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Quality management systems — Guidance — People involvement and competence in quality management systems

Systemes de management de la qualite — Lignes directrices — Competences et implication du personnel dans les systemes de management de la qualite

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75% of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 10018 was prepared by Technical Committee ISO/TC 176, *Quality Management and Quality Assurance*, Subcommittee SC 3, *Supporting Technologies*.

Introduction

0.1 General

A quality management system should balance process, people and technology to be successful.

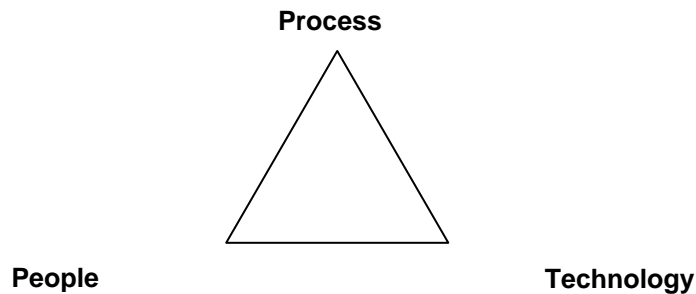


Figure 1 – Graphic reflecting balance in process, people and technology

Process and technology are generally well addressed in standards but people are often considered the primary responsibility of a human resources function.

Involvement of people is vital for the implementation of a quality management system. Human factors influence the design of a quality management system, creating value for the organization and helping to achieve its business objectives.

The ISO 9000 quality management system standards were based on eight quality management principles (ISO 9000:2005, 0.2). The leadership principle states that leadership *'should create and maintain the internal environment in which people can become fully involved in achieving the organization's objectives'*. The involvement of people principle states *'people at all levels are the essence of an organization and their full involvement enables their abilities to be used for the organization's benefit'*. The customer focus principle refers to the need to *'understand current and future customer needs'* and the mutually beneficial supplier relationships principle indicates *'a mutually beneficial relationship enhances the ability of both to create value'*.

This international standard provides guidelines to create the competence and effective involvement of people during implementation of a quality management system thereby strengthening continual improvement and enhancing customer satisfaction.

Implementation of ISO 9001 can be improved with an awareness of human factors of quality management and involvement of people in an organization.

The competence and involvement of people improves both implementation of a quality management system and the efficiency and effectiveness of subsequent operation. This leads to an improvement in the ability to meet requirements and ultimately in customer satisfaction.

0.2 Content of ISO 10018

This international standard contains the following;

- i. The eight principles of quality management' addressed from a human perspective;
- ii. The human factors of quality management which should be addressed to increase involvement and competence of people in an organization;

- iii. Process mode
- iv. Is for management of competence and people involvement;
- v. Analysis of elements of ISO 9001 showing where difficulties have been encountered as a result of lack of involvement or lack of competence of people. This analysis also shows practices adopted by organizations to overcome these problems;
- vi. An assessment tool which will enable any organization to identify those areas where it could improve involvement and competence of its people in the quality management system.

0.3 Using ISO 10018

The analysis of ISO 9001 requirements in clause 8 of this International Standard, identifies actions which can be taken to overcome specific problems.

The human factors of quality management in clause 5 present strategies an organization can pursue to strengthen the organization's performance. A matrix is provided which shows where each human factor has the greatest influence on a specific ISO 9001 requirement.

Although this international standard is focused on an ISO 9001 quality management system, it can be used with other management system models.

Quality management systems — Guidance — People involvement and competence in quality management systems

1 Scope

This International standard provides guidance to organizations for ensuring that people are adequately involved in their activities.

It provides guidance to organizations which facilitates development and maintenance of the competence of their people.

The proposed document is not intended for certification purposes.

2 Normative reference

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 9000 *Quality management systems – Fundamentals and vocabulary*

ISO 9001:2008 *Quality management systems – Requirements*

3 Terms and definitions

For the purposes of this International Standard, the terms and definitions given in ISO 9000 and the following, apply.

3.1

quality (3.1.1 in ISO 9000)

degree to which a set of inherent **characteristics** fulfils **requirements**.

NOTE 1 The term “quality” can be used with adjectives such as poor, good or excellent.

NOTE 2 “Inherent”, as opposed to “assigned”, means existing in something, especially as a permanent characteristic.

3.2

management (3.2.6 in ISO 9000)

coordinated activities to direct and control an **organization**.

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NOTE In English, the term “management” sometimes refers to people, i.e. a person or group of people with authority and responsibility for the conduct and control of an organization. When “management” is used in this sense, it should always be used with some form of qualifier to avoid confusion with the concept “management” defined above. For example, “management shall...” is rejected whereas “**top management** shall...” is acceptable.

3.3

top management (3.2.7 in ISO 9000)

person or group of people who directs and controls an **organization** at the highest level.

3.4

continual improvement (3.2.13 in ISO 9000)

recurring activity to increase the ability to fulfil **requirements**.

NOTE The **process** of establishing objectives and finding opportunities for improvement is a continual process through the use of **audit findings** and **audit conclusions**, analysis of data, management **reviews** or other means and generally leads to **corrective action** or **preventive action**.

3.5

process (3.4.1 in ISO 9000)

set of interrelated or interacting activities which transforms inputs into outputs

NOTE 1 Inputs to a process are generally outputs of other processes.

NOTE 2 Processes in an **organization** are generally planned and carried out under controlled conditions to add value.

NOTE 3 A process where the **conformity** of the resulting **product** cannot be readily or economically verified is frequently referred to as a “special process”.

3.6

competence (3.1.6 in ISO 9000)

ability to apply knowledge and skills to achieve desired results

NOTE 1: continuing application of competence can be affected by the work environment with all its variations, pressures, relationships and conflicts that can affect, for example, attitude and commitment to apply the relevant knowledge and skills.

NOTE 2: Competence requirements are more than academic qualifications, training and experience. They define the results or outcomes to be achieved for a particular job, the performance criteria or standards to be achieved, the evidence required and the method of obtaining it.

3.7

leadership

ability to establish unity of purpose and direction of an organization and create and maintain the internal environment in which people can become fully involved in achieving the organization's objectives.

**3.8
involvement**

sharing and contributing in activities of people

involvement of people through the provision of responsibility and authority to achieve desired results.

**3.9
data**

collection of facts

**3.10
information (3.7.1 in ISO 9000)**

meaningful data

**3.11
knowledge**

tangible or intangible result of perception, learning, experience, reasoning or a combination of these.

NOTE: Tangible knowledge is also known as explicit knowledge; intangible knowledge is also known as implicit, innate or tacit knowledge.

4 Quality management principles from a human perspective

A quality management principle is a comprehensive and fundamental rule or belief, for leading and operating an organization, aimed at continually improving performance over the long term by focusing on customers while addressing the needs of all other stakeholders.

The management principles contained in this clause have served as the basis for the management system elements contained in ISO 9001. They are herein addressed in the context of the human factors that bear upon the competence and involvement of people and as a result the effectiveness of a management system in general.

For each management principle the most relevant human factors are identified and discussed. Clause 5 of this standard provides a list of the human factors that are referenced in this clause. The human factors are detailed in Annex A.

This document provides an understanding of the quality management principles that will facilitate a successful management culture for users of the ISO 9000 family of standards and guidelines. The ISO 9000 family of standards is based on these quality management principles.

The quality management principles apply universally to all user groups. This document focuses on the needs of leaders and the people of the organization.

By applying the following eight quality management principles, organizations will produce benefits for customers, owners, people, suppliers, local communities and society at large.

4.1 Principle 1 – Customer focus

"Organizations depend on their customers and therefore should understand current and future customer needs, meet customer requirements and strive to exceed customer expectations".

Applying the principle of customer focus leads to the following actions:

- Breaking down barriers between customers and people within the organization to improve relationships and communication;
- People of the organization work better when they understand customer needs and expectations for products, delivery, price, dependability, after sales service etc.;
- Communicating customer needs and expectations to people not directly dealing with the customer helps them better understand the value chain operating within the organization;
- By measuring and communicating results of customer satisfaction measurement, people are able to understand how their behaviour affects customer satisfaction and can improve processes to better satisfy customer's needs.

Beneficial applications of this principle include:

- **For policy and strategy formulation**, leading by example in understanding the importance and meaning of satisfying customer needs;
- **For goal and target setting**, aligning relevant goals and targets with customer needs and expectations (rather than internal measures);
- **For operational management**, improving the performance of the organization to meet customer needs with continual improvement focusing on customer satisfaction;
- **For human resources management**, ensuring the people have the competence required to satisfy the customers needs.

4.2 Principle 2 – Leadership

"Leaders establish unity of purpose and direction of the organization. They should create and maintain the internal environment in which people can become fully involved in achieving the organization's objectives."

Applying the principle of leadership leads to the following actions:

- Establishing a clear vision of the organization's future and sharing this with the people;
- Establishing shared values and ethical role models with all people of the organization, understanding and responding to changes in the external environment and sharing and explaining those changes to all affected persons;
- Being proactive and leading the people of the organization by example, balancing the needs of all stakeholders including customers, owners, employees, suppliers, local communities and society at large;
- Educating, training and coaching people;

- Providing people with the required resources and freedom to act with responsibility and accountability;
- Promoting open and honest communication among people;
- Inspiring, encouraging and recognizing people's contributions;
- Building trust and eliminating fear;
- Sharing the setting of challenging goals and targets, and
- Implementing strategy to achieve these goals and targets.

Beneficial applications of this principle include:

- **For policy and strategy formulation**, establishing and communicating a clear vision of the organization's future, a clear explanation of the mission and an expression of the values needed to achieve both;
- **For goal and target setting**, translating the vision of the organization into objectives and measurable goals and targets;
- **For operational management**, being involved in reviewing and improving the processes of the organization;
- **For human resource management**, providing a role model for people within the organization.

4.3 Principle 3 – Involvement of people

"People at all levels are the essence of an organization and their full involvement enables their abilities to be used for the organization's benefit".

Applying the principle of involvement of people leads to the following actions by the people:

- Actively looking for opportunities to enhance their competencies, knowledge and experience;
- Being innovative and creative in furthering the organization's objectives;
- Focusing on the creation of value for customers;
- Feeling empowered to accept ownership and responsibility to solve problems;
- Actively seeking opportunities to make improvements, and
- Actively sharing knowledge and experience in teams and groups.

Beneficial applications of this principle include:

- **For policy and strategy formulation**, peoples' behaviours and beliefs are consistent with the organization's policy and strategies;

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- **For goal and target setting**, people sharing ownership of the organization's goals;
- **For operational management**, people taking appropriate decisions and improving processes they are involved in;
- **For human resource management**, people being more satisfied with their jobs, actively involved in their personal growth and development, enthusiastic and proud to be part of the organization.

4.4 Principle 4 – Process approach

"A desired result is achieved more efficiently when related resources and activities are managed as a process."

Applying the principle of process approach leads to the following actions:

- Identifying internal and external customers, suppliers and other stakeholders of the process;
- People defining processes they are responsible for to achieve desired results;
- Establishing clear responsibility for people, their authority, and accountability for managing the process;
- People identifying interfaces of processes they are part of with other processes and functions of the organization;
- People identifying and measuring inputs and outputs of the process;
- People evaluating possible risks, consequences and impacts of processes on customers, suppliers and other stakeholders of the process, and
- When designing processes, consideration is given to process steps, activities, flows, control measures, training needs, equipment, methods, information, materials and other resources to achieve the desired result.

Beneficial applications of this principle include:

- **For policy and strategy formulation**, leading to more predictable results, better use of resources, shorter cycle times and lower costs;
- **For goal and target setting**, aligning goals and targets across functions of the organization in an integrated way;
- **For operational management**, increasing sense of responsibility, lowering costs, preventing errors, controlling variation, reducing cycle times and providing more predictable outputs;
- **For human resource management**, people understanding where they fit within the organization and its processes.

4.5 Principle 5 – System approach to management

"Identifying, understanding and managing a system of interrelated processes for a given objective improves the organization's effectiveness and efficiency."

Applying the principle of system approach to management leads to the following actions:

- People understanding interdependencies among processes that make up the system;
- Structuring the system to achieve overall organizational objectives in the most effective and efficient way;
- Developing the system through identifying and developing processes that affect organizational objectives, and
- People continually improving the system through measurement and evaluation.

Beneficial applications of this principle include:

- **For policy and strategy formulation**, creating an organization-wide understanding of how the enterprise is to succeed;
- **For goal and target setting**, understanding that individual, functional and process goals are intended to support overall organization goals;
- **For operational management**, managing, aligning and improving individual activities and processes with the aim to support the system as a whole;
- **For human resource management**, providing a better understanding of roles and responsibilities for achieving system-wide objectives, reducing cross functional barriers and improving teamwork.

4.6 Principle 6 – Continual improvement

"Continual improvement should be a permanent objective of the organization".

Applying the principle of continual improvement leads to the following actions:

- Making continual improvement of products, processes and systems an objective for every individual in the organization;
- Applying the basic improvement concepts of incremental and breakthrough improvement;
- Continually monitoring and measuring to identify areas for potential improvement;
- Continually improving the efficiency and effectiveness of all processes;
- Promoting prevention based activities;
- Providing every member of the organization with appropriate education and training, in the methods and tools of continual improvement such as:

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- the Plan-Do-Check-Act cycle,
 - problem solving,
 - process re-engineering, and
 - process innovation;
- Establishing measures and goals to guide and track improvements, and
 - Recognizing improvements and evidence of success.

Beneficial applications of this principle include:

- **For policy and strategy formulation**, achieving a culture of continual improvement as a source of competitive advantage;
- **For goal and target setting**, setting realistic and challenging improvement goals and providing the resources to achieve them;
- **For operational management**, continually improving process effectiveness and efficiency across the organization;
- **For human resource management**, involving all people in the organization with continual improvement methods, tools, opportunities, and encouragement to improve products, processes and systems.

4.7 Principle 7 – Factual approach to decision making

"Effective decisions are based on the analysis of data and information".

Applying the principle of factual approach to decision making leads to the following actions by the people of an organization:

- Agreeing on objectives, taking measurements, collecting data and information relevant to the objective;
- Ensuring data and information are sufficiently accurate, reliable and accessible;
- Analysing data and information using valid methods (see below);
- Understanding the value of appropriate statistical techniques;
- Providing results of analysis in a form that can be understood and acted upon; and
- Making decisions and taking action based on the results of logical analysis balanced with experience and intuition.

Beneficial applications of this principle include:

- **For policy and strategy formulation**, developing strategies based on relevant data and information. The policy and strategy are more realistic, more likely to be achieved and understood by the people in the organization;

- **For goal and target setting**, using relevant data and information to set realistic and challenging goals and targets;
- **For operational management**, data and information are used for understanding process and system performance to guide improvements and prevent future problems;
- **For human resource management**, having people competent in using data to improve processes and operations.

4.8 Principle 8 – Mutually beneficial supplier relationships

"An organization and its suppliers are interdependent, and a mutually beneficial relationship enhances the ability of both to create value."

The following human factors are relevant to the principle of mutually beneficial supplier relationships:

- Involving people within the organization in identifying and selecting key suppliers – thereby using their knowledge and experience;
- Establishing open, clear and honest two way communication with suppliers to exchange information in order to jointly understand each other's needs and capabilities;
- Involving individuals and groups at the supplier organization with people in one's own organization in teams undertaking joint development and improvement of products and processes;
- Recognizing and rewarding efforts and achievements of individuals within the supplier organization, and
- Establishing and building relationships with suppliers balancing short-term gains with long-term considerations for the organization, its people and society at large.

Beneficial applications of this principle include:

- **For policy and strategy formulation**, creating competitive advantage through development of strategic relationships with suppliers so that people within the organization see supplier employees as colleagues;
- **For goal and target setting**, establishing more challenging goals and targets through early involvement and participation of suppliers and people in the organization;
- **For operational management**, creating and managing relationships between suppliers and the people of the organization to ensure reliable, on-time, defect-free delivery of supplies;
- **For human resource management**, improving supplier capabilities through supplier training, and joint improvement efforts.

5 Human factors

The principles of quality management in clause 4 indicate a number of human factors that need to be addressed in developing a quality management system. These human factors are now developed further.

Implementation of a quality management system to meet ISO 9001 will be greatly improved with participation of the organization's people and an awareness of the 'human factors of quality management'. For successful operation a quality management system should balance process, people and technology.

To increase participation and competence of the people in an organization, the following human factors should be addressed. Developing the human factors enables an organization to strengthen areas of performance. A matrix is provided at the end of this clause showing where a particular human factor has the greatest influence on a given ISO 9001 requirement and the 8 principles underpinning the ISO 9000 series.

Many organizations also recognize the contribution of others outside their organization such as suppliers and outsourced workers. The principles and human factors apply to suppliers and outsourced workers in the same way.

Human factors have been grouped into three categories:

Leadership Factors

- Leadership
- Organizational culture and values
- Change management
- Knowledge management

Competence factors

- Recruitment
- Education and learning
- Creativity and innovation
- Competence
- Awareness

People involvement factors

- Communication
- Networking and collaboration
- Teamwork
- Discipline
- Empowerment and responsibility
- Recognition and rewards
- Exploration

The human factors are outlined in this clause and described more fully in annex A.

5.1 Leadership factors

Leadership is one of the 8 quality management principles underpinning the ISO 9000 series and is vital for successful implementation of a quality management system. Without effective leadership, it will be extremely unlikely that any programme to improve any of the other human factors can be implemented satisfactorily.

5.1.1 Leadership

Leaders establish unity of purpose and direction for an organization. They create and maintain the internal environment in which people can become fully involved in achieving the organization's objectives (see ISO 9000:2000, 0.2b). A leader influences a group toward achieving a result and the leader's role is not dependant on title or formal authority. A leader must normally possess personal competences in planning, communication and coaching.

Leaders enable the people in an organization to follow a path to achievement of organizational objectives. A leader develops a vision which differentiates their company from the competition. The mission of the company is the activity in which the company then engages in order to achieve that vision. A leader frequently sees profit as an outcome of the organization's mission. Applying this human factor leads to peoples' efforts being aligned with organizational goals and a common purpose and strategy.

Often, people see their tasks as subordinate to the vision. For instance, an organization might have the overall task of generating profit, but a good leader will see profit as a result that flows from whatever aspect of their vision creates value for their company over and above the competition.

Relationship to ISO 9001:
5.4.1, 5.5.1, 5.5.3

Effective leaders establish values that are important to the organization – these values form a central part of the organization's culture (see 5.1.2).

5.1.2 Organizational culture

Organizational culture is the pattern of beliefs and values that have developed during the organization's history and which show in the behaviour of its members. Beliefs and values develop from people observing what leaders pay attention to and how leaders react to critical incidents.

Values are those things that matter, whether it is the customer, a standard of excellence or profit. Organizational culture affects organizational performance through aspects such as relationships between its people, the speed with which it executes and its customer relationships.

Applying this human factor leads to the creation of an organization where there is a strong focus on quality and the customer.

Relationship to ISO 9001:
5.5.3, 6.4

Change management relies in either working with a culture that accepts and embraces change as a way of life or may involve changing the organization's culture as one aspect of the larger change project. Changing culture is frequently a leadership challenge to maintain those elements

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of culture which are beneficial and how to identify and change cultural elements that are not beneficial.

5.1.3 Change management

Change management enables an organization to move from one organizational state to another. For every organizational change, there is a need to manage the change process.

The ability to make a change in an organization is influenced by the attitudes and behaviors of its people. For effective change management, we need to understand the attitudes and values of the people in an organization.

Change management enables an organization to identify key issues, predict barriers to change and so minimize organizational disruption.

- The benefits of effective change management include:
- Creating an organizational structure that is aligned with new strategies and processes; Having jobs and skill sets that support the new organizational direction and minimizing resistance to change.

Relationship to ISO 9001:
5.4, 7.1, 8.5

5.1.4 Knowledge management

Knowledge management flows from both leadership and organizational culture. Where leaders have demonstrated the value of creating, preserving and communicating knowledge within the organization, this becomes one of the values within the culture.

Business leaders now recognize knowledge as an equally important business resource alongside time, money and people. Knowledge management involves the flow, storage and retrieval of information but is also about growing the knowledge of the organization and applying that knowledge to create value. Knowledge management is a leadership strategy.

Knowledge that we have inside an individual is referred to as tacit knowledge. Knowledge which has been documented is called explicit knowledge.

- i) An organization which creates products or solutions through re-use of an existing knowledge base needs a bias to 'coding' and storing explicit knowledge,
- ii) An organization which provides custom products or unique solutions through innovation requires links between people to share 'tacit knowledge'.

Applying this human factor in a quality management system leads to organizational processes operating more efficiently as well as being able to develop new products and services more rapidly.

Relationship to ISO 9001:
6.2, 4.2.3, 4.2.4, 4.1.1

5.2 Competence factors

Organizations rely on people who are fully able to operate within an organization's processes. This ability to contribute is evidence of competence and requires processes within the organization to achieve, maintain and develop competence.

5.2.1 Recruitment

Recruitment may be looked at as the first stage of a competence management process. Any organization has to look to bringing talent into positions from both within and outside.

Recruitment is the process of sourcing, screening, and selecting people for a position in an organization. Managers can undertake some part of the recruitment process, but larger organizations often use professional recruiters.

Sourcing candidates may involve advertising a work opportunity. Skills and abilities are tested prior to the interview to identify competency levels to try to ensure that only suitable candidates are interviewed. It is necessary to verify the historical information the applicant has provided and there may be security clearances required in some work situations.

The final recruitment decision is normally made by the person who will supervise the future employee.

Key benefits of this human factor are that it assists reducing employee turnover as a result of selecting people who are more likely to stay with the organization. Labour turnover leads to higher costs and reduction in the effectiveness of an organization through the loss of skills, knowledge and experience. Applying this human factors leads to the selection of people who are more likely to succeed, a generally happier workforce and hence greater motivation in performing work

Relationship to ISO 9001:
4.1, 6.2

5.2.2 Education and learning

Just as we require processes for bringing in talent, so we need to nurture existing talent through a process to provide opportunities for education and learning to enable individuals to maintain their own competence.

Learning is the process of acquiring knowledge or skills from study, instruction or experience. This process may apply to an individual or collectively to an organization.

The learning organization focuses on enhancing its systems to continually increase the organization's capacity for performance.

In order to be useful, organizational learning must result in a change to behavior that is superior to the organization's original behavior. The process begins with individual learning, which can lead to organizational learning.

Benefits of an effective learning process are: improvement in staff morale and job satisfaction, increase in staff retention, improvement in 'soft skills' such as communication, better customer service and increased competitiveness and profitability (as applicable).

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Relationship to ISO 9001:
6.2, 5.5.1

5.2.3 Competence

Competence enables individuals to perform tasks in the workplace and achieve required results.

An individual is competent when they are able to perform a task and achieve the results required in the required time.

Evaluation of competence requires finding whether the individual can achieve predefined results which are considered necessary for performing a given role.

Competence results from a combination of knowledge, skills, and attitude and leads to behavior and actions by an individual in order to carry out an activity.

An organization which employs competent individuals is able to meet its targets more consistently as a result of being able to predict the outcome of work more reliably. As a result of employing competent people an organization will have less reworking on its products and services.

Applying this human factor in a quality management system leads to customer satisfaction being enhanced. This is a result of an organization which employs competent people being able to deliver to the customer more reliably and generally at a lower cost than when rework is involved.

Relationship to ISO 9001:
6.2

5.2.4 Creativity and innovation

Changing needs in the modern workplace require individuals to both work within existing stable processes and to operate effectively in a changing work environment using new competencies of creativity and innovation.

Creativity is the process of producing new ideas, while innovation is the process of both creating and applying such creative ideas. In the context of an organization, the term innovation refers to the entire process by which individuals or groups generate creative new ideas and convert them into commercial products, services, and business practices.

It is important to view innovation as a process. It is generally recognised that the following steps exist in the innovation process; Identifying the opportunity (necessity is the mother of invention) , linking those opportunities to solutions, turning ideas into practical solutions and finally implementing solutions.

Most innovations build on a lot of previous experience and are the result of collective knowledge. Successful Innovation results from a high degree of people involvement.

Key benefits of applying creativity and innovation inside the organization are the improvement of existing processes and the development of products and new products and services for the market.

Applying this human factor leads to the organization producing products and services for tomorrow's customer and thereby creating competitive advantage in the market place.

Relationship to ISO 9001:
8.5, 7.5.1, 4.1.1

5.3 People involvement factors

In order to make the best use of people we need to ensure that they are engaged with the processes of the organization through processes designed to make the most of their competence.

5.3.1 Communication

In order to involve people we need to effectively communicate the organization's expectations to them and listen to their views of the current direction and ways of working.

Communication is a process of transferring information and knowledge between people. The sender and receiver can be anyone within and outside the organization.

Communication can occur through different media. The media enable verbal or nonverbal information to be transferred. The correct media for a message is chosen by considering the audience the message is intended for. Media choices can include face to face, hard copy, e-mail, conference, video or meetings.

Effective communication ensures everyone inside the organization is working for the same objective. It avoids misunderstanding and so enables tasks to be carried out more easily.

Relationship to ISO 9001:
5.3.d; 5.4.1; 5.5.2.c; 5.5.3; 7.2.3; 7.4.2;

5.3.2 Networking and collaboration

Networking and collaboration are forms of communication and are ways of involving people in the work of the organization. Networking is a technique for obtaining new ideas and also for executing these ideas. There are two principle types of networks.

The open network is suited to finding opportunities and conceptual solutions. It should contain people in varied disciplines. Indirect contacts or 'two degrees of separation' usually produce the most valuable knowledge. Innovative breakthroughs frequently occur at the intersection of different bodies of knowledge.

The closed network is easier to form. The knowledge exchanged between these small groups of familiar people is more focused and higher volume. This dense network or "cluster" has its place in the later 'execution' stages of an idea. This 'cluster' type of network will normally have a very high level of trust and collaboration.

Networking leads to collaboration. Collaboration occurs because each party brings an asset, such as market knowledge, intellectual property or technology and people see the value in sharing this knowledge. Collaboration often fails due to a high focus on legal and financial aspects of the alliance to the exclusion of the relationship and resourcing aspects.

Applying this factor to a quality management system improves the flow of information and knowledge between people.

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Relationship to ISO 9001:
5.5.3, 8.5.2

5.3.3 Teamwork

Teamwork is one aspect of people involvement and is a form of collaboration with individuals working together on a shared task.

Teamwork is the ability for individuals to work together in a mutually beneficial relationship leading to enhanced and assured quality in products and services.

Teamwork is an essential skill for people in organizations of any size. Teamwork helps to optimize the knowledge and skills required of people and so teamwork increases the probability that quality objectives can be achieved. Teamwork has become so essential that many organizations assess potential employees' aptitude for roles within teams.

A high performance team increases the probability of achieving set results for any project, product or service.

Applying this human factor leads to organizational processes being increasingly complex in the global market, crossing continents as well as departments and functions teamwork in the workplace helps to focus and optimize people's efforts to ensure quality objectives are achieved.

Relationship to ISO 9001:
4.1, 5.5.1, 5.5.3, 6.2.2

5.3.4 Discipline

Teamwork requires individuals to work in a disciplined fashion and sometimes suppress their own objectives to meet team goals – this requires individual self discipline.

Discipline is something that either comes from within (self discipline) or is imposed from outside, such as by the policies of the quality management system. To discipline a person in an organization means to instruct them to follow a particular code of conduct, or to adhere to a certain order.

Self-discipline refers to the training that one gives one's self to accomplish a certain task or to adopt a particular pattern of behaviour, even though one would really rather be doing something else. Discipline has to be balanced with freedom to choose and experiment. It relies on communication to enable individuals to understand where they need to follow procedures and where they have freedom of choice.

By using a disciplined approach individuals operate consistently in areas where the risk of problems through failing to follow procedures is highest.

Applying this human factors leads to consistent delivery of product or service by following defined processes.

Relationship to 9001:
4.2.1, 4.2.3, 5.3, 5.5.1, 7.5.1

5.3.5 Empowerment and responsibility;

One aspect of people involvement when teams and individuals have demonstrated competence through a disciplined approach towards achieving organizational objectives is by managers within the organization allowing them authority to organize their own work. Empowerment is the process that provides employees with the authority and ability to make decisions about their work.

Organizations have experienced problems developing empowerment because they believe this is something that one individual does for another. People think that "someone," usually the manager, has to bestow empowerment on the people who report to them. Empowerment is more the process of an individual enabling themselves to take action and control their own work and decision making. Empowerment comes from the individual. Empowerment enhances learning. A critical feature of successful teams is that they are invested with a significant degree of empowerment, or decision-making authority. Employee empowerment helps employees own their work and take responsibility for their results.

Employee empowerment helps employees serve customers at the level of the organization where the customer interface exists.

Relationship to ISO 9001:
5.5.1, 6.2.2, 8.5

5.3.6 Recognition and rewards

Where individuals or teams have been involved in successful work to the benefit of the organization as a whole it helps develop an effective culture when the organization recognizes their contribution. Recognition and reward reinforce behaviours which the organization wishes to encourage. Non-monetary recognition can often be valued more by employees than money or gifts. Money and gifts often create resentment among others in an organization.

Recognition and rewards should be tailored to the specific needs and wants of the employee. A combination of financial and non financial recognition works well for some people; for others solely financial rewards may be more successful.

Criteria for behaviour need to be established in terms of what performance or contribution is rewardable by the organization. Anyone who then performs at the level or standard stated in the criteria should receive the reward.

Recognition should occur as soon after the performance of the actions as possible, so the recognition reinforces behaviour the employer wants to encourage. Through recognition employees understand their efforts make a difference, that the organization values its people and cares about their success, thus reinforcing their pride and self esteem.

Applying this human factor leads to greater motivation, loyalty and effort from recognized employees along with increased performance, thereby improving competitive advantage.

Relationship to ISO 9001:
5.5.3, 6.4, 8.2.3

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The human factors which have been described in this clause need to be addressed in the context of a quality management system. The matrix on the next page shows the linkage of each human factor to a given element of ISO 9001. Clauses 6 and 7 then show the process for managing people involvement and competence in the quality management system.

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	4.1	4.2	5.1	5.2	5.3	5.4	5.5	5.6	6.1	6.2	6.3	6.4	7.1	7.2	7.3	7.4	7.5	7.6	8.1	8.2	8.3	8.4	8.5	
Change																								
Communication																								
Competence																								
Creativity																								
Culture																								
Education																								
Empowerment																								
Exploration																								
Involvement																								
Recognition																								
Recruitment																								
Self Discipline																								
Teamwork																								

This matrix shows the linkage between a given technique (vertical axis) and an ISO 9001 element (horizontal axis). It can be argued that every technique affects every element of the standard. However this matrix shows the two or three techniques that should be primarily considered when addressing a given element of the standard.

6 Management of people involvement and competence

6.1 General

The 8 quality management principles of ISO 9001 and the human factors described in clause 5 of this standard indicate the importance of people involvement and the need for necessary competence. This clause specifies guidelines for the competence acquisition process and the people involvement process.

The guidelines imply that the organization should establish, document, implement and maintain processes for competence acquisition and people involvement and continually improve their effectiveness.

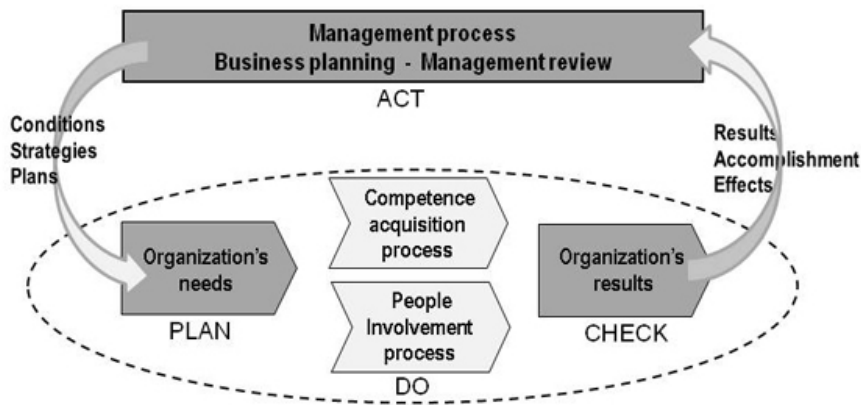


Figure 2: Management of competence and people involvement

The “Organization’s needs” and “Organization’s results” are included in the business planning process and competence management and people involvement are support processes and an integral part of the overall management system.

The competence acquisition process aims at ensuring the appropriate competence is developed with regard to the needs of the business activities. This involves managing, developing and maintaining the organization’s overall competence, in order to develop the short- and long-term business performance.

A planned and systematic competence acquisition process is of vital importance for the improvement of the organization’s ability to achieve its objectives. This process is shown in 6.2 and illustrates the different steps described. The organization should create the necessary conditions for participation and involvement by the employees in the process.

The people involvement process is shown in 6.3 and is intended to be applicable to all organizations, regardless of type (business), size and the product provided. These guidelines can be applied by an organization irrespective of the organization’s other management systems.

The processes employed by organizations for the involvement of people are key to the success of their management systems. To that end, the document provides guidelines for managing the people involvement activities.

6.2 Managing the competence acquisition process

The competence acquisition process is described in this document with the purpose of facilitating the understanding and the use of the process model as depicted below. A well operating competence acquisition process will be a competitive advantage when recruiting new employees. Furthermore, it is a prerequisite for the employees in the organization to get the proper competence development. This improves the effectiveness of the organization. At the same time the satisfaction of the employees improves, their opportunities to select jobs escalate and their value in the labour market increases.

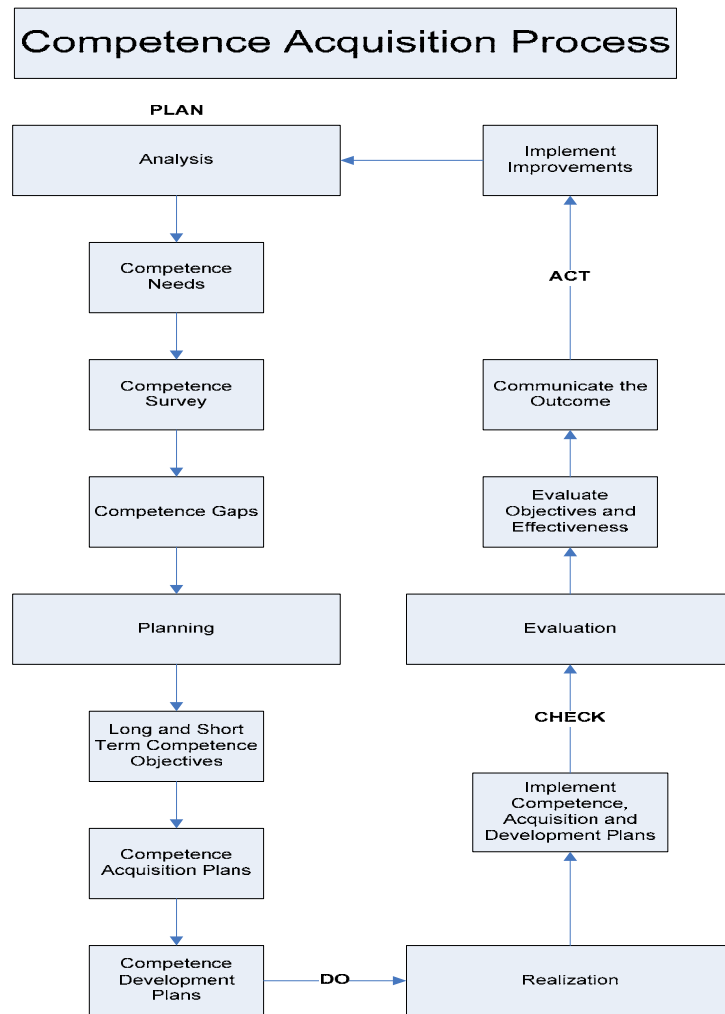


Figure 3 – Competence acquisition process

The business planning function of the organization, strategic as well as operational, constitutes the basis for competence acquisition activities defined in this International Standard. To this end, top management needs to create the necessary conditions for each employee to understand the importance of the organization's objectives and be capable of contributing to the achievement these objectives.

Furthermore, top management should ensure that the organization is informed of the importance of fulfilling statutory and regulatory requirements as well as requirements of interested parties as it pertains to the competence of the organization's people.

6.2.1 Analysis

The competence acquisition process commences with an analysis of competence needs by using inputs such as business plans, policy and guidelines from interested parties. The information is analyzed in order to identify short- and long-term competence needs.

A competence survey should be conducted using manpower plans and records from previous competence development activities. The existing competence for each employee is thereby mapped out and this creates the knowledge of existing competence and a record of existing competence for the organization.

Competence gaps are then identified from competence needs and records of existing competence. Those identified competence gaps should then be recorded as an input to the next stage.

6.2.2 Planning

Short and long term competence objectives are planned using business plans and the identified competence gaps. The objectives should be agreed upon in the organization and recorded.

Competence acquisition plans are now created and recorded using policy and objectives on competence and with knowledge of competence gaps. These plans contain all activities except competence development for existing employees and should include responsibilities and time schedules for the competence acquisition.

A competence development plan is created and recorded for each employee and proper consideration for the individual ambition and desires should be captured.

6.2.3 Realization

Established competence acquisition and development plans are executed and the activities and results are recorded. Activities in an acquisition plan for the organization could be education and training, recruitment, partnership, outsourcing, consultants. For the individual a development plan could be education and training, on-the-job training, networking, teamwork, etc.

6.2.4 Evaluation

The competence acquisition activities carried out are analyzed and evaluated using records of the accomplished activities. The extent to which objectives are achieved and the impact on effectiveness and business are recorded as well as an update of individual competence records. The outcome of the evaluation is recorded and provided as feedback information to the organization. Using the record of the outcome of the evaluation and other available information, improvements can be initiated and carried out. A record of any corrective and preventive action is maintained.

6.3 Management of people involvement

In order to ensure management system effectiveness, top management must make effective choices about *who* they involve in organizational processes and they are to be involved. Leaders should influence peoples' behavior in order to motivate them to achieve desired levels of performance.

Whether it be an individual or group, the right involvement can help generate ideas, form consensus, and smooth the way for implementing action plans. When used in combination with problem solving, decision making, and project management processes, effective people involvement is a powerful tool for effecting change and continual improvement.

In achieving these aims an organization's management must decide which is the most appropriate behavior for the outcome that is expected - choosing from behaviors that range from autocratic to consultative to participative, depending on a given situation. Therefore in order to effectively involve people, a systematic approach is required and is defined in this guideline standard.

6.3.1 Individual Involvement versus group involvement

Individual involvement

Individual Involvement is when a person engages as a participant and shares in common with other members of the organization to achieve organizational objectives.

For this process to occur individuals need to be identified with the goals of the organization and be motivated. This comes when the individual understands that there is a common purpose between the success of the organization through his or her involvement and his personal interests (i.e., recognition, compensation, security, etc.).

Group involvement

When collectively involving a group of people to address the organization's management system processes and projects, factors that should be considered and properly managed are:

- Patterns of communication and coordination;
- Patterns of influence;
- Roles/relationships;
- Patterns of dominance (e.g. who leads, who defers);
- Balance of task focus vs. social focus;
- Level of group effectiveness;
- How conflict is handled.

The group decision-making process is generally seen to occur in four stages:

- Forming (pretending to get on or get along with others);
- Storming (letting down the politeness barrier and trying to get down to the issues even if tempers flare up);
- Norming (getting used to each other and developing trust and productivity);
- Performing (working in a group towards a common goal on a highly efficient and cooperative basis).

6.3.2 Process approach

This International Standard promotes the adoption of a process approach when developing, implementing and improving the effectiveness and efficiency of people involvement processes.

A process model for people involvement activities is shown in the figure below:

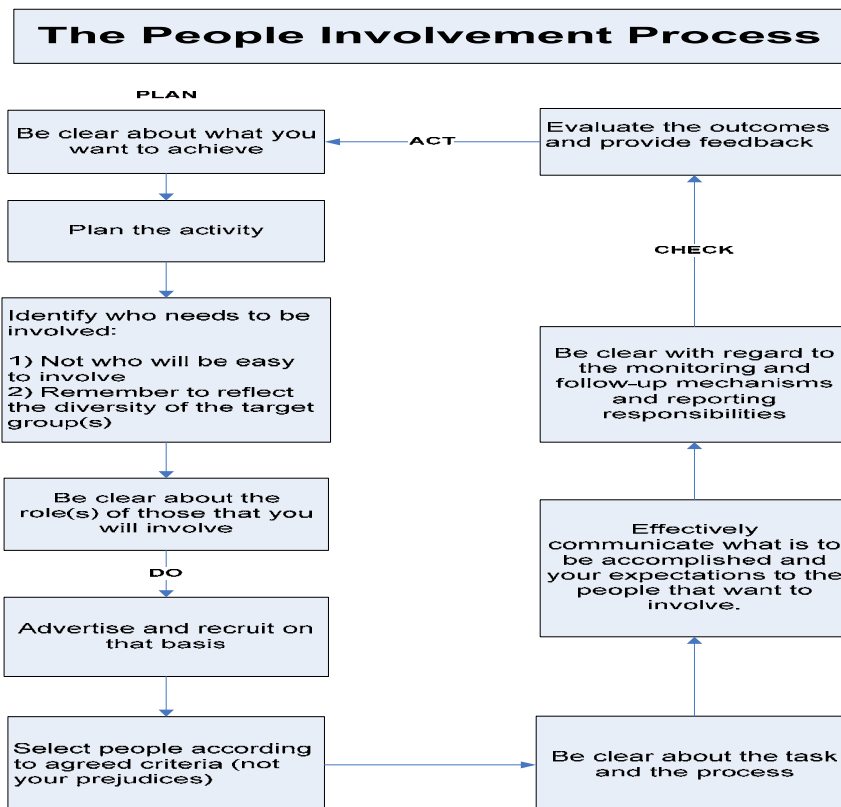


Figure 4 – The people involvement process

6.4 The people involvement process

- a. Be clear about what you want to achieve (identify personal or group objectives);
- b. Plan the activity;
- c. Identify who needs to be involved, not who will be easy to involve;
- d. Remember to reflect the diversity of the target group(s);
- e. Be clear about the role(s) of those that you will involve;
- f. Advertise and recruit on that basis (see 5.4);
- g. Select people according to agreed criteria (not your prejudices);
- h. Be clear about the task and the process;
- i. Effectively communicate what is to be accomplished and your expectations to the people that want to be involved;
- j. Be clear with regard to the monitoring and follow-up mechanisms and reporting responsibilities
- k. Evaluate the outcomes and provide feedback.

Applying the quality management principles and human factors in a quality management system by using the Plan-Do-Check-Act Cycle leads to certain specifications that need to be addressed in each clause of ISO 9001. Clause 7 shows specific actions that should be taken for each ISO 9001 clause in order to increase both competence and people involvement.

7 Guidance for effective people involvement and competence

7.1 General requirements (4.1. in ISO 9001)

ISO 9001 requires that an organization establish a quality management system by this approach.

Processes should be identified, their sequence and interaction determined and effective process operation ensured. This is achieved by ensuring the availability of resources and information and by monitoring, measuring, analyzing and continually improving the processes. Outsourced processes must also be controlled.

Recommendations

Process identification is often conducted without an understanding of the interrelationship of processes and frequently does not deal with interpersonal interfaces. Process controls often do not consider controls exercised by people in their own work and processes are often under-resourced. Measures chosen for processes do not take account of the human aspects of data collection.

'Outsourcing' is becoming increasingly important as a source of 'people' and the organization sees the 'outsourced resource' as just a resource and not as a 'work force'.

- a. People and leaders should have an understanding of the quality system and their own role in the system;
- b. People should be involved at all stages of identifying processes they work with;
- c. Interrelationship of processes should be shown on a diagram also showing an individual's process ownership;
- d. People should be involved in identifying the controls and resources necessary to ensure processes function effectively;

- e. Information should be communicated between people as well as between processes;
- f. Outsourced people need to be developed and treated as organizational employees;
- g. Outsourced training and consulting should be evaluated.

7.2 Documentation requirements (4.2 in ISO 9001)

7.2.1 General (4.2.1 in ISO 9001)

The quality management system documentation includes the quality policy and quality objectives, a quality manual, documented procedures, planning documents, and records.

7.2.2 Quality manual (4.2.2 in ISO 9001)

The quality manual shows the system scope, the procedures and the interaction between processes.

Excessive documentation and documentation which is badly written is a problem and frequently deters the involvement of people. This also limits the development of competence. Documents are often produced by “documentation people” rather than the users of the documents and are not ‘user friendly’.

People are not aware of where the documents they need are available. Complex documents will not be referred to when work is performed. Documentation is often generic and as a result documentation loses its usefulness.

Recommendations

- a. Excessive documentation can be avoided by using training to develop ‘tacit’ knowledge (knowledge in the mind) and avoid reliance on ‘explicit’ (i.e. documented) knowledge;
- b. Some of this problem can be addressed by implementing ISO 10015;
- c. The policies in the quality manual should be shared among the leaders and owned by them;
- d. The manual should be developed to show roles and responsibilities of people in the organization;
- e. The amount of documentation required should reflect the number of people in the organization, the competency of the people and the complexity of the organization;
- f. The purpose of documents which have been produced should be explained to people;
- g. The understanding of the value of ‘tacit’ knowledge held in a person’s head should be developed;
- h. Over reliance on ‘explicit’ knowledge documented in manuals and procedures should be avoided;
- i. This links to management of competence and retention of intellectual capital.

7.2.3 Control of documents (4.2.3 in ISO 9001)

Documents required by the quality management system are to be controlled.

7.2.4 Control of records (4.2.4 in ISO 9001)

Records should be maintained to provide evidence of conformity to requirements and of the effective operation of the quality management system.

Quality specialists are often overly dependant upon records.

Recommendations

- a. People outside the quality management system administration should be trained and given responsibility and authority (empowered) to manage documents and records;
- b. People should be trained in document control procedures;
- c. The people who are best to involve in document approval should be identified;
- d. People should be educated on the need for records and how they should be used.

7.3 Management commitment (5.1 in ISO 9001)

Top management are required to perform certain actions as evidence of its commitment to the quality management system. These actions are explained more fully in 5.2 to 5.6 below. There is often a lack of commitment and communication by top management regarding the quality management system. This results in failure to deploy both the quality policy and measurable quality objectives.

Recommendations

Top management fulfil their leadership role more effectively by;

- a. Understanding of how the quality management system (quality management system) relates to the financial management system through the common activity of measurement (ISO 10014);
- b. Each member of the leadership team being given responsibility for implementation of specific requirements of the standard;
- c. Quality management system objectives being set for the leadership team and then being deployed through the organization;
- d. Leadership understanding operation of the quality management system;
- e. Explaining to the people in the organization the value created by the quality management system by means of success stories.

Top management fulfil their leadership role by developing their competence in:

- Communication techniques;
- Objective setting as a means of engaging people;
- Management systems review;
- Coaching and guidance.

7.4 Customer focus (5.2 in ISO 9001)

Top management are required to ensure that customer requirements are met with the aim of enhancing customer satisfaction. Customers are often seen as a source of short term profits and future customer needs are not considered.

Recommendations

- a. Employees need to understand the connection between their jobs and delivery of a product or service that meets customer needs and expectations;
- b. To do this, top management should review customer satisfaction results regularly (see 8.2.1) and communicate results within the organization;
- c. The customer interface for departments such as engineering, shipping, finance and operations should be defined and the nature of interaction specified;

- d. Customers should be engaged in development and improvement of products and services through meetings, such as focus groups and these meetings should involve people in departments referred to in c above.

7.5 Quality policy (5.3 in ISO 9001)

Top management is required to document and communicate its commitment to establishing quality objectives, compliance with requirements, and to continual improvement. The statement should provide focus for people in an organization toward specific goals, policies, and practices. However, top management often do not communicate the quality policy statement and do not understand the value of the statement for involving the employees.

Recommendations

- a. Top management should discuss the quality policy with people;
- b. People should be shown links of the quality policy to the business and operations plan;
- c. Real life illustrations from the organization show this linkage;
- d. The connection between the policy and each person's activity and their role in the organization should be explained.

7.6 Planning (5.4 in ISO 9001)

Top management is required to ensure that measurable quality objectives, consistent with the quality policy, are established in the organization. They must plan the quality management system to meet these quality objectives.

However, the setting of quality objectives does not automatically involve people in their formulation and people are often unaware of how they contribute to the achievement of objectives. The quality management system is often isolated from the day to day management system of the organization. As a result objectives are often not seen to be relevant to the organization or its people.

Recommendations

- a. Employees' efforts should be aligned with the goals and objectives of the organization;
- b. Top management should explain setting and monitoring the achievement of objectives;
- c. Quality plans should be integrated with those of the business;
- d. The organization should involve its people in formulation and changes to quality objectives;
- e. Objectives should be explained in discussion with staff, in a way that all employees can understand;
- f. Objectives should be "SMART" (specific, measurable, relevant, achievable, and time related);
- g. Explanation should take consideration for the organization's culture and values;
- h. Performance management can be used for periodically reviewing objectives;
- i. Personal quality objectives for each staff member should be included in the periodic (often annual) employee appraisal;
- j. Quality should be a key performance indicator for all management staff and all staff.

7.7 Responsibility, authority and communication (5.5 in ISO 9001)

7.7.1 Responsibility and authority (5.5.1 in ISO 9001)

Top management is required to ensure that responsibilities and authorities are defined and communicated within the organization. Communication of responsibility and authority by top management is often ineffective. People can be made responsible without the authority to do the job.

Recommendations

- a. Roles & responsibilities should be explained in discussions with staff;
- b. There should be guidance to ensure authority levels are in balance with responsibilities assigned;
- c. There should be a balance between quality and other areas of responsibility;
- d. There should be a responsibility, for managers, that relates to people and their involvement.

7.7.2 Management representative (5.5.2 in ISO 9001)

Top management must also appoint a member of management who reports them on the performance of the quality management system. The management representative often has insufficient authority to carry out their role and inadequate time for it.

Recommendations

- a. Top management are ultimately responsible for the effectiveness of the quality management system;
- b. There should be guidance on competence criteria for the management representative and their responsibilities should be added to the job description with a precise figure for time commitment;
- c. The responsibility as management representative should not be delegated to a person at a junior level in the organization;
- d. In larger organizations, there should be a quality representative in each dept forming a cross functional team.

7.7.3 Communication (5.5.3 in ISO 9001)

Top management must ensure there is communication in the organization regarding the effectiveness of the quality management system. People often lack awareness of performance.

Recommendations

- a. Internal communications must be from top management to people, from people to top management, from people to people and from people to other stakeholders;
- b. Techniques such as 'team briefing' need to be used to improve communication;
- c. An organization needs a balance between communication techniques such as meetings, e mails, intranet etc.;
- d. There is a need to be aware of the organization's culture and values when planning the communication processes;
- e. Using methods such as social network analysis, the organization should evaluate the effectiveness of its various communication techniques on a regular basis. It should take corrective action where necessary.

7.8 Management review (5.6 in ISO 9001)

7.8.1 General (5.6.1 in ISO 9001)

Top management is required to periodically evaluate whether the quality management system is effective. This means assessing whether there is a need to change the quality policy or objectives and identifying opportunities for improvement.

Top management often does not see value in to this process. As a result management review can become a 'tick-the-box' activity and the objectives and policy of the organization do not change.

Recommendations

- a. Management review can be integrated with the financial review of business performance in order to provide relevance for top management;
- b. The review should include a review of the effectiveness of communications;
- c. The review should include a review of Involvement of people in the quality management system.

7.8.2 Review input (5.6.2 in ISO 9001)

The input to the review is required to include audit results, customer feedback and measurement results. Often management review is not linked to the daily operation of the business.

Recommendations

- a. There needs to be guidance on running effective meetings;
- b. People should be encouraged to make suggestions for change for consideration by top management.

7.8.3 Review Output (5.6.3 in ISO 9001)

Decisions and actions are the output of the review and relate to the improvement of the system, the processes and the product. Resource needs should be specified. Outputs are often not communicated effectively to people in the organization and leaders do not ensure availability of resources. The link between resource planning and management review is not well defined.

Recommendations

There should be effective communication of the results of the "review output" to all people within the quality management system.

7.9 Provision of resources (6.1 in ISO 9001)

The organization is required to provide the resources needed to implement, maintain and continually improve the quality management system.

There is often a lack of awareness of the knowledge resource that exists within the organization. This applies to both explicit knowledge, captured in company systems and documents, and tacit knowledge held by individuals in their heads. The resources required for the quality management system are often difficult to obtain and there is a lack of resources for employees for personal development (education, health, safety, etc).

Recommendations

- a. Knowledge needs to be recognized as a resource alongside money, people and time and the

organization should address knowledge management from a human perspective;

- b. In parallel with change planning (see 5.4.2), it should be recognised that knowledge resources are not used efficiently when moving people between processes and projects at short notice.

7.10 Human Resources (6.2 in ISO 9001)

7.10.1 General (6.2.1 in ISO 9001)

Personnel performing work affecting product quality are required to be competent.

Human resources planning together with a personnel development process and training process needs to be strategic and not tactical. Competences required are often not linked to the future needs of the business. There is also a need to address the recruitment process and also how an individual “fits” (eg. values and attitudes) within an organization.

Recommendations

- a. The organization should provide guidance on human resource planning, resource allocation and planning of peoples’ activities (especially across processes and projects);
- b. The recruitment process must specify competence criteria to be met when recruiting;
- c. The recruitment process should include evaluation of competences required and also how well an individual “fits” in an organization (eg. values and attitudes within an organization);
- d. Human resources planning needs to be strategic and not tactical.

7.10.2 Competence, awareness and training (6.2.2 in ISO 9001)

Competence is developed by identifying the competence needed for personnel to perform tasks and then providing training or taking other actions to develop the competence. The effectiveness of these actions is evaluated. Records of education, training, skills and experience are maintained. It is also ensured that personnel are aware of how they contribute to the achievement of objectives.

Training is often provided but without connection to the need for competence. Evaluation of the effectiveness of training and experience provided is often carried out in an ad-hoc manner.

People are frequently not aware of how their contribution is linked to strategic objectives (see 5.4).

Recommendations

- a. Peoples training needs should be analysed at regular intervals;
- b. The effectiveness of training provided should be assessed. ISO 10015 can be referenced as a way of planning, delivering and monitoring the effectiveness of training;
- c. Experience required, and which is not provided by formal training, should be addressed in a similar process to that for training;
- d. People’s roles in satisfying quality objectives should be communicated to them;
- e. Employees should be made aware of how they contribute to the results of the organization;
- f. The annual employee appraisal should be used to improve the awareness of the employees’ contribution;
- g. A performance management system should be linked to the training plans of the organization and department and performance evaluation aligned with the quality management system objectives;
- h. This should be addressed through performance management, team meetings, departmental and organization meetings;

- i. The performance evaluation needs to address the important items in quality management system implementation and orient people about aspects that are important to this objective;
- j. For certain activities certification of personnel may be necessary as a recognized qualification;
- k. Rewards and recognition should be aligned with quality management system implementation.

7.11 Infrastructure (6.3 in ISO 9001)

The organization has to maintain the infrastructure needed to achieve conformity. The process for providing infrastructure is improved by taking into account human factors for facilities and equipment through methodologies and disciplines such as ergonomics, social interaction and hygiene factors and through employee involvement in workplace design and selection.

People are frequently not trained in information technology skills such as 'system back up'.

Recommendations

1. Infrastructure should take into account human factors for facilities and equipment such as:
 - a. Ergonomics,
 - b. Social interaction and
 - c. Hygiene factors.
2. The organization should provide guidance on use of quality tools such as "Lean methodology" for employee involvement in:
 - a. Workplace design/redesign
 - b. Selection of machinery and equipment.
3. Training should be given on information technology skills and system back up.

7.12 Work environment (6.4 in ISO 9001)

The organization has to determine and manage the work environment needed to achieve conformity to product requirements. There is a lack of personnel involvement when defining the work environment needs and maintenance activity does not always consider human factors.

Recommendations

- a. There is a need for policy and training on equality and diversity and these will be key management challenges in the future (ISO 26000);
- b. People needs should be considered with regard to the work environment;
- c. Although not a requirement of ISO 9001, there should be an Occupational Health and Safety committee and people should be involved in removal of hazards and analysis of dangerous incidents;
- d. A people satisfaction survey is a valuable tool;

7.13 Planning of product realization (7.1 in ISO 9001)

The organization is required to plan and develop the processes needed for product realization and determine:

- a. Product requirements;
- b. Processes, documents, and resources needed;

- c. Criteria for product acceptance;
- d. Monitoring, verification and validation, required and the
- e. Records needed.

The output of this planning should be in a form suitable for the organization.

There is often a lack of Input from operations people in creating the operations plan and people do not think beyond their own departments.

Recommendations

- a. Planning meetings should include all affected persons and involve the customer representative, as appropriate;
- b. Affected people should be involved in process design and planning and this should be linked to the performance management system;
- c. Processes should be designed around people's needs in operating the process;
- d. Cross functional team working should be encouraged and process ownership training provided;
- e. Process design should include communication of requirements and the passing of work from one individual or function to another;
- f. Human resources should be balanced between the different stages of a process in order to avoid bottle necks;
- g. Integration of experiences over longer periods of time provides better solutions;

Involve people in techniques such as FMEA (Failure Mode and Effectiveness analysis) to effectively design processes.

7.14 Customer-related processes (7.2 in ISO 9001)

7.14.1 Determination of requirements related to the product (7.2.1 in ISO 9001)

The organization should determine customer requirements and statutory and regulatory requirements for the product. However, identification of requirements is often limited to the sales interface and employees are not all aware of customer requirements and their role in fulfilling them.

7.14.2 Review of requirements related to the product (7.2.2 in ISO 9001)

The organization ensures product requirements are defined and the organization has the ability to meet requirements. Where requirements change, the organization ensures that documents are amended and personnel are made aware of the change.

7.14.3 Customer communication (7.2.3 in ISO 9001)

The organization is required to communicate with customers on product information, order handling and customer feedback.

There is often a lack of understanding of customer requirements by those responsible for product realization and delivery due to a lack of consultation, communication and involvement with the customer. There is also a lack of understanding of legal obligations by operational staff.

(Also see 7.4).

Recommendations

- a. Areas other than sales should communicate with and be involved with the customer;
- b. Individuals that carry out activities that involve the customer should have special skills in order to assure that customer requirements are understood and communicated to the organization;
- c. Training should be provided to ensure effective communications with external parties regarding legal obligations for product realization, particularly consumer law and consumer protection;
- d. Internal communication related to customer complaints should be ensured;
- e. Feedback should be provided to the client and all personnel in the organization regarding the resolution of the complaints.

7.15 Design and development (7.3 in ISO 9001)

7.15.1 Design and development planning (7.3.1 in ISO 9001)

The organization is required to plan and control the design and development of product and determine the design stages and the review, verification and validation required at each stage, together with the responsibilities for design.

7.15.2 Design and development inputs (7.3.2 in ISO 9001)

Inputs requirements are determined and recorded and include functional requirements, statutory and regulatory requirements and information from similar designs. Inputs are reviewed for adequacy and ensured to not be in conflict.

7.15.3 Design and development outputs (7.3.3 in ISO 9001)

The outputs are verified against the inputs and approved prior to release. They should provide information for purchasing, production and service as well as contain product acceptance criteria, and the safety characteristics of the product.

7.15.4 Design and development review (7.3.4 in ISO 9001)

Reviews are performed in accordance with the plan (see 7.3.1) to evaluate the ability to meet requirements, and to identify any problems for action. Reviews include functions concerned with the design stage(s) being reviewed.

7.15.5 Design and development verification (7.3.5. in ISO 9001)

Verification should be performed in accordance with planned arrangements (see 7.3.1) to ensure that the design and development outputs have met the design and development input requirements.

7.15.6 Design and development validation (7.3.6 in ISO 9001)

Validation is performed in accordance with the plan (see 7.3.1). Where practicable, validation is completed prior to the delivery.

7.15.7 Control of design and development changes (7.3.7 in ISO 9001)

Changes are identified and records maintained. Changes are reviewed, verified and validated, and approved before implementation.

Design and development usually requires expertise from multiple functions of the organization and should involve people from areas outside the design department (eg. sales, marketing and production). Failure to do this can lead to a lack of agreement on design inputs from the various people in the organization. Design stages are often not clearly identified by the people involved in the process and responsibilities and authorities are often not adequately defined. There can be poor communication between people involved in the stages of the design process and other stakeholders (see 7.3.2 and 7.3.3). People chosen to take part in design reviews are not always the most appropriate to evaluate suitability.

A lack of consideration of the people who will use the output from the design process ("internal customers") can lead to products which are difficult to use. There is a tendency for designers to concentrate on product features rather than the benefit to the user.

Recommendations

- a. Ensure effective communication of needs and wants between customer and the organization;
- b. Design stages should be clearly identified for people involved in the design process;
- c. Design responsibilities and authorities should be defined for all people involved;
- d. The design verification and validation activities should be explained to people;
- e. Involvement of people other than designers is required to identify design problems and possible solutions;
- f. Train people for innovation and have innovation as a key performance indicator for staff;
- g. Select people to take part in design reviews who have competences outside the design function;
- h. Ensure effective communications between individuals of various disciplines involved in design;
- i. People should understand the benefit of the new product/service to the user(s) rather than just product features.

7.16 Purchasing (7.4 in ISO 9001)

7.16.1 Purchasing process (7.4.1 in ISO 9001)

The control applied to the supplier depends on the impact of the purchase on product realization. Suppliers are evaluated and selected based on their ability to supply the organization's requirements.

7.16.2 Purchasing information (7.4.2 in ISO 9001)

Purchasing information describes the product to be purchased. There is often a disconnection between the people's role in supplier selection and the users of the purchased goods/services.

7.16.3 Verification of purchased product (7.4.3 in ISO 9001)

The organization is required to ensure that purchased product meets requirements. Communication of information to suppliers is sometimes inadequate, leading to problems with purchased product.

Recommendations

- a. People within the organization should understand and be able to apply the principle 'mutually beneficial supplier relationships' upon which ISO 9001:2000 is based;
- b. The organization's operational processes should be shown to the supplier's design and operations people, as well as the sales people;
- c. People within subcontractors who are directly involved in supplying the service should be included in the organization's briefing sessions;

- d. Supplier performance should be explained in discussion with staff;
- e. Leadership should then monitor that supplier decisions are based on overall quality performance;
- f. It should be ensured that personnel communicate with suppliers and link this to effective process design and cross functional team working.

7.17 Production and service provision (7.5 in ISO 9001)

7.17.1 Control of production and service provision (7.5.1 in ISO 9001)

The organization is required to plan and carry out production and service provision under controlled conditions.

7.17.2 Validation of processes for production and service provision (7.5.2 in ISO 9001)

The organization is required to validate any processes for production and service provision where the resulting output cannot be verified by subsequent monitoring or measurement.

7.17.3 Identification and traceability (7.5.3 in ISO 9001)

Where appropriate, it is required to identify the product and the product status throughout product realization.

7.17.4 Customer property (7.5.4 in ISO 9001)

It is required to identify, verify, protect and safeguard customer property. If any customer property is lost, damaged or found to be unsuitable for use, this is required to be reported to the customer. Customer property can include intellectual property.

7.17.5 Preservation of product (7.5.5 in ISO 9001)

The organization is required to preserve the conformity of product during internal processing and delivery to the intended destination.

Critical product characteristics are often not communicated effectively to the workforce and work instructions are not always understood by the workforce. Equipment selection should take into account ergonomics (see 7.12).

There is often a lack of involvement of workforce in the development of process capability and a lack of understanding of process validation by personnel.

There is often a lack of concern for protecting "intellectual property" of customers

Recommendations

- a. People should be encouraged to work as autonomously as possible;
- b. People should be involved in creating their own work instructions;
- c. Guidance should be provided and people should be involved in process design and process validation;
- d. Equipment selection should take into account ergonomics (see 7.12);
- e. Training programmes should be developed and trainers engaged for introduction of new processes;
- f. Critical product characteristics should be communicated effectively to the workforce;

- g. Suggestions should be collected about approaches to “due care” with regards to customer property including control of intellectual property or sensitive information;
- h. Employees should be certified for critical processes and operations.

7.18 Control of monitoring and measuring devices (7.6 in ISO 9001)

The organization is required to determine the monitoring and measurement to be undertaken and the monitoring and measuring devices needed to provide evidence of conformity of product to determined requirements (see 7.14.1).

Calibration is often carried out by independent people (calibration houses) – taking ownership away from the workforce producing product. People are often unaware of the importance and consequences of calibration.

Training on calibration can be inadequate.

Recommendations

- 1. Calibration is often carried out by independent people (calibration houses); – personnel using instruments should be involved so as to understand the calibration process;
- 2. People should be made aware of the importance and consequences of calibration;
- 3. Although not a requirement, organizations should address the issue of human calibration such as with taste panelists.

7.19 Measurement, analysis and improvement - General (8.1 in ISO 9001)

The organization is required to plan and implement monitoring, measurement, analysis and improvement processes.

People who measure and monitor products and processes are sources of additional data and information for the measurement plan and often not considered. People often do not have the necessary skills to be able to improve processes.

Recommendations

- a. People should be involved in the selection of what is to be measured on processes for which they have responsibility;
- b. The measures that are selected should enable people to improve the performance of their process;
- c. People must be trained to understand measurement, analysis, and improvement;
- d. They should be shown how their measurements contribute to the measurement of the overall performance of the organization;
- e. Training should be provided in quality tools and techniques – particularly the basic tools such as histograms, flow charts, Pareto diagrams, cause-and-effect diagrams and check sheets;
- f. The responsibilities in 5.5.1 should include measuring and monitoring responsibilities.

7.20 Monitoring and measurement (8.2 in ISO 9001)

7.20.1 Customer satisfaction (8.2.1 in ISO 9001)

The organization is required to monitor information relating to customer perception as to whether the organization has met customer requirements. When customer surveys are conducted response rates are typically very low leading to invalid conclusions. Groups of people such as those in call centres, customer assistance and front line attendance in services are frequently not involved in customer satisfaction measurement.

Recommendations

- a. There is a need for training in understanding customer satisfaction;
- b. There is an opportunity to include suggestions about how to approach customer satisfaction measurement with organization wide “meetings” with comments from customers being the theme (ISO 10004);
- c. Information should be available for people as to what is expected and what is monitored for customer satisfaction;
- d. Tools for measuring external/internal customer satisfaction need to be addressed;
- e. As a step to achieving customer satisfaction the internal customer should be treated in the same way as an external customer.

7.20.2 Internal audit (8.2.2 in ISO 9001)

The organization is required to conduct internal audits at planned intervals to determine whether the quality management system is effectively implemented and maintained.

Audits are often seen as threatening and intrusive and are not seen as adding value. The internal auditor is often not seen as a partner who is part of the organization. Often internal auditors do not have the necessary interpersonal skills to assess the effectiveness of processes.

There is frequently a lack of ownership by management of the results of audits.

Recommendations

- a. The cross functional audit team is a major opportunity;
- b. People from different departments on the audit team and with different levels of seniority enable the team to be seen as representative of the whole organization;
- c. Staff should be given the opportunity to act as lead auditor;
- d. Guidance should be provided on people aspects of auditing and the role of auditing in communicating the effectiveness of the quality system to top management;
- e. The organization should ensure top management owns audit results;
- f. Competence of the internal auditor is often an issue and training and mentoring as well as education should be provided.

7.20.3 Monitoring and measurement of processes (8.2.3 in ISO 9001)

The organization is required to monitor and measure quality management system processes and demonstrate the ability to achieve planned results. When results are not achieved, corrective action is to be taken.

Process monitoring is one of the cornerstones in the quality system and is often poorly executed due to unclear deployment. There is often a lack of connection between process non conformance and corrective action.

The monitoring and measurement activity rarely considers the aspects of a process such as work conditions, people competence, people relationships, people management and health.

Process analysis skills and training in quality tools is often lacking in the people who are working with the process.

Recommendations

- a. The link from process measures to corrective action should be explained;
- b. Guidance on setting objectives and on obtaining customer needs and wants should be provided;
- c. Responsibilities for monitoring and measurement of processes should be clearly specified and training in quality tools should be provided (see 7.19);
- d. The process owner should be responsible for monitoring the process;
- e. 'Leading and lagging indicator's for measurement should be developed by the people involved in a given process.

7.20.4 Monitoring and measurement of product (8.2.4 in ISO 9001)

The organization is required to monitor and measure the characteristics of a product to verify that product requirements have been met. Records are required to indicate the person(s) authorizing release of product. Inspection is often seen by people as 'policing'. There is often a disconnect between product monitoring and the fulfilment of customer requirements. A lack of ownership of product monitoring can occur due to conflict with production leading to customer requirements being overridden.

Recommendations

- a. The software technique of 'triaging' can provide guidance here;
- b. Inspection is often seen by people as 'policing' and the relationship between the 'producer' and the 'checker' should be developed.

7.21 Control of nonconforming product (8.3 in ISO 9001)

The organization is required to ensure that product which does not conform to product requirements is identified and controlled to prevent its unintended use or delivery. The controls and related responsibilities and authorities for dealing with nonconforming product need to be defined in a documented procedure.

People are often unclear about what is nonconforming product. This is especially true in service organizations. Often the person with authority for dealing with nonconforming product is also not clear. As a result the decision process does not lead to effective corrective action to prevent recurrence.

Recommendations

- a. Provide guidance to people on identifying types of non-conforming product and associated risks in both product and service industries;
- b. Involve relevant people in developing the process to identify non conforming product and dealing with it;
- c. Involve people who are responsible for the process which identifies non conforming product in writing the procedure;
- d. Use Information and training sessions regarding nonconformity to address this.

7.22 Analysis of data (8.4 in ISO 9001)

The organization is required to collect and analyze data to demonstrate the effectiveness of the quality management system and to evaluate where continual improvement can be made.

There is often a lack of competence in data analysis techniques. Data analysis is seen as time consuming instead of being an initiator of improvement. Data analysis is often seen as an isolated and specialist activity and not as a necessary part of operating a process.

Recommendations

- a. The results of data analysis should be explained to people and not just issued as a document;
- b. Training should be provided in quality tools and techniques, together with guidance on the concept of variation;
- c. People should be provided with training in solution of problems;
- d. Competence in measurement and reading data should be developed.

7.23 Improvement (8.5 in ISO 9001)**7.23.1 Continual improvement (8.5.1 in ISO 9001)**

The organization is required to continually improve the effectiveness of the quality management system.

Continual improvement is often managed by a small group of specialists in the organization and companies do not share information. There is little emphasis on total involvement and communication to achieve continual improvement.

There is often poor linkage between continual improvement and management review, there is a lack of commitment to improvement and improvement is not built into the framework or culture of the organization.

Recommendations

- a. A flow chart should be developed explaining the linkage of management review to continual improvement;
- b. The organization's leaders should establish improvement programmes, involving people across functions.

7.23.2 Corrective action (8.5.2 in ISO 9001)

The organization is required to take action to eliminate the cause of nonconformities in order to prevent recurrence. Corrective actions should be appropriate to the effects of the nonconformities encountered.

Corrective action has poor linkage to control of non-conforming product (see 7.21) and data is not gathered effectively for analysis (see 7.22). Root causes of problems are rarely identified and human factors in mistakes are rarely assessed. There is rarely an effective review of corrective action.

Recommendations

- a. Training in investigation of root cause should use a structured method and employ knowledge gained from measurement;
- b. This should be supported by training in quality tools and techniques;
- c. There should be an understanding of human aspects of mistakes;
- d. There should be an understanding of the use of 'collective wisdom' in the organization for solving problems;
- e. It should be spelled out clearly that managing process improvement is the task of the process owners;
- f. The use of cross functional teams for improvement projects is a well documented approach here.

7.23.3 Preventive action (8.5.3 in ISO 9001)

The organization is required to determine action to eliminate the causes of potential nonconformities in order to prevent their occurrence. Preventive action is to be appropriate to the effects of the potential problems.

There is a lack of understanding of the concept of preventive action by people in the organization and opportunities for identifying actions to prevent nonconformity are rarely identified. As a result there is often no link between preventive action and analysis of data (i.e. when a process is trending in the wrong direction).

Recommendations

- a. The concept that preventive action is appropriate when a process is trending in the wrong direction should be explained to people;
- b. The importance of the link between preventive action and analysis of data should be explained to people;
- c. The value of prevention over correction should be explained to people.

Annex A

(Informative)

Human factors of quality management

A.1 General

Implementation of ISO 9001 is frequently impeded by a lack of participation of the people in an organization and a lack of awareness of the 'human factors of quality management'. For successful operation a quality management system must balance process, people and technology.

The following 'human factors of quality management' should be addressed to increase participation and competence of the people in an organization. Developing the 'human factors of quality management' in an organization enables an organization to pursue strategies to strengthen areas of the organization's performance where it has identified weaknesses. A matrix is provided at the end of clause 5 which shows where a particular 'human factor' has the greatest influence on a given ISO 9001 requirement.

A.2 Change management

Change management is the process of successfully moving from one organizational state to another. For every change, there is a need to effectively manage the process from one state to another.

The ability to make a change in an organization is influenced by the attitudes and behaviors of those affected by the change. To effectively understand change management, we need to investigate these attitudes and values which form the intentions that we have in relation to the different actions or behavior.

These attitudes are developed by our interaction with the environment and other influences affecting the individual.

The extent to which these attitudes affect behavior depends on the underlying attitudes in relation to the specific action or behavior and the relative influence of factors such as incentives, barriers, information and awareness about different choices or courses of action.

The feedback loop from behavior to underlying attitudes, values and aspirations is illustrated in figure A.1.

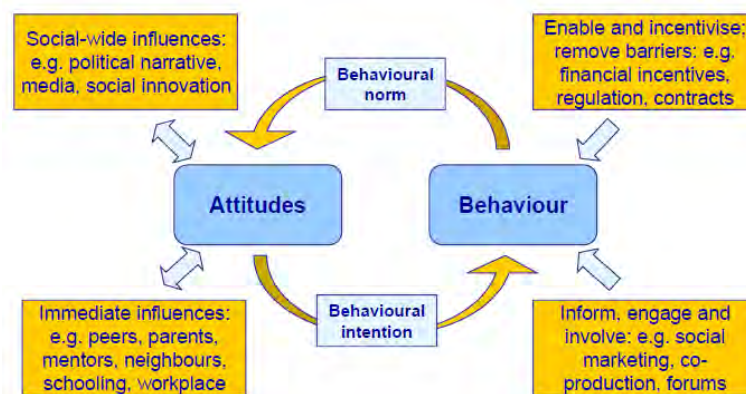


Figure A.1 – Feedback loop from behaviour to underlying attitudes, values and aspirations

Our behavior becomes the norm and adapts our attitudes and values.

The extent to which an individual's action affects others is another challenge. The time period over which diffusion of ideas and innovations occurs is thought to be dependent on a number of factors:

- The perceived benefits / improvements that may result from the change;
- How well the change would fit with the current system;
- How easily will people understand the change;
- The ability to assess the improvements that may result from the change.

Change management enables an organization to predict the key issues and barriers to accelerate change and minimize organizational disruption.

The process of determining an organization's readiness for change focuses on identifying barriers to change initiatives as well as aspects of the organization that can be leveraged to accelerate successful change.

Some pitfalls to avoid:

- The tendency to avoid behavior when there is missing information;
- Under-estimating events that may occur;
- Developing habits which are difficult to change;
- Not making short term investment when it may lead to long term gains;
- Thinking that action is worse than inaction even if the result would be the same.

It is more difficult to predict behavior when attitudes, values or aspirations are in conflict. Finally, willingness to make changes indicates management's commitment to continual improvement.

Relationship to ISO 9001:

- Quality management system planning (ISO 9001, 5.4);
- Planning of product realization (ISO 9001, 7.1);
- Improvement (ISO 9001, 8.5).

Benefits/Outcomes

The benefits of effective change management include:

- Creating an organizational structure that is aligned with new strategies and processes;
- Having jobs and skill sets that support the new organizational direction;
- Employing effective communications strategies;
- Ensuring customers, suppliers and other stakeholders understand and support the effort;
- Minimizing resistance to change.

A.3 Communication

Communication is vital for the sustained success of an organization and then, it is important to understand the process for its effectiveness.

Communication is a process of transferring information between a sender and a receiver. The sender and receiver could be anyone within and outside the organization. Examples of communication:

Internal:

- Top down – from leaders, managers to transmit vision, mission, objectives, directives, policy etc;
- Bottom up – information of performance, understanding of top down communication, feedback of employees' satisfaction or desires/ needs etc;
- Cross function among groups – process approach, input and output;
- Among individuals – social or professional exchange experience, to share information and learning.

External:

- Customers – share information as a partnership approach, customer unwritten requirements, organization capability to provide products and services, mutual benefits ...;
- Suppliers - share information as a partnership approach, organization unwritten requirements, supplier capability for provide products and services, mutual benefits...;
- Society – understanding of mutual benefits, cooperation between organization and society.

There are different purposes for communication that influence the media and the way it is done. Example:

- To manage change;
- To motivate;
- To transmit orders;
- To show the performance of organization;
- For training.

To achieve any one above may require many different communication methods.

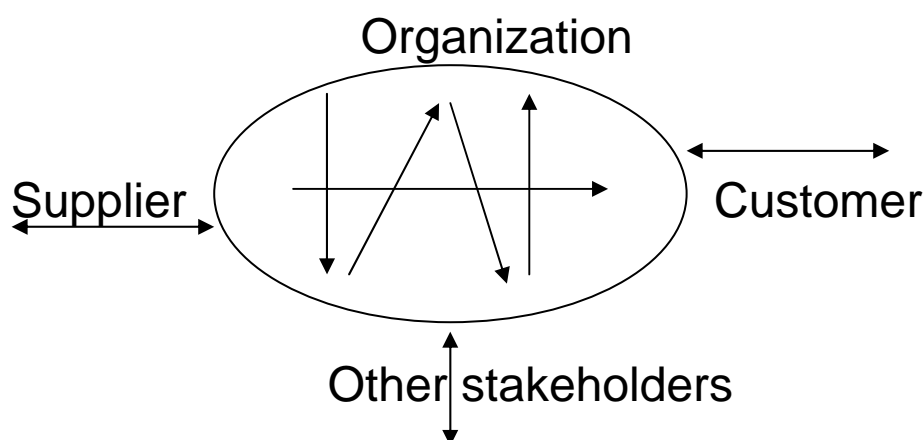
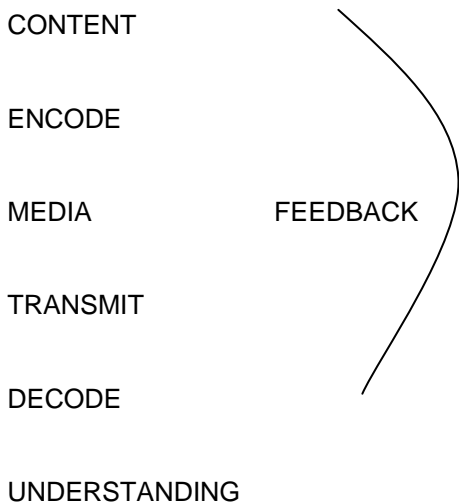


Figure A.2 – Communication directions in an organization

Quality of Communication

In order to have effective communication it is important to consider some aspects, such as:

- Relevancy. The communication needs to be relevant to the receiver. It is therefore important that we carefully select the language that we use;
- Simplicity. How often have you read or heard a communication and thought "what did that mean?". When communicating we should encode our message in the simplest possible terms. This includes reducing the number of words, symbols or gestures used;
- Organization. Before encoding our message, it is important for us to think it through ie "what am I trying to get across?". We can then organise the communication into a series of points ensuring that we complete each point before proceeding to the next;
- Repetition. Especially in spoken communications, our message is not always clearly heard or understood the first time. It is therefore important that we restate key points at least twice;
- Focus. It is important to concentrate on the key meaning of the communication avoiding any unnecessary detail.



Communication is the articulation of a message, through different media. The media may be verbal or non-verbal, as long as the transmission involves an idea, gesture, action, etc. It is important to choose the correct media for each message considering the audience it is for. For example: Face to face; the organization to the employees; newsletter; CEO-blog and comments of employees; e-mail to everyone; customer and supply conference; open day events; videoconference; meetings for specific matter.

Key Benefits

An effective communication provides, for all inside the organization, that there is worked for common objectives and improvement of synergy in activities moving the organization ahead.

Avoid misunderstanding and make the tasks easier and profitable.

Relationship to 9001:
5.3.d; 5.4.1; 5.5.2.c; 5.5.3; 7.2.3; 7.4.2

A.4 Competence

Competence enables individuals to perform tasks in the workplace and achieve required results. An individual is competent when they are able to perform a task and achieve the results required in the required time.

Evaluation of competence requires finding whether the individual can achieve predefined results considered necessary for performing a given role.

Competence results from a combination of knowledge and skills, and is affected by an individual's attitude leading to behavior and actions by an individual in order to carry out an activity.

A 'level of competence', demonstrated by a document such as a trade certificate, operating license or professional certification, is referred to as a "Qualification". Qualifications are historically fixed and become part of an individual's record, but competence may vary and therefore should be periodically reassessed depending on:

- The complexity of the operation;
- The associated risks;
- Changing circumstances, including advances in technology.

Individuals within an organization should possess the competence for handling the following aspects of an assignment:

- Theory and information (knowledge);
- Methods.

By ensuring people are competent for their assigned roles, organizations are able to achieve the outcomes expected by relevant stakeholders.

Key benefits

An organization which employs competent individuals is able to meet its targets more consistently as a result of being able to predict the outcome of work more reliably. As a result of employing competent people an organization will have less reworking of its products and services.

Relationship to ISO 9001
6.2, 4.1.1, 7.5.1

A.5 Creativity and innovation

Creativity and Innovation are different activities.

Creativity is the process of producing new ideas, while innovation is the process of both creating and applying such creative ideas.

In the context of an organization, the term innovation refers to the entire process by which individuals or groups generate creative new ideas and convert them into commercial products, services, and business practices.

Creativity by individuals and teams is a starting point for innovation; creativity is a necessary but not sufficient factor to enable innovation.

The process

It is important to view innovation as a process. It is generally recognised that the following steps exist in the innovation process:

- Identifying the opportunity (necessity is the mother of invention);
- linking those opportunities to solutions;
- turning ideas into practical solutions;
- implementing solutions.

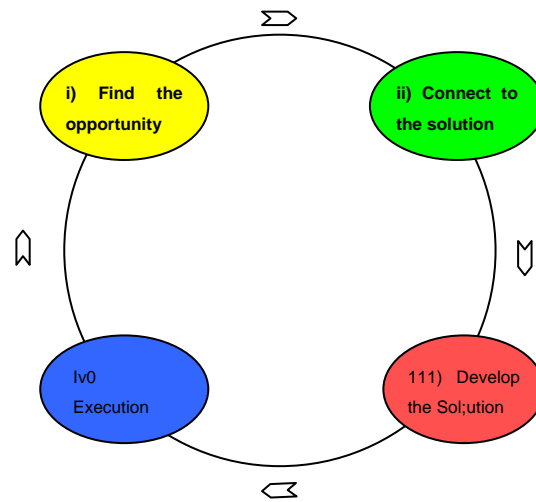


Figure A.3 - People in the Innovation Process

Most innovations build on a lot of previous experience and are the result of collective knowledge. Successful Innovation results from a high degree of people involvement.

The early steps of the innovation process require creativity and creative ideas and are best obtained from collective knowledge. Collective knowledge can be accessed through techniques such as brainstorming and networking.

The nature of the contribution that people make to the innovation process changes through the process.

Step 1: Finding the opportunity

At the start of the innovation process, ‘Opportunity Creators’ are the type of people who find an unsatisfied need. They explore, interact and take notes. Ideally they will find markets with no competition. These people often find their best opportunities from secondary connections. Their networks need to be dispersed.

Step 2: Finding the solution

Connectors are people who define the problem and “Connect” to Solutions often by connecting with other industries. ‘Connector’ networks again are dispersed. They need to get lots of ideas and ‘epiphanies’ comes from hard work not magic insights.

Step 3: Making the solution user friendly (develop the solution)

This is where solutions are selected and focus is narrowed. The job of the developer is to make the solution user friendly. This is where customer and consumer networking becomes critical. This stage of the process requires a more ‘closed’ network.

Step 4: Execution

As with development, a closed network ensures a rapid delivery process.

Innovation networks

There are two types of networks. The open network is about sharing knowledge and the closed network about making things happen.

The open network

The first two steps of the innovation process are about sharing and growing knowledge. To find opportunities and conceptual solutions people need to work in a diverse, dispersed network. People can be those who may not yet be customers, who may not yet be business partners and definitely people in other disciplines. Innovation breakthroughs occur at the intersection of different bodies of knowledge. It is that “spark of ingenuity”.

The closed network

The closed network or “cluster” has its place in the world of the innovator but in the later ‘development’ and ‘execution’ steps of innovation. This ‘cluster’ type of network which is like a group of friends will normally have a very high level of trust and collaboration.

Key benefits

Applying creativity and innovation inside the organization enables the improvement of existing processes and products and new products and services for the market.

Relationship to ISO 9001:

8.5, 7.1, 7.3

A.6 Organizational culture

A quality culture starts with managers who understand and believe the implications of the systems view and the necessity of satisfying customers. An organization’s cultural values determine its quality and performance.

Description of the human factor

Schein (1984:237) defines organizational culture as *the pattern of basic assumptions, that a given group has invented, discovered or developed in learning to cope with its problems of external adaptation and internal integration, and that has worked well enough to be considered valid and therefore is to be taught to new members as the correct way to perceive, think and feel in relation to those problems.*

Nature of organizational culture

Organizational culture refers to the patterns of beliefs, values and learned ways of coping with experience that have developed during the course of an organization’s history and which tend to be manifested in its material arrangements and the behaviour of its members. Culture is created through norm formation around critical incidents such as mistakes and identification with leaders, what leaders pay attention to, resource allocation, and how leaders react to critical incidents.

Culture is both unconscious (values, behavioural norms) and observable (artefacts). It consists of behavioural norms (the way people should behave) and organizational values (the things that are highly valued). Cultural differences are apparent mainly in values. This human factor seems to determine the identity of a group the same way that personality determines the identity of an individual.

Culture influences the manner in which people behave in their organizations. In any given situation an individual's behaviour is decided by their personal values and the organization's culture. There are times when the values are not aligned with the organization's culture and one or other will prevail. The relative strength of the organizational culture tends to decide this.

Elements of culture

Culture is now considered a framework for organizational change. Its main elements are:

- leadership;
- employee involvement and empowerment;
- teamwork;
- customer focus;
- mutually beneficial supplier relationships.

Organizational culture change

In the process of changing culture, three issues exist:

1. How to maintain the elements of culture which are beneficial;
2. How to integrate, blend or at least align the various sub-cultures and
3. How to identify and change those cultural elements that are not beneficial.

Key benefits

Organizational culture affects organizational performance. It does not exist in isolation and changes in organizational culture can affect other organizational dimensions and similarly changes in other organizational dimensions can affect organizational culture.

Relationship to ISO 9001:
5.5.1, 5.5.3, 6.4

A.7 Networking and Collaboration

There are two principle types of networks. One is about sharing knowledge and the other about making things happen.

The open network is suited to finding opportunities and conceptual solutions. For this to work a network must be diverse and dispersed. It should contain people, who may not yet be customers, people who may not yet be business partners and definitely people in other disciplines. Innovative breakthroughs frequently occur at the intersection of different bodies of knowledge.

Having a lot of people doesn't necessarily create a good network and that a sparser, well distributed network is best for getting new ideas. The really interesting thing we are learning is that indirect contacts or 'two degrees of separation' produce the most valuable knowledge.

For example, it has been shown that people who are job hunting are far more likely to find a job through a "friend of a friend" than through any other source, whether direct friends or job advertisements.

This "open" but private network has great value when compared to the internet. It is your private and personal network and so ideas are contained and captured. You can handle intellectual property far more easily when you are the "hub" of this type of private network. On the other hand if you travel the internet for solutions then someone else will have that solution as well. In fact, many others will have that solution.

The closed network is easier to form. We naturally gravitate to people with similar backgrounds. However, the knowledge exchanged between such small groups of familiar people is more focused and higher volume. This

dense network or “cluster” has its place in the later ‘Execution’ stages of an idea. This ‘cluster’ type of network which is like your immediate group of friends will normally have a very high level of trust and collaboration.

Collaboration is eventually the outcome of networking. However, collaboration has a very high failure rate. A major reason for failure in collaboration is the focus on legal and financial aspects of the alliance to the exclusion of the relationship and resourcing aspects. Building trust is essential to success and that trust builds when behavior follows expected patterns and patterns which the other party understands.

An alliance is normally formed because each party brings an asset, whether it is market, intellectual property or technology. It is important to recognize that the other partner will probably not understand your technology if that is what you bring to the party. If the other partner brings market opportunity you need to take time to understand that.

We generally lack diversity in our personal network. We repeat this practice in our organization with our recruitment policy and engage new people who are similar to ourselves. For successful innovation we need diversity of experience in our network.

Networks are a great way of accessing skills and knowledge you don’t have and a great way of sending messages that are important. Your messages may appear to be ‘public’ but when compared to the internet they are very private.

You start the traffic by giving. You need to give something interesting. It may be business related or personal. It will be electronic and so is likely to be information that a person would value. It may well be different for different people.

Relationship to ISO 9001:
5.5.3, 7.2, 7.4

A.8 Education and learning

Learning is the process of acquiring knowledge, attitudes or skills from study, instruction or experience. This process may apply to an individual or collectively to an organization.

The learning organization focuses on enhancing its systems to continually increase the organization's capacity for performance.

In order to be useful, organizational learning must result in a change to behavior that is superior to the organization’s original behavior. The process begins with individual learning, which can lead to organizational learning.

Individual learning

Many individuals do not progress beyond acquiring knowledge. They become ‘sources of knowledge’. To have value, learning must be applied and the application of learning is often referred to as demonstrating competence.

Successful individuals apply their knowledge in a way that creates value for themselves and others. Their knowledge flows out from them in a way that ‘makes a difference’. They are ‘competent’ and are strongly positioned to create value for an organization. It is essential to develop information flow in order to enable learning.

Organizational learning

Organizations must be competent to be competitive. To achieve the necessary flow of information and knowledge to become a learning organization, the organization’s processes need to come together as a management system. An organization’s ability to learn makes it more competitive.

With reference to specific projects, there are different times during which learning can occur.

- 'Learning before' starts by looking at lessons from past projects;
- 'Learning during' a project consists of continuously reviewing progress; and
- 'Learning after' a project is carried out consists of drawing together general reflections and lessons for the future.

The learning process

1. Identify the learning needs

The key steps in needs assessment are:

- Identification of learning gaps. Identifying the gaps between current and desirable practice and selecting areas that need to be addressed;
- Analysis of learning gaps;
Analyzing the gaps and determining what is causing them;
- Bridging of learning gaps:
Identifying ways of satisfying the learning needs.

Note: The methods employed for identifying learning gaps should be consistent with those that will be employed for evaluating the effectiveness of the learning process. For a list of suggested methods please see item 3 of the learning process; "evaluate effectiveness".

2. Decide and employ the learning methodology

Typical approaches to learning include:

- Rote learning
Memorization of material so that it can be recalled by the learner, exactly the way it was read or heard.
- Informal learning
Learning through the experience of day-to-day situations, such as the exchange of ideas with individuals of similar interests.
- Formal learning
Learning that takes place within a teacher-student relationship
- Combination learning
At times a combination of the above approaches provides a more effective outcome.

3. Evaluate effectiveness

The evaluation of the effectiveness of the learning process can be either planned or informal. Typical methods include:

- Personal observation;
- Feedback from others;
- Comparison with other trainees;
- Customer feedback;
- Performance appraisal;
- Reviewing documentation;
- Trainee self assessment;
- Testing;

- Trainee reflection on practice;
- Questionnaires.

Analyzing information from such sources will enable the user to assess individual and organizational learning needs accurately and efficiently.

The organization may not need to employ these approaches all of the time. However, the more of these tools that are used, the easier it will be to build up a profile for the trainee or for the organization in general.

Learning obstacles

Several factors (culture, control, and politics) can make the transformation of learning into action difficult. The impact of these factors can lead to:

- Uncertainty about the value of organizational learning;
- The difficulty of relating organization performance to learning;
- The problems of measuring the effects of organizational learning.

It is important to be aware of these and other potential obstacles and deal with these appropriately to the degree that they impact the individual and/or organizational learning objectives.

Benefits/outcomes

Some of the tangible benefits of an effective learning process are:

- Improvement in staff morale and job satisfaction;
- Increase in staff retention – bringing a significant cost saving – and reduced staff turnover;
- Improvement in 'soft skills' such as communication;
- Better customer service;
- Improvement in product (and service) quality;
- Good worker safety practices;
- Better time management;
- Increased efficiency;
- Increased customer satisfaction;
- Increased competitiveness and profitability (as applicable);
- Job security.

Relationship to ISO 9001:
6.2, 5.5.1

A.9 Empowerment

Empowerment is the process that provides employees with the authority and ability to make decisions about their work.

Organizations have experienced problems developing empowerment because they believe this is something that one individual does for another. People think that "someone," usually the manager, has to bestow empowerment on the people who report to them. Empowerment is more the process of an individual enabling themselves to take action and control their own work and decision making. Empowerment comes from the individual.

For empowerment to succeed an organization has to create a work environment which fosters the desire and ability of employees to control their own work and decision making. The organization must remove barriers that restrict the ability of staff to control their own work.

To develop empowerment in an organization it is first necessary to assess:

- the maturity of organizational management,
- organizational structure, and
- Human resources management.

Empowerment occurs by allowing people power, freedom and the information that enables them to take decisions and actively participate in the organization's activities. Autonomous teams and participative and open cultures enable the sharing of power with employees. The reduction in centralized control enables organizational agility and the ability of people to make independent decisions.

Empowerment depends on four key factors:

1. Power – This means delegating authority and responsibility, giving trust to people, and giving freedom of action to them;
2. Motivation – Continuously providing the incentive for people to act autonomously, recognizing good performance, rewarding results and celebrating the goals reached;
3. Development – Providing resources to develop people's competence and personal and professional ability. This means continually training, providing complete knowledge and information about their work and teaching new techniques continually;
4. Leadership – Providing leadership in the organization. It means orienting people, defining objectives and goals, opening new perspectives, measuring performance and giving feedback.

Empowerment develops from a low to a high level of power in both individuals and teams. When this level is high, high performance teams are realized. The excellent dynamics in high performance teams leads to improved results.

Knowledge-based enterprises are often characterized by flat structures and multi-skilled workforce. Managers assume more leadership and coaching tasks and provide employees with resources and working conditions they need to accomplish the goals they've agreed to. This can be seen as managers working for their staff, and not the reverse. Involvement in an organization is no longer a one-way street.

Empowerment enhances learning. A critical feature of successful teams is that they are invested with a significant degree of empowerment, or decision-making authority.

Equally important, employee empowerment changes the managers' mind-set and leaves them with more time to engage in broad-based thinking, visioning, and nurturing. This intelligent and productive division of duties between visionary leaders, focusing on emerging opportunities, and empowered employees, running the business unit day to day (with oversight on the leader's part) provides for a well-managed enterprise with strong growth potential.

Benefits

Employee empowerment helps employees own their work and take responsibility for their results.

Outcomes

Employee empowerment helps employees serve customers at the level of the organization where the customer interface exists.

Relationship to ISO 9001:
5.5, 8.5

A.10 Exploration – experimentation – failure acknowledgement

Exploration is often the victim of 'good time management'. The focus on process efficiency in operations has extended to all aspects of business life. Archimedes moment of 'Eureka' was when he was having a bath. The best ideas will come when they are allowed to emerge instead of forcing them. There must be time to 'bathe and relax'.

Allow teams, to step out of the box and explore. Leadership teams have 'retreats'. Everyone must step out of the box. New experiences broaden perspectives. They also enable new opportunities to be seen. Allow time to step back from experiences.

Organizations frequently keep employees in a well defined area where they have proven capability and operate effectively. There is a reluctance to move people to a place where they are not necessarily fully competent. This leads people to do the same job for a long time and they may get in a rut or may become happy in a comfort zone.

Experiential learning requires no teacher and is based on the individual's direct experience. For successful experiential learning:

1. The learner must be willing to be actively involved;
2. The learner must be able to afterwards reflect on the experience;
3. The learner must be able to conceptualize the experience; and
4. The learner must decide to use the new ideas gained from the experience.

Experiences do not automatically lead to learning. An example is the lecture many students have during formal education. While the content of the course might be "physics" the experiential learning becomes "I hate physics." Preferably, the student should have learned "I hate poor lectures."

Experiential learning can be problematic as the experience can distort education and disable an otherwise capable learner. There are frequent examples of this leading to prejudice and stereotypes.

Key Benefits

Good judgement comes from experience which comes from bad judgement.

A.11 Recognition and rewards

The purpose of recognition (and reward as one form of recognition) is to reinforce good behaviour. Rewards can be intrinsic (internal) or extrinsic (external). Internal rewards are those an individual receives in the form of personal satisfaction for a job well done. External recognition (and rewards) can be monetary or non-monetary, formal or informal, individual or group. Sincere non-monetary recognition may be valued more by employees than money or gifts which may often create resentment.

Note: Throughout this clause we describe recognition for employees. Some organizations also recognize the contribution of others outside such as suppliers and outsourced workers. The principles apply in the same way.

Recognition and rewards should be tailored to the specific needs and wants of the employee segment. A combination of financial and non financial recognition works well for some people; for others solely financial rewards may be more successful.

Key Practices:

1. Giving both individual and team awards
2. Involving everyone in the organization (both front line and senior management);
3. Tying rewards to quality based on measureable objectives (behaviours that increase quality and customer satisfaction);
4. Encouraging peers to nominate and recognize superior performance;
5. Publicizing recognition extensively (in newsletters, at breakfasts, at annual events, etc.);
6. Making recognition fun!

The organization needs to establish criteria for behaviour in terms of what performance or contribution is rewardable by the organization. Things to consider are:

1. All employees must be eligible for the recognition;
2. The recognition must supply the employer and employee with specific information about what behaviors or actions are being rewarded and recognized;
3. Anyone who then performs at the level or standard stated in the criteria receives the reward;
4. The recognition should occur as close to the performance of the actions as possible, so the recognition reinforces behaviour the employer wants to encourage;
5. You don't want to design a process in which managers "select" the people to receive recognition. This type of process will be viewed forever as "favouritism" or talked about as "it's your turn to get recognized this month." This is why processes that single out an individual, such as "employee of the month," are rarely effective;
6. Recognition programmes should be consistent across the organization;
7. Recognition programmes should be based around demonstrated behaviour of value to the organization rather than rewarding a set of circumstances that have lead to a good set of results;
8. As the working environment changes, recognition programmes should be extended to cover new competencies such as adaptability, innovation and learning to recognize the value the organization places on these competencies.

Financial rewards

Financial rewards are usually decided at an organizational level and are often outside the immediate control of an individual manager. Problems can exist when at an individual level, we compare how much financial reward we get compared to others doing the same type of work, or working at the same grade. If we feel that they are getting more for the same or less effort, then we feel a sense of inequity in our situation. This can then impact our satisfaction and performance.

Key Benefits

Through recognition employees understand that their efforts make a difference, that the organization values its people and cares about their success, thus reinforcing their pride and self-esteem.

Relationship to ISO 9001: 5.5.3, 6.4, 8.2.3

A.12 Recruitment

Recruitment is the process of sourcing, screening, and selecting people for a position in an organization. Managers can undertake some part of the recruitment process, but larger organizations often use professional recruiters.

Process

What about needs analysis, person specification, advertisement (and maybe others)

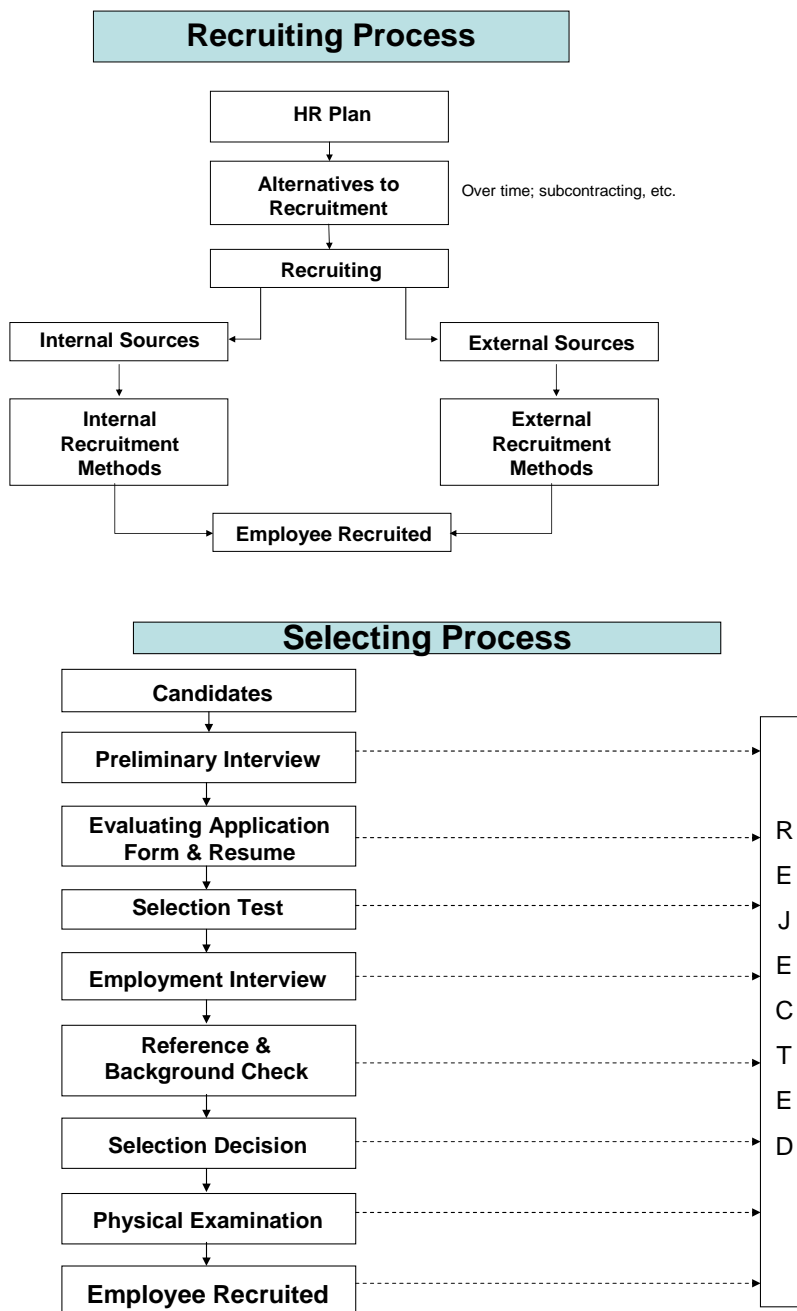


Figure A.4 – Recruiting and selecting process

An organization may not employ every step in the process shown. This will depend on the nature of the work to be carried out.

Candidates

Sourcing candidates may involve advertising a work opportunity using media, such as the internet, newspapers and job centres. Proactive identification of talent through, for example, headhunters results in a list of prospects who can then be contacted to solicit interest.

Preliminary interview

Candidates are screened very quickly, often at the time of presenting their resume, to identify those with the right qualifications and necessary personality 'fit' with the organization.

Evaluating application form & resume

Information in the application form and resume is compared with the requirements for the job. The applications with the closest match are selected for interview.

Selection test

Skills and abilities are tested prior to the interview to identify competency levels. Tests would include tests such as;

- Cognitive aptitude tests;
- Job knowledge tests;
- Work sample tests;
- Vocational interest tests;
- Personality tests.

This ensures that only suitable candidates are interviewed.

Employment interview

The following types of interviews can be conducted

Unstructured interview:

This is one of the most commonest types of interview. It follows the random thinking of the interviewer and the success correlation is as low as 30%

Structured interview:

This has a success correlation in excess of 50% and will contain questions such as;

- Situational questions; how the applicant would deal with a given work situation;
- Job knowledge questions; to explore their knowledge about the work;
- Job-sample simulation questions; requires the applicant to perform a simple work task.

Behavioural description interview

This is also a structured interview but is designed to identify what an applicant has done in the past in given situations in the past.

Reference & background check

It is necessary to verify the historical information the applicant has provided and there may be security clearances required in some work situations. This can be an extensive task and should be restricted to the final two or three applicants if there is a close decision on selection.

Selection decision

The final decision is normally made by the person who will supervise the future employee. The decision might also include the opinions of future co-workers if the applicant has met those people during the selection process. This depends on the culture of the organization.

Physical examination

The physical ability of a person to perform the work may need to be verified. Potential health risks should be identified if they will impact a person's ability to do the work or if a health issue will place co-workers at risk.

Employee recruited

The legal process of engaging the employee is then executed. Also starter induction course for orientation, probationary period etc. should be considered.

Key benefits of this human factor assist in the reduction of labour turnover as a result of selecting people who are more likely to stay with the organization. Labour turnover leads to higher costs and reduction in the effectiveness of an organization through the loss of skills, knowledge and experience.

Relationship to ISO 9001:

6.2

A.13 Self discipline

Discipline is something that either comes from within (self discipline) or is imposed from outside, in this case by the quality management system.

To discipline a person in an organization means to instruct them to follow a particular code of conduct, or to adhere to a certain order. An ideal disciplinarian is one who can enforce order without use of coercion. However, the term discipline carries some negative connotations because enforcement of order - that is, ensuring instructions are carried out - is often regulated through punishment or fear.

To be disciplined is then, subject to context, either a virtue (the ability to follow instructions well) or a euphemism for punishment (which may also be referred to as disciplinary procedure).

Self-discipline refers to the training that one gives one's self to accomplish a certain task or to adopt a particular pattern of behaviour, even though one would really rather be doing something else. For example, denying oneself of an extravagant pleasure in order to accomplish a more demanding charitable deed. Thus, self-discipline is the assertion of willpower over more base desires, and is usually understood to be a synonym of 'self control'. Self-discipline is to some extent a substitute for motivation, when one uses reason to determine a best course of action that opposes one's desires.

Discipline has its place in a quality management system. It has to be balanced with freedom to choose and experiment (see A.10). It relies on effective communication (see A.3) to enable individuals to understand where they need to follow procedures and where they have freedom of choice.

Key Benefits

By using a disciplined approach individuals operate consistently in areas where the risk of problems through failing following a procedure is highest.

Relationship to ISO 9001:
4.2.1, 4.2.3, 5.3, 5.5.1, 7.5.1

A.14 Teamwork

Teamwork is the ability for individuals to work together in a creative relationship within a process leading to enhanced and assured quality in products and services.

In the context of human factors in quality management, it is expected that teamwork is used as a leverage to maximize the value derived within quality management systems.

Teamwork is increasingly acknowledged as an essential skill for employees in organizations of any size. Processes increasingly cross continents as well as departments and functions within an organization. This places a premium on teamwork in the workplace. Teamwork helps to focus and optimize the efforts required of people. Teamwork also provides the added assurance that quality objectives can be achieved.

Teamwork has become so essential that organizations need to assess potential employees' aptitudes for roles within teams.

It is important that the dynamics of teamwork are considered by process designers and operations management to develop and execute quality processes.

While quality principles can be applied to an already designed process, the outcome is nevertheless constrained and restricted if the processes are stipulated in isolation of human factors.

Key Benefit

A high performance team is the guarantee of achieving set results for any project, product or service.

Meredith Belbin proposed nine team roles required for successful teams:

1. Coordinator - with a clear view of team objectives and skilled at getting team members to contribute in achieving these. The team leader is self disciplined and applies this discipline to the team. They are confident and mature, and will summarize the view of the group and will be prepared to take a decision on the basis of this;
2. Shaper - full of drive to make things happen and get things going; looks for patterns in discussions to pull things together into something feasible;
3. Planter - most likely to come out with original ideas and challenge the traditional way of thinking about things helping the team to make headway;
4. Resource investigator - with strong contacts and networks, excellent at bringing in information and support from the outside;
5. Implementer - well organized and effective at turning big ideas into manageable tasks and plans that can be achieved;
6. Team worker - sensitive and supportive of other people's efforts, tries to promote harmony and reduce conflict, particularly important when the team is experiencing a stressful or difficult period;
7. Completer Finisher – a perfectionist who makes sure everything is "just right. has a strong inward sense of the need for accuracy, rarely needing any encouragement from others because of their own high standards are what he or she tries to live up to;

8. Monitor evaluator - is good at seeing all options with a strategic perspective and the ability to judge situations accurately;
9. Specialist - provides specialist skills and knowledge with a dedicated and single-minded approach. (Note: the specialist is not considered a team role);
10. Each individual has elements of each of these roles in their personality and brings all of these skills to the team. Particularly for smaller teams we may be asked to act in more than one role within the team. Sometimes within a team we are asked to fulfil a role that is not our favoured one but we can do this successfully.

A.15 Knowledge management

Knowledge is now recognized as an equally important business resource alongside time, money and people. "knowledge management" asks what knowledge do we have? What knowledge do we need? How can we get that knowledge that we need? However, the rapid growth of the 'information society' has, led to an 'unmanageable' amount of knowledge being available to organizations.

Some people think knowledge management is all about information technology. This arises as people resort to tools like 'Google' and the 'search' button on their personal computer to navigate their unmanageable information and knowledge. To say this is an information technology issue is to say the minds of our people contain no knowledge. Knowledge management is very much a 'people' issue. A key part of 'knowledge management' strategy is setting the balance between storage of knowledge with people or with technology.

Knowledge management is more than just the flow and storage and retrieval of information. It is also about learning and growing the knowledge of the organization and applying that knowledge to create value.

There are two types of knowledge in an organization. The knowledge we have inside the individual, referred to as tacit knowledge. The other is the knowledge which has been documented and is called 'explicit knowledge'. The model developed by Nonaka and Takeuchi shows how knowledge develops.

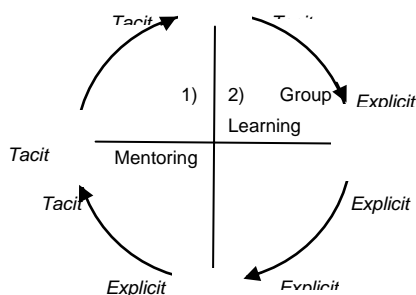


Figure A.5 – Development of knowledge - model

There are four stages in developing knowledge:

1. The first step in the process involves the transfer of tacit knowledge between two people. From when you were taught how to ride a bike or to having lessons from a golf professional, you learn the hidden mysteries, you are 'personally coached';

2. As organizations have grown the ratio of available mentors has reduced and so group learning has become important. The earliest and best recorded example of group learning was of Aristotle teaching Alexander the Great and his contemporaries. A key feature for this process to succeed is “dialogue”. Knowledge is also documented during this process and moved from ‘tacit’ (stage 1) to being ‘explicit’. This is also where we introduce one of the best known knowledge Management tools known as ‘communities of practice’;
3. As the bodies of knowledge in the world have grown exponentially in the last decade it has become necessary to store explicit knowledge in a way that it can be easily accessed. The old profession of ‘librarian’ has taken on a whole new meaning. This ‘content management’ is a subset of knowledge management;
4. The explicit knowledge must be stored in a way that will enable it to create value. The core problems are the method by which explicit knowledge is recorded and then the method by which explicit knowledge is stored. The objective in this last stage is for people to be able to retrieve explicit knowledge and

themselves to make it tacit. This rarely happens successfully. It is like expecting to become a good golfer by just reading books on golf. The architecture for storage is also critical to step 4. It depends on your strategy for knowledge management which in turn depends on the type of business you run. There are two primary strategies...

The balance between technology and people must depend on whether:

- An organization creates products or solutions through the re-use of an existing knowledge base (in which case you need a bias to ‘coding’ and storing explicit knowledge) or
- An organization provides custom products or unique solutions through innovation using knowledge (which requires a bias to links between your people to share ‘tacit knowledge’). So communities of practice that are a key tool of knowledge management are vital for Innovation.

Relation to 9001:
6.1, 6.2, 8.5

A.16 Empowerment, responsibility and authority

Empowerment is the process that provides employees with the authority and ability to make decisions about their work.

Teamwork is an effective dynamic that makes the most of human effort, relationships and cooperation of people, towards achieving a particular goal.

Relationship to ISO 9001:
4.1, 5.5.1, 5.5.3, 6.2.2

A.17 Leadership

Quality management leadership is about creating a way for people to contribute to making something happen.

Principle 2 – Leadership

Leaders establish unity of purpose and direction of the organization. They should create and maintain the internal environment in which people can become fully involved in achieving the organization’s objectives [see ISO 9000:2000, 0.2b].

Nature of leadership

A leader is anyone who influences a group toward achieving a particular result. It is not dependant on title or formal authority. Any individual appointed to a managerial position has an assumed right to command by virtue of the authority of the position. However the individual must possess adequate personal attributes to match the delegated authority. Without sufficient personal competence a manager may be challenged by employees in the organization and their role may be relegated to that of a figurehead. An emerging leader in an organization may require a formal position in the hierarchy if he / she is to have the authority to use his/her personal competencies to direct other employees. Every organization needs leaders at every level.

There is a large distinction between leadership and management with an emphasis on leaders enabling people to do things. Management focuses more on organizing to achieve a task. This does not mean leaders do not focus on the task – they generally have a good history of achievement. Managers typically follow a leader's vision and make it a reality. Leaders realize that achievement of a task comes about through the goodwill and support of others (influence), managers may not. This goodwill and support comes from leaders seeing people as people, not as another commodity for deployment in support of "the task".

Leadership does not only manifest itself as purely a business phenomenon. Many people can think of an inspiring leader who has nothing to do with business: a politician, an officer in the armed forces, a Scout leader, a teacher, etc.

Key Benefits:

Leadership provides a clear focus for employees throughout an organization and enables them to follow a path to achievement of the organizational objectives.

Relationship to ISO 9001:

5.4.1, 5.5.1, 5.5.3

Often, people see the task as subordinate to the vision. For instance, an organization might have the overall task of generating profit, but a good leader may see profit as a by-product that flows from whatever aspect of their vision differentiates their company from the competition.