

JAPANESE
INDUSTRIAL
STANDARD

Translated and Published by
Japanese Standards Association

JIS Q 9024 : 2003

**Performance improvement of
management systems—
Guidelines for procedures and
methodology for continual
improvement**

ICS 03.100.01

Reference number : JIS Q 9024 : 2003 (E)

PROTECTED BY COPYRIGHT



Documents

Document Sharing Hub

23 S

Foreword

This translation has been made based on the original Japanese Industrial Standard established by the Minister of Economy, Trade and Industry through deliberations at the Japanese Industrial Standards Committee in accordance with the Industrial Standardization Law:

Date of Establishment: 2003-02-20

Date of Public Notice in Official Gazette: 2003-02-20

Investigated by: Japanese Industrial Standards Committee
Conformity Assessment Board

JIS Q 9024:2003, First English edition published in 2003-10

Translated and published by: Japanese Standards Association
4-1-24, Akasaka, Minato-ku, Tokyo, 107-8440 JAPAN

In the event of any doubts arising as to the contents,
the original JIS is to be the final authority.

© JSA 2003

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from the publisher.

Printed in Japan

PROTECTED BY COPYRIGHT

Contents

	Page
0 Introduction	1
1 Scope	2
2 Normative reference	2
3 Definitions	2
4 Fundamental concepts	4
4.1 Principles of continual improvement	4
4.2 Role of top management	5
4.3 Continual improvement process	5
5 Management of continual improvement	7
5.1 Issues in continual improvement	7
5.2 Formation of organisation for continual improvement	8
5.3 Environment for continual improvement	8
6 Procedure of continual improvement	10
6.1 General	10
6.2 Procedure	11
7 Techniques for continual improvement	19
7.1 Techniques for numerical data	19
7.2 Techniques for language data	27
7.3 Process mapping	37
7.4 Benchmarking	40

Performance improvement of management systems— Guidelines for procedures and methodology for continual improvement

0 Introduction

0.1 General For an organisation to fulfill its mission, maintain competitiveness and realise sustainable growth, it is necessary to enhance the significance of its existence by gaining satisfaction of customers and other interested parties in the value of the products that the organisation offers. For that purpose, the organisation must adapt swiftly to changes in the environment, enhance overall performances both effectively and efficiently, and create high customer value in response to needs and expectations of customers and other interested parties.

Continual enhancement of the ability to meet requirements in response to changes in environment and diversification of customer needs is vitally important. Growth in differential product development inevitably requires the need to enhance the capability that makes this possible. Hence, the importance of methodology for enhancing this capability is rising.

The methodology for enhancing the capability to adapt swiftly to changes in the environment and to satisfy the needs and expectations of customers and other interested parties affect:

- Customer satisfaction,
- Simultaneous improvement of quality, cost and cycle time, and
- Performance improvement such as earnings and market share.

0.2 Consistency with other standards This Standard has been prepared to be used independently of **JIS Q 9023** and **JIS Q 9025**. However, it may be used in complementary form as harmonised standards. Also, this Standard has been developed in consideration of the use as supporting technique pertaining to items described in **TR Q 0005** and **TR Q 0006**.

0.3 Relationship with JIS Q 9000 (ISO 9000) family This Standard has been prepared in consideration of the use as supporting technique for effective and efficient management system administration and operation by an organisation based on **JIS Q 9001 (ISO 9001)** and **JIS Q 9004 (ISO 9004)**.

0.4 Compatibility with other management systems This Standard has not been prepared as supporting technique specifically for environmental management, occupational health and safety management, financial management, risk management or other management systems. However, it may be applicable to any organisation as methodology to support performance improvement of related management systems.

1 Scope This Standard establishes guidelines related to procedures and techniques for continual improvement to support effective and efficient performance improvement of management systems of an organisation, and provides methodologies for effective and efficient problem-solving to achieve the issues. This Standard is intended for use by any organisations that wished to:

- identify problems in products provided to customers and solve them by following consistent procedure;
 - implement and manage breakthrough projects requiring the change in existing process or introduction of new process apart from daily business administration;
- and
- develop resources necessary in the future, apart from day-to-day business administration.

This Standard is intended to be applied to any organisation which, regardless of the type of business, form, scale, or product, aims at performance improvement of management systems of the organisation through effective and efficient implementation of continual improvement.

2 Normative reference The following standard contains provisions which, through references in this Standard, constitute provisions of this Standard. If the indication of the year of coming into effect is given to this referred standard, only the edition of the indicated year constitutes the provision of this Standard but the revision and amendment made thereafter do not apply.

JIS Q 9000 (ISO 9000) : 2000 *Quality management systems—Fundamentals and vocabulary*

3 Definitions For the purpose of this Standard, the terms and definitions in **JIS Q 9000 (ISO 9000) : 2000** and the following terms and definitions apply.

However, in case of difference from those defined in **JIS Q 9000 : 2000 (ISO 9000 : 2000)**, definitions given in this Standard apply.

Terms used in definition or information that are defined in clause 3 of this Standard are indicated in boldface. Terms defined in **JIS Q 9000 (ISO 9000)** are indicated in boldface, and **JIS Q 9000** in parentheses subsequent to it. Terms shown in boldface can be replaced by full definition of the term.

Throughout the text of this Standard, wherever the term “product” occurs, it can also mean “service.”

3.1 continual improvement Improvement in which **problem solving** or **issue achieving** is repeated through identification of **problem** or **issue**.

3.2 problem Gap between reality and established **objectives** that must be addressed and overcome.

3.3 cause An item that is likely to induce a phenomenon.

3.4 root cause One cause among **causes** that is identified to trigger a phenomenon.

3.5 problem solving Activity to identify the **root cause** of a **problem** and implement measure, confirm, and take required action.

3.6 issue Gap between reality and **objectives** to be established that requires action.

Information : **Issue** may be referred to as important issue, priority action item, important action item, challenging issue, etc., under **policy**.

3.7 issue achieving Activity conducted to achieve an **objective** in an **issue** through effort and skill.

3.8 hypothesis An assumption established to identify the **root cause**.

3.9 recurrence prevention Action taken to remove the **root cause** of a **problem** or the impact of the **root cause** in order to prevent recurrence.

Information : The **recurrence prevention** includes corrective action and preventive measures.

3.10 cross-functional team Team organised by members from different divisions and departments to assemble all the knowledge and technology that can be utilised in addressing **issues** that are difficult to resolve by a single division alone.

Information : A **cross-functional team** includes members representing design, manufacturing, technology, quality, production, and other relevant areas of the organisation. It may also include **customers** (JIS Q 9000) or business partners.

3.11 small group A small group of people working in front line of the organisation, that engages in improvement of **product** (JIS Q 9000) or **process** (JIS Q 9000).

Information : This **small group** may be referred to on occasions as QC (quality control) circle.

3.12 improvement opportunities Condition in which more effective and efficient production of **product** (JIS Q 9000) or **process** (JIS Q 9000) is feasible.

3.13 policy General intention and direction of the **organisation** (JIS Q 9000), regarding the mission, philosophy, and management vision, as well as achievement of the medium-range and long-range business plan, announced officially by the **top management** (JIS Q 9000).

Information: 1 **Policy** provides the framework for critical issues, **objectives**, and **means**.

2 **Policy** may include the following, depending on the **organisation** (JIS Q 9000).

- a) Critical issues
- b) **Objectives** and **means**
- c) Critical issues, **objectives**, and **means**

- 3 **Policy** may refer to direction announced by responsible persons in charge inside the organisation in response to **policy** of the **top management (JIS Q 9000)**.

Example : Division manager policy, branch manager policy, or site manager policy.

- 4 Modifiers may be added to suggest that the policy is for a specific management area.

Example : Quality policy, environmental policy.

- 5 **Policy** development, implementation, and administration may be collectively called "policy management".

3.14 objectives Point of achievement to be pursued and attained through efforts directed toward the achievement of **policy** or critical issue.

Information : The **objectives** may often be defined in measurable form.

3.15 means Means selected to achieve the **objectives**.

3.16 monitoring item Item selected as performance indicator for managing the level of **objectives** achievement.

Information: 1 Item selected as performance indicator for management of the level of achievement for **means** may be called inspection item or cause management item.

- 2 **Monitoring items** may be established for business operation for which a business division or individual is responsible to determine whether objective or action is being implemented as planned and take necessary actions.

4 Fundamental concepts

4.1 Principles of continual improvement The aim of an organisation is to gain satisfaction of customers and other interested parties through value of the products it offers and to realise continual growth. To achieve this, it is necessary for the organisation to improve continually its products and performance of the system that produces the products. The guidelines for continual improvement provided in this Standard are based on the following basic principles.

- a) **Approach to product, process and system** The targets for continual improvement are the products that are created as a result of all activities inside the organisation and the processes and system that produce them.
- b) **Factual approach** Improvement activities are not dependent on experience or intuitive inspiration alone but through quantitative assessment of facts as data and conversion of subjective decision to objective evidence.
- c) **Consistency in logical thinking** The following scientific and rational approach in consistent and logical thinking is adopted for effectiveness and efficiency in improvement activity:

- 1) Comprehension of current conditions;
 - 2) Identification of problems and root causes;
 - 3) Planning of corrective measures;
 - 4) Action;
 - 5) Evaluation.
- d) **Pursuit of improvement opportunities** Make effort to explore opportunities for better performance, rather than waiting for problems to become chronic and improvement opportunities to emerge.
- e) **Gradual improvement and breakthrough** Breakthrough is realised in following items by addressing changes in environment based on the fundamentals of gradual improvement, rather than as extension of existing action:
- 1) Development of new products and new technologies;
 - 2) Formulation of new process;
 - 3) Expansion into new business areas.

4.2 Role of top management For effective and efficient management of continual improvement, it is recommended that top management should express that they are deeply committed to the improvement by assuring the following:

- a) Availability of environment for continual improvement;
- b) Development of policy with regard to future business environment;
- c) Establishment of business policy and objectives based on the business environment;
- d) Precise and solid implementation of business policy and objectives;
- e) Periodical review on progress status;
- f) Measures based on reviews.

4.3 Continual improvement process

4.3.1 Planning The organisation should establish the following with certainty in planning of continual improvement.

- a) **Issues**
 - Issues on which action is taken under policy;
 - Problems that emerged in the course of day-to-day business administration and that affect the principal objectives of the organisation.
- b) **Objectives**
 - Relationship with overall policy of the organisation and contribution to performance improvement of the organisation;
 - Presence of measurable quantitative value;

- Superior level based on benchmarking, etc.
- c) **Means** The organisation should identify the means in the following procedures for achievement of its objectives:
 - Clarification of process for achievement of objectives;
 - Processes important for development of the organisation, such as product creation process, supporting processes for general affairs, personnel management and accounting, technology development and human resources development.
- d) **Monitoring items**
 - Items showing the state of achievement of objectives.
Example : Product quality, date of delivery and total sales.
 - Items showing the state of policy implementation.
Example : Frequency of facility maintenance and the number of attendances at training programmes.
 - Information : Item selected as performance indicator for management of the level of achievement for means may be called inspection item or cause management item.

4.3.2 Implementation The organisation should ensure that, in implementing continual improvement activities:

- a) Schedule planning by establishing necessary time periods, such as date, week, month and year;
- b) Appoint responsible persons suitable for the problem or issue, process and schedule;
- c) Review the plan with relevant manager at an early stage if action results differ from plan.

4.3.3 Confirmation of status of implementation The organisation should confirm whether or not continual improvement activities are being implemented with the following procedure:

- a) Evaluation of status in achievement of objectives and implementation of policy, based on action plan;
- b) Evaluation based on evaluation criteria set at the planning stage;
- c) Analysis on whether achievements have been made as planned and process management realised, in order to identify problems;
- d) Application of suitable methodology for analysis of facts and data (see clause 7).

4.3.4 Measures The organisation should take the following measures, depending on results of confirmation of status of implementation:

- a) Taking emergency measures immediately if unusual status is found in the plan;

- b) Confirming that improvement in unusual process may result in improvement of product quality;
- c) Proceeding to new plan if required plan achievement is not possible with improvement activities;
- d) Identifying the root cause and the problems if achievement cannot be realised as planned.

4.3.5 Standardisation The organisation should standardise its process, if achievements are realised as planned, and apply it to the entire organisation. Standardisation is aimed at unification and simplification to provide benefits fairly among people in the organisation. Provisions on standardisation may be established on the following items:

- Physical object, performance, capability, allocation, condition, movement, procedure, method, administrative procedure, responsibility, authority, approach and concepts, etc.;
- Method or object for expressing size used as standard established to give universality to measurement.

The organisation should put down standards in writing and maintain them in order to assure fair access to benefits produced as a result of continual improvement activities. The procedure is as follows:

- a) **Prevention of recurrence** Establishment of method for removal of the root cause of problem identified through improvement activities or for removal of the impact of the root cause and revision or new preparation of standards;
- b) **Publication of standards** Publication of revised or newly prepared standards to the entire organisation.

5 Management of continual improvement

5.1 Issues in continual improvement The organisation should preferably pursue effective and efficient improvement on an ongoing basis, rather than wait for improvement opportunities to emerge with occurrence of a problem. Improvement can range from gradual improvement to strategic improvement project propelled by breakthrough. The organisation should clearly establish improvement activities and develop process for administration of such activities. Moreover, if current status seems to be optimal, the status should be maintained.

Such improvement may bring change not only in products or process of product creation but also in management system and organisation. This can, as a result, enhance organisational structure.

Product or process to be designated as issue may have the following aspects.

- a) **Product**
 - Key in responding to customer needs and value of an organisation's existence;
 - Key in capturing customer needs in advance and source of competitiveness of the organisation.

b) **Process**

- Assurance of product quality to customers;
- Planning and implementation of the organisation's policies and means;
- Education and training of human resources to support the organisation;
- Build core competence of the organisation and develop new technologies and products.

5.2 Formation of organisation for continual improvement The top management should clearly define the importance and range of activities and allocate adequate resources to enable people in the organisation to participate in continual improvement. For this purpose, a division to promote continual improvement activities should be organised to cover all divisions inside the organisation. Examples of such an organisation are as follows.

a) **Division promoting activities**

- Division in which top management of the organisation exercises leadership and supervises the entire organisation.

Example : Function-based committee for function-based management.

b) **Division implementing action** (see Annex 3 of **JIS Q 9023** *Performance improvement of management systems—Guidelines for management by policy*)

- **Cross-functional team** If improvement cannot be realised by one division alone, it is necessary to form a cross-functional team of people possessing knowledge and skills relevant to the issue to be addressed, without regard to existing division or hierarchy inside the organisation, to take organised action;
- **Division** The role of the division is to take concrete action in response to organisation's policy. For short-term or medium-and long-range issues that cannot be resolved by mere extension of everyday's activities, the division should plan for organised action to change or improve the existing process;
- **Small group of field personnel at each workplace** Apart from improvement activities based on job function, continual improvement should be promoted by small groups of field personnel at each workplace.

5.3 Environment for continual improvement

5.3.1 Communication The top management should disseminate awareness of business policy and objectives to the people in the organisation through effective and efficient means of communication.

Making such information available encourages people in the organisation to participate in the achievement of the objectives and support performance improvement of the organisation. In order to realise significant performance improvement linked to business policy and objectives, activities reaching into the entire supply chain by cross-functional team that transcends the organisation framework are necessary, and, mutual trust backed by team work is essential.

The top management should implement effective and efficient communication to share progress and achievements in such activities. Opportunities for participants to exercise creativity will be made available through such information.

5.3.2 Evaluation The top management should evaluate results in performance improvement through awards and other incentives, in order to motivate people in the organisation to achieve the objectives of continual improvement and contribute to greater satisfaction.

The incentive system should be a scheme that is fair and transparent and clearly establishes the performance level and evaluation corresponding to each area of business activity and to each role for effective and efficient management.

5.3.3 Proposal system The top management should create a proposal system in order to motivate people in the organisation for continual improvement, and encourage improvement proposals to address problems.

In order to secure the number and quality of proposals, an incentive scheme should be adopted for evaluation of proposals corresponding to the size of impact and number of proposals. Also, outstanding proposal should be made public and shared within the organisation.

5.3.4 Training The organisation should set up an education system designed to enhance the level of skills and competence of people in the organisation. In order to create and maintain an environment for continual improvement, opportunities for education and training, such as training programmes for improving problem-solving capabilities, should be made available to the people in the organisation. Moreover, the organisation should review programmes for improving problem-solving capabilities on whether they are functioning adequately to achieve their objectives, based on results of continual improvement.

The following items should be taken into consideration in training programmes:

- Training by job rank, such as for managers, supervisors and administrators;
- The basics of job practice such as code of practice and technical standards;
- Guidance through on-the-job training;
- Systematic approach, methodology for continual improvement.

5.3.5 Exploitation of information technology In order to create and maintain an environment for continual improvement, the organisation should provide people in the organisation with the environment for improvement support through effective exploitation of information technology. For example, many of the “Techniques for Continual Improvement” described in clause 7 are found as software packages, which should be used for efficient data processing. Furthermore, results and examples of improvement should be utilised as knowledge through development of database from which people in the organisation can learn.

6 Procedure of continual improvement

6.1 General

6.1.1 Objective All jobs entail “solving problems” or “making achievement in an issue”. Therefore, “the approach in solving problems” and “the approach in making achievements in an issue” should be effective and efficient. Continual improvement in these approaches enables an organisation to maintain sustainable development by increasing the value of the products it offers to customers.

Problem-solving and systematic approach to issue-achieving make series activities which include initial assessment of current status, development of action plan, implementation and spread of effects effective and efficient.

6.1.2 Problem-solving and issue-achieving A problem is a “gap between reality and the objective established”; and an issue is a “gap between reality and the objective to be established”.

In both cases, the concepts of continual improvement and basic procedure for the organisation do not change.

Help box: Problem-solving process and issue-achieving process

In contrast to the problem-solving process in which the problem (actual problem) presents clearly the need to resolve it, the issue-achieving process often involves dealing with problems that are not actual but likely to grow in the future to require large-scale action (potential problem) if left neglected today. In this respect, the two differ in methods to be adopted and how the objectives are perceived on the planning stage. The issues involved in this issue-achieving process are very often presented top-down from higher ranks of the organisation. This is in sharp contrast to the problem-solving process, which is bottom-up movement to problems that field personnel faces.

In taking actual action, problem-solving very often focuses on activities to make improvements in each existing process (aggregation of small changes), while issue-achieving often involves full-scale change of process, such as design and introduction of a new process (large-scale change).

	Problem-solving	Issue-achieving
Problem location	Actual problem	Potential problem
Problem raising	Bottom-up type	Top-down type
Solution methods	Continual improvement activity conducted in existing process	Change and improvement of existing process or introduction of new process

The following sequence is a cyclical type that may start at any point. PDCA (Plan, Do, Check, Act) cycle is also CAPD (Check, Act, Plan, Do).

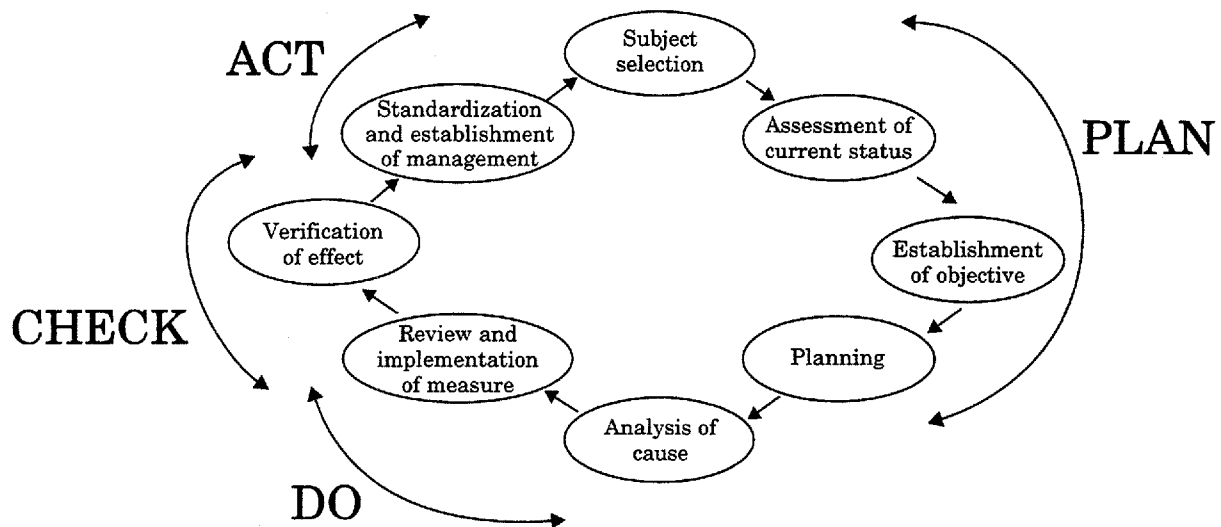


Fig. 1 Problem-solving process and issue-achieving process

6.2 Procedure

6.2.1 Subject selection A problem or an issue is also a gap between reality and customer expectations. It is a problem if customer dissatisfaction really exists and an issue if dissatisfaction is likely in the future. In other words, it is important to have the awareness that problem exists because customers are not satisfied. For this reason, it is important to start action with improvement that most affects customer satisfaction.

A subject is selected from problems and issues for organising improvement activity, and its selection should take into consideration the following, for effective and efficient action with problem awareness and focus on key points.

The following items should be taken into consideration in subject selection.

- Emphasis on customer requirements** A subject should be verified on whether it consistently complies with customer requirements. Although improvement unrelated to customer requirements is possible, the top priority should be placed on items related to customer requirements.
- Involvement of top management** Because a subject is directly linked to business management, it is important that top management is involved in and committed to the activity.
- Emphasis on organisation objectives** The subject should not be based on convenience of one's own division but should be selected with close affinity to the objectives of the organisation. Since partial optimisation does not necessarily contribute to organisation's optimisation, it is important to pay constant attention to the interests of the organisation.
- Unforced number of items** When working for breakthrough, the comprehensive actions which cover all the items should be avoided. Since this is not activity organised as extension of existing processes, it commonly entails many difficulties. Success is not possible without focusing on key points at the convergence of all strengths.