How does ISO 9000:2000 compare to ISO 9000:1994?

The two standards offer different models for quality. ISO 9000:1994 defines quality around 20 key elements that a company uses to effectively and consistently produce products and services it provides customers. The standard was originally designed for application to manufacturing companies that produce widgets, although it can be and has been adapted to apply to processing companies and service organizations.

The primary purpose is to assure customers that the certified company produces products at a consistent level of quality. To register to ISO 9000:1994, as the cliché goes, "Document what you do, do what you document, and be prepared to prove it."

The quality model in ISO 9000:2000 is quite different. Instead of 20 elements, it is based on a Process Model that any effective enterprise can use whether it manufactures parts, processes chemicals or provides services. Instead of 20 elements, the Process Model, as laid out in the new ISO 9001, is composed of four sections: Section 5: Management responsibility, Section 6: Resource management, Section 7: Product realization and Section 8: Measurement, analysis, improvement.

The other sections in ISO 9001 support the Model: Sections 0–3 provide background and Section 4: Quality Management System is a precursor to the Process Model itself, describing the organization's obligations in establishing a documented QMS.

The four sections in the standard contain all the requirements for the new ISO, but stated in more generic and less prescriptive terms than in the previous 20-element model. This lack of specificity makes it easy for enterprises of all sorts to fit their operations to the new ISO.

On the other hand, although the new model may be simpler and less prescriptive than its predecessor, the requirements are a quantum leap forward and in line with progressive thinking in the quality field. The model's four sections function similarly to the Plan-Do-Check-Act (PDCA) improvement process popularized by W. Edwards Deming. This is much more rigorous than the 1994 ISO's watchwords: "Do what you document, document what you do, and prove it."

Where is the quantum leap? In comparison to its predecessor, ISO 9000:2000 actually features several quantum leaps forward. Here are the key ones:

- **Voice of the customer.** Even a cursory view of the graphic depiction of the Process Model in Fig. 1 shows the power of the customer in the new standard. It's bookended by two drivers: "Customer Requirements" drives the input, and "Customer Satisfaction" drives the output. The organization will need methods in place to describe and monitor the needs and desires of each customer for each order. It will need processes and procedures in place to measure and analyze customer satisfaction.

  Critics have long complained that a company could make "concrete life preservers" and still be registered to ISO 9000. ISO 9000:2000 helps put that criticism to rest.

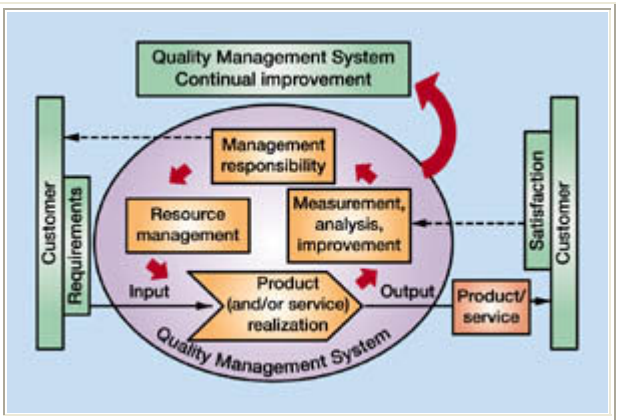

Fig. 1. Graphic depiction of the Process Model shows the power of the customer in the new standard.

- **Continual improvement.** Under ISO 9000:2000, it won't be enough for an organization simply to measure customer satisfaction, it will need to improve the level of satisfaction. It will also have to measure and improve internal processes. Continual, aka continuous, improvement is a core theme in the new version of ISO 9000 and inherent in the Model's PDCA structure.

  Continual improvement is one of the essential goals of quality. Continually improving defect rates, with consequent increased customer satisfaction, is a core value of Deming and TQM. Although we and many others believe that continual improvement was always implied in ISO 9000, continual improvement is now a clearly defined requirement throughout the 2000 revision.

- **Management responsibility.** Management had a role in the previous ISO 9000 in that it was required to establish quality policy, commit adequate resources, conduct a management review and appoint a management representative to supervise the QMS. But mostly, under ISO 9000:1994, the QMS was largely the responsibility of quality professionals.

  Executive management plays a far more central role with the new standard. In ISO 9000:2000, management responsibility is expanded so that management presides over a multi step version of the PDCA process. This process includes these requirements:

  Step 1: *Policy.* Management is obligated to establish an appropriate quality policy that incorporates a commitment to continual improvement and meeting customer requirements.

  Step 2: Objectives. This policy must establish a framework for reviewing quality objectives that are set "at relevant functions and levels within the organization."

  Step 3: Planning. Objectives are set with a plan that identifies the activities and resources necessary to achieve it. The planning "shall be consistent with other requirements of the quality system."

  Step 4: Quality Management System. Management is responsible for the organization establishing a QMS as a means of implementing the quality policy, with its associated objectives and plans, as well as the requirements of the standard.

  Step 5: Management Review. Although ISO 9000:1994 required a management review, this element is much expanded in the new version. In this new model, management's check of the QMS specifically includes a review of policy and objectives in order to find opportunities for continual improvement. On the basis of this review, management is required to take actions – among other things – "relating to the improvement of the quality management system."

This process begins with setting policy and moves to management review with continual improvement as the output. It is similar to the way the PDCA process is outlined in ISO 14001, the Environmental Management System Standard.

The compatibility between ISO 14001 and the new ISO 9000 should permit organizations to develop complementary systems for the two standards. (Appendix A of ISO 9001:2000 offers tables that show the correspondence between ISO 9001 and ISO 14001.)

- **Resource management.** The 1994 standard contains a paragraph (4.1.2.2) that requires management to provide necessary resources. It also contains requirements for training (4.18). These kernels are expanded in the 2000 revision to be one of the four clauses, "6.0 Resource Management," in the Process Model.

The section spells out a wide range of specific resources that management leadership must provide or make available, i.e., adequate numbers of competent people, training necessary to assure competence, infrastructure, work environment (i.e., resources that affect safety, ergonomics, hygiene, etc.), suppliers and partners, and financial resources.

These advances are embodied in the standard's eight Quality Management Principles listed in Table 1. They emphasize the importance of: customer focus; leadership; involvement of people at all levels; process approach; systems and objectives; continual improvement; accurate data and analysis; and supplier relationships – a mirror image of the focus on the customer.

Table 1. Quality management principles of ISO 9000:2000

Principle 1 – Customer-focused organization Organizations depend on their customers and, therefore, should understand current and future customer needs, meet customer requirements and strive to exceed customer expectations.
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.
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.
Principle 4 – Process approach A desired result is achieved more efficiently when related resources and activities are managed as a process.
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.
Principle 6 – Continual improvement Continual improvement should be a permanent objective of the organization.
Principle 7 – Factual approach to decision making Effective decisions are based on the analysis of data and information.
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.