belts

Organizations employing a number of Black Belts will go on to train and appoint Master Black Belts. The Master Black Belts will head the team of Black Belts. For the experienced Black Belt, progression to Master status involves two weeks of training over a two-month period.

Statistical Process Control (SPC)

How to use

Table 39 — How to use the Statistical Process Control (SPC) approach

Factors	Comments				
Link to ISO 9001	MR	RM	PR	M&A	Imp
				✓	
Scope of use	• All types of organization • Both manufacturing and service, but most success has been with manufacturing units • Function (particularly manufacturing) and organization-wide				
Degree of change in systems	Medium				
Degree of change for people	Medium				
Level of benefits	Medium				
Type of benefit	Financial, reputational and cultural				
Level of involvement	Fully inclusive				
Maturity level	Beginner, experienced and world-class				
Timescale	Less than 3 months, 6–12 months and/or over 12 months				
Level of investment	Medium, due to training costs				
How to implement	Programme				

Background

Statistical Process Control (SPC) was at the heart of the Japanese quality revolution in the 1950s. Often avoided due to its perceived heavy reliance

on complex mathematical equations, SPC is all about having more confidence in the quality of a process output.

SPC is a problem-solving approach. In reality it is 10 per cent statistics and 90 per cent management action. Like other business improvement approaches, SPC has a need for quality improvement leadership and a systematic approach. In fact, SPC is an integral part of Six Sigma and many approaches to TQM.

SPC was first used in the manufacturing industry and it has many applications in service industries. The perception of the main problem with its use in the service sector was that 'widgets' are not being produced whose dimensions may be easily measured. But this is not really an issue because SPC is not about dimensions; it is about the availability of 'regular' data. For further reading on the application of SPC to service industries see Appendix B.

Principles

With SPC it is recognized that not all products or services produced or delivered will be the same. There is always going to be some 'variation' in the output of a process, i.e. product dimensions, delivery times and processing times vary. If we sample the process and plot the variable involved against its frequency of occurrence it is likely that we will see the 'normal' curve featured in Figure 24.

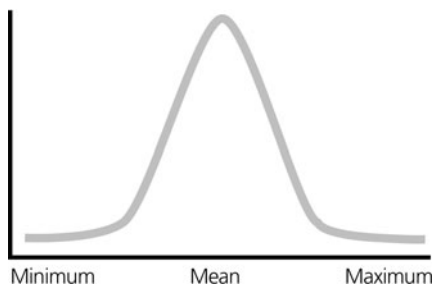


Figure 24 — Example 'Normal' or Bell Curve

Taking a sample of the output, it is possible to estimate what the minimum, maximum and mean value of the variable will be. If the minimum and maximum are within the specification laid down, then we can say that the process is capable of meeting the requirements laid down in the specification.

The main principle is therefore to ask a series of questions. These are:

- Can we produce the product or service to the requirements? This is all about establishing whether the process is capable by using SPC to determine process capability.
- Can we continue to produce conforming product or service consistently on an ongoing basis? This is about using SPC to control the process by taking measurements during production or service delivery.
- Have we made it OK? SPC may be used post-production or post-service delivery as part of quality control.
- Could we improve what we are doing? SPC may be used to identify and remove special causes of variation and thereby improve the process.

Approach

At the simplest level, implementing SPC requires control charts to be established for the output being measured. With a control chart it is normal to take small samples from the process at regular intervals. The sample mean is calculated together with the range, this being the largest minus the smallest reading.

The results are plotted on the control chart. Depending where the points are placed, action may be taken to correct an 'out of control' situation. The lightly shaded area in Figure 25 represents results where the process is in control. The medium shaded areas, however, provide a warning that the process may be going 'out of control', and the darkest areas show where the process is 'out of control'. This indicates that products are being produced that are likely to be out of specification. The shaded zones are not chosen at random, but are based on the probability of when defects may occur. For example, you may choose to place the boundary of the medium shaded warning zone at when there is a chance of an error once in every 1,000 occurrences, whereas for critical operations one in 10,000 may be more appropriate.

Under normal conditions the results will vary for many understandable reasons. These might be due to small process changes, differences in materials and errors in the measurements taken. These differences are said to be due to *common causes of variation*. Every so often there will be a major change in the process. This could be caused by incorrect or reject parts being used or be due to an operational change such as that caused by incorrect maintenance. When this happens the process is likely to go out of control as detected by a point in the darkest shaded area of the control chart. Such changes are said to be due to *special causes*.

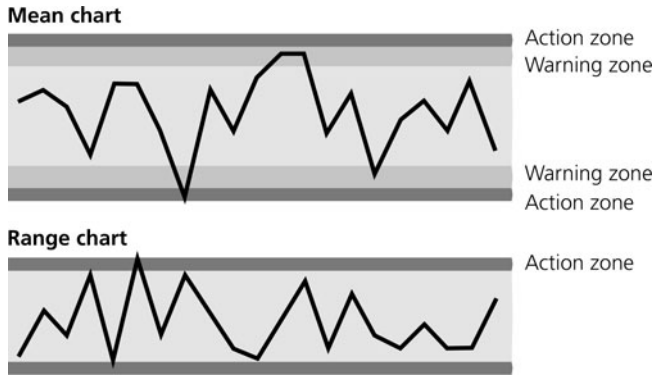


Figure 25 — Example control chart

Sustainability

How to use

Table 40 — How to use the sustainability approach

Factors	Comments				
Link to ISO 9001	MR	RM	PR	M&A	Imp
	✓	✓			
Scope of use	• All types of organization • Both manufacturing and service • Division and/or organization				
Degree of change in systems	Large				
Degree of change for people	Large				
Level of benefits	Medium				
Type of benefit	Financial, reputational and cultural				
Level of involvement	Fully inclusive				

Maturity level	Beginner
Timescale	Over 12 months
Level of investment	Medium
How to implement	Programme

Background

Sustainability, or corporate social responsibility (CSR) as it is sometimes referred to, is something that has been in the background for many years but has now become so important that it has been described as a 'licence to trade'. Many organizations are having their reputations damaged even though they may not have been directly responsible for an issue that has raised its head in the public domain, a good example being the use of child labour by suppliers in the clothing industry.

The growth of many non-governmental organizations, such as the World Business Council for Sustainable Development, which works with organizations providing thought leadership, has raised the profile of sustainability across the world. The Global Reporting Initiative is another independent body whose mission is to develop and disseminate globally applicable *Sustainability Reporting Guidelines*. These guidelines are for voluntary use by organizations for reporting on the economic, environmental and social dimensions of their activities, products and services. They outline core content that is broadly relevant to all organizations regardless of size, sector or location.

Many large organizations now have to undertake an external verification of their reporting and activities as part of their annual business cycle, in a similar way to the financial audits at the end of the year. Company reporting such as this is just one area of activity. A number of standards, guidelines and frameworks have also emerged to support organizations' improvements in this area. Perhaps the best-known framework, which covers environmental practices, is ISO 14001. This is described in more detail elsewhere in this publication (see page 84). Another reference standard aimed at CSR is ISO 26000. Carbon footprinting is also growing in popularity, and more details on this are given on page 50).

Principles

It is easy to get confused between the terms 'corporate social responsibility', 'sustainable development' and 'sustainability'. They all

cover the actions needed to get the best out of people and at the same time ensure that there is a future that includes: respecting human rights, fair treatment of the workforce (and customers and suppliers), being good corporate citizens, protecting the environment, operating in an ethical way; and making a contribution to society.

The key components of sustainability are shown in Figure 26. These lead to what has been termed as the 'triple bottom line': people, profit and planet. Pursuing a growth plan that boosts profits but endangers people or the environment usually hurts organizations in the long run. However, investments in environmental protection or community resources will enhance the growth plan.

Figure 26 — The key components of sustainability

Approach

The first task is to create an awareness of sustainability, to sell the idea of managing the organization in a different way. Once the leadership team and other stakeholders are engaged, the organization can begin to build the foundations for a new way of working. This includes some quite sensitive areas such as building trust and increasing accountability.

Having laid the foundations, the next step is to decide on the specific actions to be taken. This is not just a case of deciding where the organization can have an impact, but rather deciding where the organization needs to have an impact in support of its own strategy.

Then, having set the CSR agenda, actions are to be taken to implement the strategy and on completion, their impact is assessed to make sure that the approach was effective. Finally, there is a need to refresh the approach and reinforce the message. The world does not stand still and neither does an organization's environment! (See Figure 27.)

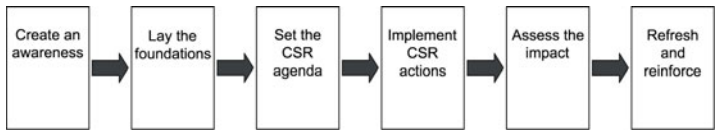


Figure 27 — The approach to sustainability

(source: BQF, 2005)

In a survey conducted by the Ashridge Centre for Business and Sustainability for the British Quality Foundation it was found that for CSR to work the following are required:

- a different mindset: new ways of thinking within management;
- ensuring relevance: only relevant activities should be implemented;
- focusing on integration: to be valuable the approach must be integrated into the way the organization is being led and managed.

(Olsen, L. (2004) Making Corporate Responsibility Work: Lessons from Real Business, Ashridge Report, June)

All these factors are built into the approach detailed above.

Theory of Constraints (TOC)

How to use

Table 41 — How to use the Theory of Constraints (TOC) approach

Factors	Comments				
Link to ISO 9001	MR	RM	PR	M&A	Imp
		✓	✓		
Scope of use	• All types of organization • Both manufacturing and service, but most success has been with manufacturing units • Function (particularly manufacturing)				

Degree of change in systems	Medium to small
Degree of change for people	Medium
Level of benefits	Medium
Type of benefit	Financial and reputational
Level of involvement	Inclusive
Maturity level	Experienced and world-class
Timescale	Over 12 months
Level of investment	Medium to low
How to implement	Evolution

Background

Based on Deming's concept of 'profound knowledge' and systems thinking, the Theory of Constraints (TOC) was developed by Eliyahu Goldratt from his experience of manufacturing. The theory is based on his book, *The Goal*, which was first published in 1984.

Goldratt examines the nature of science and education. He sees science as being the use of a minimum number of assumptions to explain the many phenomena of nature. Education or learning, on the other hand, is delivered through the process of deduction. The consequence is that his technique recognizes the use of assumptions to describe activity and deduction to predict future behaviour.

TOC is described as a systems approach to continuous improvement. It is a collection of systems principles and tools or methods for improving the overall system performance.

Principles

Deming's 'profound knowledge' comes from:

- an understanding of the theory of knowledge;
- knowledge of variation;
- an understanding of psychology;
- appreciation of systems.

TOC rests on the assumption that managers and/or organizations know their real purpose and the goal they are trying to achieve. Unfortunately, this is not always the case. No manager can hope to succeed, however, without knowing three things:

1. what the ultimate goal is;
2. where they currently stand in relation to that goal;
3. the magnitude and direction of the change needed to move from the status quo to where they want to be (the goal).

TOC has a number of principles, as follows.

Systems as chains

This is crucial to TOC. If systems function like chains, weakest links can be found and strengthened.

Local vs. system optima

Because of interdependence and variation, the optimum performance of a system as a whole is not the same as the sum of all the local optima. If all the components of a system are performing at their maximum level, the system as whole will not necessarily be performing at its best.

Cause and effect

All systems operate in an environment of cause and effect. Something causes something else to happen. This cause-and-effect phenomenon can be very complicated, especially in complex systems.

Undesirable effects and core problems

Nearly all of the undesirable effects seen in a system are not problems, but indicators. They are the resultant effects of underlying causes. Eliminating undesirable effects gives a false sense of security. Identifying and eliminating the core problem not only eliminates all the undesirable effects that issue from it, but also prevents them from returning.

Solution deterioration

An optimal solution deteriorates over time, as the system's environment changes. A process of ongoing improvement is necessary to update and

maintain the efficiency (and effectiveness) of a solution. Inertia is the worst enemy of a process of ongoing improvement. The attitude that 'We've solved that problem, no need to revisit it' damages continuous improvement efforts.

Physical vs. policy constraints

Most of the constraints in systems originate from policies, not physical things. Physical constraints are relatively easy to identify and break. Policy constraints are much more difficult, but they normally result in a much larger degree of system improvement than elimination of a physical constraint.

Ideas are NOT solutions

The best ideas in the world never realize their potential unless they are implemented. And most great ideas fail in the implementation stage.

Approach

Goldratt developed five sequential 'focusing' steps to concentrate improvement effort on the component that is capable of producing the most positive impact on the system.

Step 1. Identify the system constraint

What part of the system constitutes the weakest link? Is it physical or is it a policy?

Step 2. Decide how to exploit the constraint

This means wringing every bit of capability out of the constraining component as it currently exists. In other words, it involves getting the most out of the constraint without committing to potentially expensive changes or upgrades.

Step 3. Subordinate everything else

The rest of the system needs to be adjusted to a 'setting' that will enable a constraint to operate at maximum effectiveness. This may mean 'detuning' some parts of the system, while 'revving up' others. Then evaluate the results: is the constraint still constraining the system's performance? If not, move ahead to Step 5. If it is, continue with Step 4.

Step 4. Elevate the constraint

This step considers the idea of major changes to the existing system – reorganization, divestiture, capital improvements or other substantial system modifications. It can involve considerable investment in time,

energy, money or other resources, so this step should only be taken if it is not possible to break the constraint in the first three steps. 'Elevating' the constraint means taking whatever action is required to eliminate the constraint. When this step is completed the constraint is broken.

Step 5. Go back to Step 1, but beware of inertia

It is important to keep on looking for and breaking other constraints, and not to become complacent. Because of interdependency and variation, each subsequent change made to the system will have new effects on the constraints already broken. They may need to be revisited and updated too.

The Five Focusing Steps have a direct relationship with the three management questions pertaining to change: what to change, what to change to, and how to cause change. They explain how to answer those questions.

Time-based analysis

How to use

Table 42 — How to use the time-based analysis approach

Factors	Comments				
Link to ISO 9001	MR	RM	PR	M&A	Imp
				✓	
Scope of use	• All types of organization • Both manufacturing and service • Cross-function				
Degree of change in systems	Large to small				
Degree of change for people	Small				
Level of benefits	Large				
Type of benefit	Financial and reputational				

Level of involvement	Fully inclusive
Maturity level	Beginner and experienced
Timescale	Less than 3 months
Level of investment	Low
How to implement	Project

Background

It has been said that nothing is really new and that most ideas are reworked old ones. In fact, many of the improvement techniques in this book have features in common. Time-based analysis is truly eclectic as it combines Lean, BPR, TQM and others, to offer an extremely powerful simple technique that can identify major improvement in any process. For example, in an optical manufacturing company within the space of 2–3 hours the opportunities to improve a customer orders return process from 6 hours down to 30 minutes were identified by a team of workers who had no experience of process improvement. In another situation a public sector construction funding organization identified how to reduce its contract-placing process from 427 days down to 137 days.

Principles

The approach grew out of an idea first voiced in a *Harvard Business Review* article, 'Staple Yourself to an Order' in 1992. Shapiro, Rangan and Sviokla argued that the CEO who wanted to grow the bottom line should abandon wooing clients on a golf course and turn to concentrating on getting their customers' orders processed without delays by 'Stapling themselves to an order'. By doing so, executives will not only move across their organization, charting gaps and building information bridges, but also they will see the company from the customers' perspective. There is no other way to alter the perspective, improve interdepartmental relations and, in the long haul, improve financial performance.

Time-based analysis calls on a number of techniques. It is best implemented using a facilitated team-based approach, with the team receiving some initial training before observing the process first hand 'on the shop floor'. In this way it is very similar to rapid improvement teams (see page 20), although it is much faster and does not go as far as implementation.

Approach

Conducting a time-based analysis follows a four-step approach.

Step 1: Scope project and on-board team

Management must first set the objectives of the exercise and decide on the scope of the activity, as with any project-based approach. Cross-functional team members should be selected from the process under investigation, and it also helps to have management involved so it can support the improvement ideas.

On-boarding of team members is first conducted to ensure that everyone has a common understanding of the techniques to be used in the approach, such as the 'voice of the customer' (VOC). It is also important for the team to understand the importance of improving the process under review and how their efforts will have a positive effect on the organization and, in particular, the customer experience.

Step 2: Produce a customer expectation diagram

The customer expectation diagram captures the VOC. Its purpose is to analyse the process data and compare VOC needs with process capability. In doing so it addresses the following questions:

- Who is your customer? (Those who use process outputs and outcomes.)
- Are the processes meeting customer needs? (Is the process capable and in line with customer needs?)
- Do we know the outputs of our process? (Process outputs are defined.)
- Are the customers satisfied? (How is customer satisfaction measured?)

Once these questions have been addressed it is possible to match customer expectations against process performance. In the example (Figure 28) the process is delivering the customer's requirements and the customer is happy. The customer is also reasonably happy with delivery, although the process is not performing very well. This is an opportunity for future improvement that would lead to the customer being 'delighted'. Cost, however, is another matter. Although the process is reasonably efficient, the customer is not satisfied, making this a top priority for improvement.

Step 3: Map the current process – (the 'as is')

This step identifies and classifies the different types of current activities, and whether these activities add or remove value. This is so that team members can see and understand the activities in preparation for the next step, where re-engineering decisions are made.

Figure 28 — Analysing the 'Voice of the customer'

The approach is to get the team to map out what really happens from the start of the process until the end. All the activities are listed and then mapped in two dimensions (see Figure 29). Along the base the typical time it takes to perform the activity is recorded. On the vertical axis the value added by the activity is captured. Activities such as delays, inspections or reworking add no value to the process, and so they are represented by a flat line.

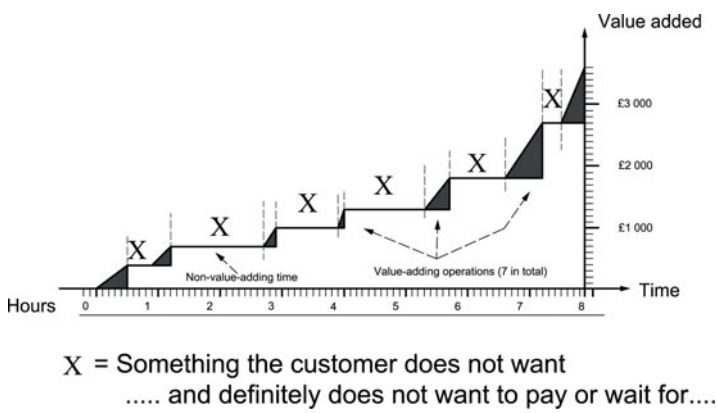


Figure 29 — Identifying Value-adding Activities

Once the initial chart is constructed, the process is 'walked through' so that the material and information flows are cross-checked. Once an agreed time-based analysis is available, the team can move onto the next step.

Step 4: The re-engineering stage (the 'to be')

The main objective is to remove all the non-value-adding steps, thereby streamlining the process. Being highly visible and team based, the analysis reduces barriers to change as the team seeks to move from situation A to situation B (see Figure 30). Not all the improvements will be made overnight, and some will require investment, but, in a short space of time, time-based analysis demonstrates what is possible.

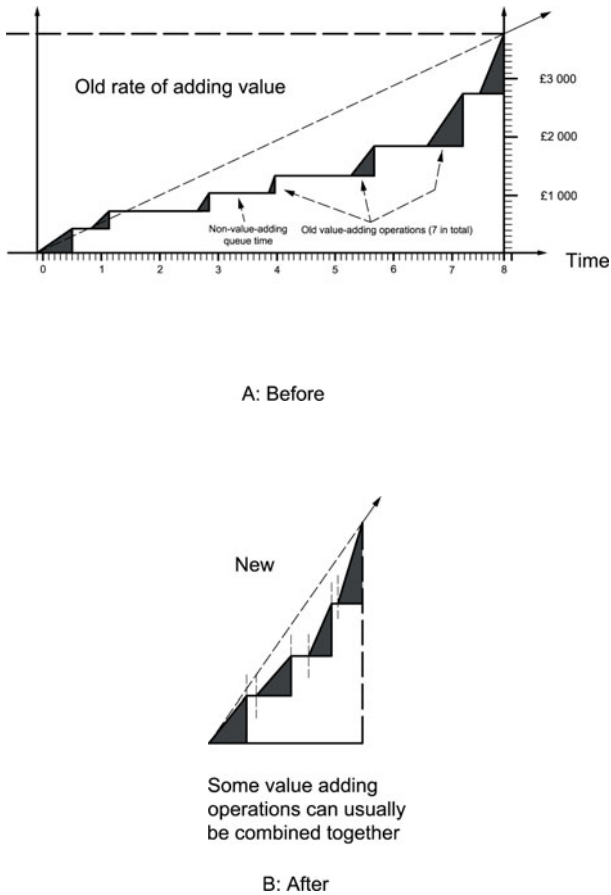


Figure 30 — Streamlining the process

Total Productive Maintenance (TPM)

How to use

Table 43 — How to use the Total Productive Maintenance (TPM) approach

Factors	Comments				
Link to ISO 9001	MR	RM	PR	M&A	Imp
		✓	✓	✓	✓
Scope of use	• Private sector and SME • Almost exclusively manufacturing • Function (particularly manufacturing)				
Degree of change in systems	Small				
Degree of change for people	Large				
Level of benefits	Medium				
Type of benefit	Financial and cultural				
Level of involvement	Fully inclusive				
Maturity level	Beginner, experienced and world-class				
Timescale	Over 12 months				
Level of investment	Medium				
How to implement	Programme				

Background

Total Productive Maintenance (TPM) is a proven approach to continuous improvement that was developed in Japan. More than 1,200 successful factories worldwide are using the approach.

Being factory-centred, the approach examines and improves the relationship between operator and machine. It is results-focused with the main target being the removal of the main obstacles to efficient performance.

The approach is a very systematic programme, which takes around two to five years to implement. A key component is staff training, mainly shop floor workers. They work in small, cross-functional teams to implement improvements.

Such is the popularity of the approach that there is a Japanese society that promotes it and provides training. The society promotes a recognition scheme allowing organizations to reach particular 'levels' and there is also an annual award process.

A number of TPM benefits have been noted, including improvements in productivity, quality, costs, delivery, safety, the environment and employee morale.

Principles

The principles of TPM are represented by the 'TPM Pillars' (see Figure 31). These 'pillars' are similar to the components of TQM and other continuous improvement approaches. As expected, a maintenance theme runs throughout the approach. 'Autonomous maintenance' requires operators to perform simple maintenance on their own machinery and 'effective maintenance' ensures minimum equipment downtime.

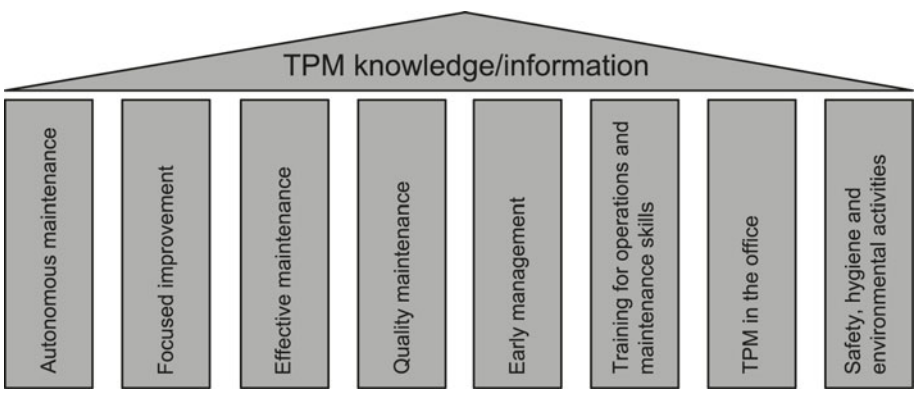


Figure 31 — The Total Productive Maintenance Pillars

Approach

The approach to TPM is systematic and goes through different phases as the implementation progresses. A typical implementation plan would be as follows.

Preparation

Step 1. Formally announce decision to introduce TPM.

Step 2. TPM introductory education and publicity campaign.

Step 3. Create a TPM promotion organization.

Step 4. Establish basic TPM policy and goals.

Step 5. Create a master plan to implement TPM.

Introduction/Roll-out

Step 6. Kick off TPM initiatives.

Implementation

Step 7. Build a corporate constitution to maximize productive effectiveness:

- focused improvement;
- autonomous maintenance;
- effective maintenance;
- training.

Step 8. Early management.

Step 9. Quality maintenance (ISO 9001).

Step 10. TPM in administration.

Step 11. Safety, hygiene and environment.

Stabilization

Step 12. Full TPM implementation and raised levels.

Total Quality Management (TQM)

How to use

Table 44 — How to use the Total Quality Management (TQM) approach

Factors	Comments				
Link to ISO 9001	MR	RM	PR	M&A	Imp
	✓	✓	✓	✓	✓
Scope of use	• All types of organization • Both manufacturing and service • Division or organization-wide				
Degree of change in systems	Small				
Degree of change for people	Large				
Level of benefits	Large to medium, depending on success of implementation				
Type of benefit	Financial, reputational and cultural				
Level of involvement	Fully inclusive				
Maturity level	Beginner				
Timescale	Over 12 months				
Level of investment	High				
How to implement	Programme				

Background

Total Quality Management (TQM) is based on Kaizen, the Japanese philosophy of continuous improvement (see page 87). Interest in Japanese methods increased in the 1960s and 1970s when Western organizations faced new competition from a part of the world that had

previously been known for producing cheap goods. Suddenly there was a new competitor that was not only lower priced, but also produced goods of higher quality and specification. The 'revolution' had been led by two Americans who received no recognition for their ideas in their country of origin, Dr Deming and Dr Juran.

There are many approaches to implementing continuous improvement, each with their individual features. The approach advocated by Deming relates to leadership and the reduction in variation. Juran's approach, although still advocating the reduction in variation, focuses on the use of quality planning and improvement projects. Crosby (1979) made the terms 'conformance to requirements', 'prevention', 'zero defects' and 'price of non-conformance' his catchphrases. Although developed some time ago the Crosby approach has stood the test of time and many other authors have attempted to copy it. For this reason, TQM using the Crosby approach is the one described in this section.

Principles

Phil Crosby was a skilful communicator who was once described as a cross between PT Barnum and The Pied Piper for the way he promoted showmanship in communication to encourage leaders to a different way of working that delivered value to customers. This also saved a lot of money, which caught leaders' attention.

He described the ideal culture for an organization as one where:

- people do right things routinely;
- growth is profitable and steady;
- customer needs are anticipated;
- change is planned and managed;
- people are proud to work there.

Crosby developed what he termed 'The Four Absolutes' as his principles for quality improvement. These were:

1. *quality is 'conformance to requirements'.* Quality is a word that means different things to different people. This definition is clear. Find out what the customer requires and if you achieve this then you have achieved quality. Take the purchase of a car. Is the 'quality' of a Rolls-Royce any different from that of a more common vehicle? If the driver wants to obtain over 40 mpg and only pay the minimum amount of road tax then a Rolls-Royce will not be on the shopping list;
2. *the system is 'prevention'.* Organizations should strive to prevent quality problems – not have a system that corrects defects as a matter of business as usual;

3. *the standard is 'zero defects'*. The attitude that 99.9 per cent is good enough is unacceptable. If a surgeon in a hospital has a 99.9 per cent survival rate from their operations would you want to be in the 0.1 per cent?
4. *measure using the 'price of non-conformance'.* This is the financial value attributed to getting things wrong, and is very similar to 'waste' in the Lean approach (see page 96). It was called the 'price' as this is the price leaders chose to pay for not getting things right first time. It has been said that in a manufacturing organization the price of non-conformance can be as high as 30 per cent of operating costs. In service organizations, this rises to around 50 per cent of operating costs.

Process thinking sits at the heart of TQM, where 'right first time' output is achieved through the internal supplier/customer chains working seamlessly to ensure that the external customer's requirements are met (see Figure 32).

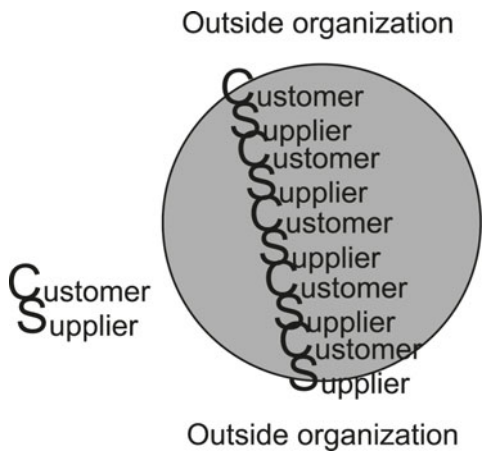


Figure 32 — Customer/Supplier Chains

Approach

Like other authors, the Crosby approach was based around 14 'steps'. The steps cover a range of activities including education, development of tools and systems, and communication. It was common practice that every senior leader would take ownership of one or more steps to demonstrate their commitment to the 'programme'. The use of the word 'programme' was carefully chosen to show that quality improvement was a never-ending initiative and not a project with a definite start and end date. Crosby's 14 steps covered:

1. leaders driving the change;
2. setting direction;
3. education;
4. communication;
5. process and systems:
   a. process understanding;
   b. supporting HR systems;
   c. using IT to support performance improvements (step changes);
   d. performance measurement system;
6. continuous improvement activity;
7. sustaining improvements;
8. developing people's capability;
9. enabling culture:
   a. continuous improvement;
   b. customer-focused;
   c. performance-focused.

Value stream mapping (VSM)

How to use

Table 45 — How to use the value stream mapping (VSM) approach

Factors	Comments				
Link to ISO 9001	MR	RM	PR	M&A	Imp
		✓	✓	✓	✓
Scope of use	• All types of organization • Both manufacturing and service, but most success has been with manufacturing units • Cross-function and/or division				
Degree of change in systems	Small				
Degree of change for people	Small				
Level of benefits	Large				
Type of benefit	Financial and reputational				

Level of involvement	Fully inclusive
Maturity level	Experienced and world-class
Timescale	Less than 3 months
Level of investment	Medium
How to implement	Project

Background

The need to map the 'value stream' came out of the original work by Womack and Jones (see 'Lean improvement', page 93). Over the past 10 years it has become a very popular technique for understanding 'end-to-end' processes across organizations at a high level.

Value stream maps can become very complex and are often drawn by an expert. Time-based analysis (see page 140) is a similar technique, and this may be more appropriate for less experienced organizations.

Principles

A value stream is the process flow from the *point of requested need* to *closure of all activity* after the product or service has been provided. Value stream mapping (VSM) is a process mapping tool that allows the observer to see both the process flow and the communication within the process, or value stream. By using the map it is possible to identify the VA (value-added) activities and the NVA (non-value-added) activities. The ratio between the two can easily be 1:3. There is a third type of activity: NVA, but necessary. These are steps that add no value to the process, but they cannot be eliminated. A good example is activities necessary for regulatory compliance.

Value stream maps are visual storyboards that represent a snapshot in time and they set the foundation for designing a future process. A powerful feature is the ability to allow everyone – management, workers, suppliers and customers – to see value, to differentiate value from waste, and to create a plan of action for waste elimination.

A map contains three types of information: product or service flow, information flow, and a timeline, as follows.

1. Product or service flow

This is the portion of the map that is most similar to a traditional flow chart. The process flow (or lack of it) is always shown going from left to right. Sub-tasks or parallel tasks are drawn below the main flow.

2. Information flow

The upper portion of the map contains the information flows. It is possible to see all the communication, both formal and informal, that exists within a value stream. Communication goes from the customer on the right of the page to the supplier on the left-hand side, although, unlike the process flow, communications can go in any direction and often double back and forth.

Much of the chaos and confusion that often appears within a value stream can be traced to non-value-added communication. These are communication activities that add no value to the process or that the customer is unwilling to pay for.

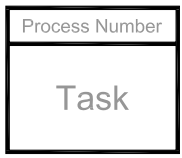
3. Timeline

At the bottom of the value stream map is a series of lines that provides some of the most compelling information to the viewer. Two lines are used to communicate the primary pieces of information used in process improvement.

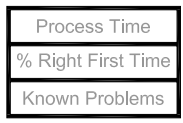
The first timeline measures process lead time and this details how long it will take on average to move all the material or work through to completion. It is expressed as the number of days' work and when totalled up this gives the process lead time. The first line also captures the cycle time for each activity and when all of the cycle times are added up one gets the total cycle time.

A second line is placed below the first timeline to capture the travel distance through the process. This can be the travel distance of the product and materials, and also the distance travelled by the people moving within the process.

In a value stream map, activities, movements and information are represented by symbols. Most methods use a wide range of symbols, and there is no standard set. One such set is shown in Figure 33.



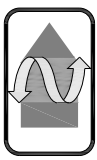
Process Block – This contains the macro-level process steps. The process blocks are numbered for convenience (upper right corner) and include the task, the responsible person/department, and how many workers perform the tasks



Data Box – These smaller boxes appear directly below the process block they represent, and include relevant data such as process time and percent complete and accurate (%C&A). Process blocks can also include other obstacles to flow.

Information System – This contains the description of the application program/software used.

Information Flow Label – Appears on relevant communication flow lines describing how the information is being communicated. Due to the available space on the sample map, only select information flow lines have been labelled.

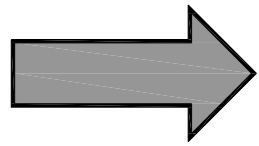


Eternal Entity (outside your organization) – May be used for customers, suppliers, or contractors to whom you outsource work.

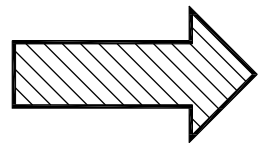
Lines with Arrows – Represent information and material flow.

Information flow initiated by human intervention. The arrowhead shows the direction of information flow; double-headed arrows mean the information flows in both directions.

Automatic electronic flow of information.



Product flow (physical product, such as reports, supplies, equipment, etc.).



Push Arrow – Represents when a process works to a schedule or other rules which don't take into account the downstream processes' actual needs, capacity or availability to process additional work.

The label for an information flow line, illustrating that direct communication occurs via telephone. Other icons may include lips for in-person communication, e-mail symbols, etc.

Inventory – Indicates an accumulation point (or queue) of work – either incoming inventory or work-in-process (WIP). The value that appears under the inventory triangle typically depicts the physical quantity of 'items' completed by the prior process and either waiting to be worked on, being worked on, or waiting to be passed onto the subsequent process step.

Inbox – A more appropriate symbol of office-related work-in-process than the typical inventory triangle commonly used in manufacturing VSMs. The inbox depicts the total lead time (turnaround time) from the time work is made available until it's completed and passed to the next macro-level step in the process. It can also include the quantity of 'items' waiting to be worked on and in the process of being worked on.

Workers – Represents the number of workers who perform that particular task.

Figure 33 — Value stream mapping symbols

Approach

The best way to build a value stream map is to do it in stages, as follows.

1. Determine the process family

A process family, also known as a product family, is a group of products or services that go through the same or similar processing steps. To determine your process family, create a matrix similar to the example shown in Table 46 for a fast-food restaurant.

- Along the top row, write all the process steps your organization performs, from a 30,000-foot point of view.
- In the first column, write down the items or parts (for example, components, stock-keeping units, and/or finished goods or services) your organization makes or provides.
- Place an X in the corresponding box if the item or part goes through the processing step.

Table 46 — Example matrix for a fast-food restaurant

Meal	Take order	Position tray	Get box	Get drinks	Get burger	Add comple-ments	Take money
Burger meal	X	X		X	X	X	X
Kids meal	X	X	X	X	X	X	X
Family meal	X	X	X	X	X	X	X
Drink	X	X		X		X	X
Single item	X	X			X	X	X

After completing this vital step, examine the matrix and look for parts that go through similar or the same processing steps. Search for items or parts that share about 80 per cent of the steps. Look for items or parts that it would make sense to create alongside each other. In other words, consider items or parts that share many of the same steps and procedures that can be created together—by the same workers using similar or related steps—more efficiently in a manufacturing or service cell.

At this point, select the particular process family to concentrate on for the current state map. Every organization may have a different reason for selecting one process family over another when deciding which map

to draw first or in which order to map out its value streams. Here are some criteria for deciding which process family to draw:

- biggest bang for the buck;
- largest reduction in lead time or inventory;
- biggest impact on the customer;
- highest probability for success;
- most visible to stakeholders;
- new product line;
- volume or quantity.

2. Draw the current state map

The current state map should illustrate how the processes perform in today's work environment. To create a current state map, collect the data and information by walking the flow and interviewing the people who perform the task. There are two main reasons why walking the flow is more beneficial to creating the map than staying seated at a desk in front of a computer:

1. it will give the opportunity to see the entire process and look for waste;
2. value-adders—the people who actually perform the work (operators, assemblers, technicians, etc.)—can answer questions and clarify any misconceptions or preconceived notions on how tasks are performed.

From walking the flow, collect on a worksheet several types of information, such as:

- cycle time or processing time;
- changeover time;
- reliability of equipment;
- first pass yield;
- quantities;
- number of operators and shifts;
- hard copy information;
- electronic information;
- inventory levels;
- queues or waiting times.

There is no need to get precise data when constructing the value stream map. If the information is in the ballpark then it can be used to get started. For example, if an operator says their machine breaks down about four hours every week, the team can mark down 90 per cent for reliability (of equipment). If it is discovered later that the actual reliability was 91 per cent, that difference would not have that much of an impact. Ninety per cent was bad enough for the team to know some changes were necessary. Do not wait for perfect data (analysis paralysis), but

wrong or disinformation needs to be clarified. If in doubt about any of the data, consider measuring it to verify.

There are a number of software packages available to help organizations draw value stream maps, each with slightly different symbols like those shown in Figure 33. Once the information has been collected, it is best to first draw the map on A3 paper (landscape) using a pencil and, probably, a large eraser. Key areas on the map are:

- the upper right corner for customer information;
- the upper left corner for supplier information;
- the top half of the paper for information flow;
- the bottom half for material (or product) flow;
- the gutters on top and bottom to calculate VA and NVA time.

Calculate the cycle time vs. the inventory time (in days) for the material and information flow. Every value stream map will look slightly different depending on the exact process, the author who drew the map and how it was drawn.

3. Determine and draw the future state map

Once the current state map is complete, an organization can set its sights on creating the future state map. This book contains a lot of advice on how to identify improvements, such as in the section on Lean Six Sigma (see page 99). Be careful to use the questions appropriate to your type of business. Here is a short list of questions with common elements that may fit most types of organization.

- *What is the takt time?* 'Takt' is the German word for the baton a conductor uses to control his orchestra's speed, beat and timing. Takt time refers to how frequently a part or component must be produced to meet your customers' demand. The formula is the time available (per shift) divided by the demand (per shift). For example:
  22,000 seconds (time available)
  ÷ 200 pieces (demand)
  = 110 seconds/piece.
- *Are there bottlenecks or constraints?* From the data collection during the Kaizen approach, look at the cycle times or processing times. If any of these are greater than your takt time, you have a candidate for a bottleneck or constraint. This may be causing overproduction waste, work in process (WIP) in some areas, or extra processing time, such as overtime, to meet demand.
- *Where can inventory (or queue time) be reduced or supermarkets used?* Look at raw material, WIP, buffer stock, safety stock and finished goods inventories to see whether these can be reduced. Does it make sense to put in a supermarket replenishment system?

A supermarket is a controlled inventory system - the downstream process removes items from the shelf and the process owners upstream replenish that amount to the supermarket.
The key is to find ways to reduce inventory in a logical manner. Also look for opportunities for paperwork to flow and not sit around.

- *Where can you improve flow?* Is it possible to put materials into a cell or eliminate materials from stopping and waiting? If flow improvement is not possible, could a first-in, first-out lane be established between processes?
- *What other improvements are required?* For instance, does the reliability of equipment need to be improved? Are the first pass yield or quality levels acceptable? Do we need to perform training in 5S (workplace organization)? Do we need to create a new layout for an area?

On the map, place a Kaizen burst symbol around any items to signal that improvement is needed. Items may include low equipment reliability or first pass yield issues, long changeover times, large batches, any waste such as overproduction, motion, transportation, waiting, defects or adjustments, and over or extra processing.

If you are not sure whether there needs to be an improvement during the time frame intended, put a Kaizen burst around it anyway. You can determine if it will be a priority when you put together your plan. Estimate the amount of inventory and queue times based on improvements that are achievable. Once the improvements have been identified, recalculate the VA vs. NVA time.

4. Draft a plan to arrive at the future state

Creating (and executing) the draft plan is the most important part of VSM. Creating the maps can be an enlightening experience. But if you do not execute the plan, you have just created more waste or 'muda' in Japanese.

During a typical VSM exercise, it is possible to create the draft plan based on the information from the future state map. The plan will need further refinement - especially in determining resources required, such as time, people and budgets.

VSM can be an effective tool to build improvements and efficiencies for any organization. For completing this part of the Lean journey, the pay-offs can be immense for any organization. VSM requires a dedicated team ready to ask difficult questions and think beyond the current state - and a team not afraid to admit error and use that eraser a few times along the way.

Glossary of terms

Abbreviation Definition

APQC	American Productivity and Quality Center
BPR	Business process re-engineering
BQF	British Quality Foundation
BSC	Balanced Scorecard
COPQ	Cost of poor quality
DFSS	Design for Six Sigma
DMAIC	Define–measure–analyse–improve–control
DPMO	Defects per million opportunities
EFQM	European Foundation for Quality Management
Evolution	Ongoing change with no predefined end point
FMEA	Failure Mode and Effect Analysis
IiP	Investors in People
Imp	Improvement (ISO 9001 requirement)
ISO 9000	ISO 9000: Quality management systems — Fundamentals and vocabulary
ISO 9001	ISO 9001: Quality management systems — Requirements
ISO 9004	ISO 9004: Managing for the sustained success of an organization — A quality management approach
ISO 14001	ISO 14001: Environmental management systems — Requirements with guidance for use
JiT	Just-in–Time
Kaizen	Continuous improvement
M&A	Measurement and analysis (ISO 9001 requirement)
MR	Management responsibility (ISO 9001 requirement)
'Muda'	Waste
NVA	Non-value-added

PCF	Process Classification Framework
PMF	Performance management framework
'Poka-Yoke'	'Mistake proofing'
PR	Product realization (ISO 9001 requirement)
Programme	A combination of business improvement projects with a distinct beginning and end
Project	A business improvement activity with a distinct beginning and end
RADAR	Results, Approach, Deployment, Assessment and Refine
RM	Resource management (ISO 9001 requirement)
SME	Small- to medium-sized Enterprises
SOP	Standard operating procedures
SPC	Statistical Process Control
TOC	Theory of Constraints
TPM	Total Productive Maintenance
TQM	Total Quality Management
VA	Value-added
VSM	Value stream mapping
WIP	Work in process

Appendix A

Where the approaches support ISO 9001

Table A.1 — Where the approaches support ISO 9001

Approach	Management responsibility (MR)	Resource management (RM)	Product realization (PR)	Measurement and analysis (M&A)	Improvement (Imp)
Balanced Scorecard	✓		✓	✓	✓
Benchmarking				✓	✓
Board performance review	✓			✓	✓
Business process re-engineering (BPR)					✓
Carbon footprinting		✓	✓	✓	
Customer Service Excellence	✓	✓	✓	✓	✓
Design for Six Sigma			✓		

Failure Mode and Effect Analysis (FMEA)			✓	✓	✓	✓
Good practice transfer		✓	✓	✓	✓	✓
High-performance culture	✓	✓		✓	✓	✓
Investors in People (IiP)	✓	✓		✓	✓	✓
ISO 9004	✓	✓	✓	✓	✓	✓
ISO 14001	✓	✓	✓	✓	✓	✓
Kaizen/Continuous improvement	✓	✓	✓	✓	✓	✓
Kaizen teams		✓	✓	✓		✓
Lean improvement			✓	✓	✓	✓
Lean Six Sigma	✓	✓	✓	✓	✓	✓
Performance management	✓	✓				
Performance measurement	✓		✓	✓	✓	✓

Approach	Management responsibility (MR)	Resource management (RM)	Product realization (PR)	Measurement and analysis (M&A)	Improvement (Imp)
Process Classification Framework (PCF)			✓		
Process management	✓	✓	✓	✓	✓
Self-assessment	✓			✓	✓
Six Sigma	✓	✓	✓	✓	✓
Statistical Process Control (SPC)				✓	
Sustainability	✓	✓			
Theory of Constraints (TOC)		✓	✓		
Time-based analysis				✓	
Total Productive Maintenance (TPM)		✓	✓	✓	✓

Total Quality Management (TQM)	✓	✓	✓	✓	✓	✓
Value stream mapping (VSM)		✓	✓	✓	✓	✓

Where the approaches support the Baldrige model

Table A.2 — Where the approaches support the Baldrige model

Approach	Leadership	Strategic planning	Customer focus	Measurement, analysis and knowledge management	Workforce focus	Operations focus	Results
Balanced Scorecard		✓		✓			✓
Benchmarking				✓			✓
Board performance review	✓						
Business process re-engineering (BPR)				✓		✓	
Carbon footprinting				✓		✓	✓
Customer Service Excellence	✓	✓	✓	✓	✓	✓	✓
Design for Six Sigma			✓			✓	
Failure Mode and Effect Analysis (FMEA)				✓		✓	
Good practice transfer				✓	✓	✓	

High-performance culture						✓		
Investors in People (IiP)						✓		
ISO 9004	✓		✓	✓		✓	✓	✓
ISO 14001				✓			✓	
Kaizen/Continuous improvement			✓	✓		✓	✓	
Kaizen teams			✓	✓		✓	✓	
Lean improvement			✓	✓		✓	✓	✓
Lean Six Sigma			✓	✓		✓	✓	✓
Performance management						✓		
Performance measurement				✓				
Process Classification Framework (PCF)						✓		

Approach	Management responsibility (MR)	Resource management (RM)	Product realization (PR)	Measurement and analysis (M&A)	Improvement (Imp)	Approach	Management responsibility (MR)
Process management			✓	✓	✓	✓	
Self-assessment				✓			
Six Sigma	✓		✓	✓	✓	✓	✓
Statistical Process Control (SPC)				✓			
Sustainability	✓	✓					
Theory of Constraints (TOC)				✓		✓	
Time-based analysis				✓		✓	
Total Productive Maintenance (TPM)				✓	✓	✓	
Total Quality Management (TQM)	✓		✓	✓	✓	✓	✓

Value stream mapping (VSM)				✓		

Where the approaches support the EFQM Excellence Model®

Table A.3 — Where the approaches support the EFQM Excellence Model®

Approach	Leader-ship	Strat-egy	People	Partner-ships and re-sources	Pro-cesses, prod-ucts and services	Cus-tomer results	People results	Society results	Key results
Balanced Scorecard		✓				✓	✓	✓	✓
Benchmarking		✓	✓	✓	✓	✓	✓	✓	✓
Board performance review	✓								
Business process re-engineering (BPR)					✓				
Carbon footprinting				✓				✓	
Customer Service Excellence	✓		✓	✓	✓	✓			

Design for Six Sigma					✓				
Failure Mode and Effect Analysis (FMEA)					✓				
Good practice transfer				✓	✓				
High-performance culture			✓				✓		
Investors in People (IiP)			✓				✓		
ISO 14001				✓				✓	
ISO 9004	✓		✓	✓	✓	✓			✓
Kaizen/Continuous improvement			✓		✓				✓
Kaizen teams			✓		✓				✓
Lean improvement					✓				✓

Approach	Leader-ship	Strat-egy	People	Partner-ships and re-sources	Pro-cesses, prod-ucts and services	Cus-tomer results	People results	Society results	Key results
Lean Six Sigma	✓		✓	✓	✓				✓
Performance management			✓				✓		
Performance measurement					✓				✓
Process Classification Framework (PCF)					✓				
Process management	✓				✓				✓
Self-assessment		✓							✓
Six Sigma	✓		✓	✓	✓				✓
Statistical Process Control (SPC)					✓				✓

Sustainability	✓	✓						✓	✓
Theory of Constraints (TOC)						✓			✓
Time-based analysis						✓			✓
Total Productive Maintenance (TPM)			✓			✓			✓
Total Quality Management (TQM)	✓		✓			✓	✓		✓
Value stream mapping (VSM)						✓			✓

Appendix B: Bibliography and Further information

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ISO 9001:2008, ISO 9000, ISO 9004

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