Using Professional Certifications to Add to the Bottom Line

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Discussion Overview

- Professional certifications attained by employees can help improve the bottom line for organizations that effectively take advantage of those achievements.
- Certification examples include the Certified Quality Technician (CQT) and Certified Quality Auditor (CQA) from the American Society for Quality (ASQ).
- Encouraging employees to become certified helps improve product and service quality, improves customer satisfaction and retention, and aids in the recruitment and retention of employees.
- Each of these contributes to the organization's bottom line by helping to boost sales and lower costs.

Body of Knowledge

Certified Quality Technician

The topics in this Body of Knowledge (BOK) include additional detail in the form of subtext explanations and the cognitive level at which the questions will be written. This information will provide useful guidance for both the Exam Development Committee and the candidate preparing to take the exam. The subtext is not intended to limit the subject matter or be all-inclusive of what might be covered in an exam. It is meant to clarify the type of content to be included in the exam. The descriptor in parentheses at the end of each entry refers to the maximum cognitive level at which the topic will be tested. A complete description of cognitive levels is provided at the end of this document.

I. Quality Concepts and Tools (20 Questions)

A. Quality Concepts

1. **Customers and suppliers**
   Define internal and external customers, identify their expectations, and determine their satisfaction levels; define internal and external suppliers and key elements of relations with them. (Comprehension)
2. **Quality principles for products and processes**
   Identify basic quality principles related to products (such as features, fitness-for-use, freedom from defects, etc.) and processes (such as monitoring, measuring, continuous improvement, etc.). (Comprehension)
3. **Quality standards, requirements, and specifications**
   Define and distinguish between quality standards, requirements, and specifications. (Comprehension)
4. **Cost of quality (COQ)**
   Describe the four classic cost of quality (COQ) categories and their uses. (Comprehension)
   [NOTE: Specific distinctions between prevention, appraisal, internal and external failure costs will not be covered]
2. **Team development**
   Define, describe, and train team members in the basic elements of team building, which include the importance of diversity and team member participation, how to use creative-thinking tools like brainstorming, and how to use various tools to achieve consensus, etc. (Application)
3. **Team stages**
   Describe the evolutionary stages of teams: forming, storming, norming, and performing. (Application)
4. **Globalization**
   Define and describe the impact globalization has on team-related issues such as developing and participating on virtual teams, using electronic communications to support distant collaboration, etc. (Comprehension)

II. Statistical Techniques (21 Questions)

A. General Concepts

1. **Terminology**
   Identify and differentiate between statistical terms such as population, sample, parameter, statistic, statistical process control, statistical quality control, etc. (Comprehension)
4. **Confidence limits**
   Determine, calculate, and apply confidence limits in various situations. (Application)
5. **Probability**
   Calculate probability using the basic concepts of combinations, permutations, and area under the normal curve. (Application)
6. **Student's *t***
   Describe how and why *t* tests are used. (Comprehension)
7. **Analysis of variance (ANOVA)**
   Define and determine the applicability of ANOVAs. (Comprehension)

C. Control Charts

1. **Techniques and applications**
   Select control charts that are appropriate for monitoring or analyzing a process and explain their construction and use. (Application)
2. **Control limits vs. specification limit**
   Identify and describe the different uses of control limits and specification limits. (Comprehension)
3. **Variables charts**
   Identify, select, construct, and interpret variables charts such as $\bar{X}$–R, $\bar{X}$–s, etc. (Analysis)

Body of Knowledge

Certified Quality Auditor

The topics in this new Body of Knowledge (BOK) include additional detail in the form of subtext explanations and cognitive level. These details will be used by the Exam Development Committee as guidelines for writing test questions, and are designed to help candidates prepare for the exam by identifying specific content within each topic that may be tested. The subtext is not intended to limit the subject matter or be all-inclusive of what might be covered in an exam, but is intended to clarify how the topics relate to a Quality Auditor's role. The descriptor in parentheses at the end of each entry refers to the maximum cognitive level at which the topic will be tested. A more comprehensive description of cognitive levels is provided at the end of this document.

Examinations based on the 2004 BOK will contain a number of case studies. Each case study will include a brief scenario outlining critical details about an audit situation. In addition, each case study will be supported by related audit documents. Approximately 15-20% (20-30 questions) of the test will be devoted to these case studies. Although the questions related to these cases will use the same four-choice answer format as the rest of the test, the use of scenario details and sample documents will allow the candidates to apply their critical thinking skills in evaluating realistic situations and accompanying documents, communiqués, etc. Additional time will be needed to process all elements of the case studies, and, therefore, the length of examination time will be increased from four hours to five hours.

I Auditing Fundamentals (30 Questions)

A. **Basic terms and concepts**
Define and differentiate basic quality- and audit-related terms, such as quality, quality assurance, quality control, evidence, finding, observation, noncompliance, and nonconformance. (Apply)
[NOTE: The application of these audit terms during the performance of an audit is covered in greater detail in II. B.]

B. **Purpose of audits**
Describe and examine how audits are used to assess organizational effectiveness, system efficiency, process effectiveness, business performance, risk management, and conformance to requirements. (Analyze)

and negligence, in various situations, and anticipate the effect that certain audit results can have on an auditee's liability. (Apply)

3. **Professional conduct and responsibilities**
Define and apply the concepts of due diligence and due care, with respect to confidentiality, conflict of interest, the discovery of illegal activities, or unsafe conditions. (Apply)

II Audit Process (60 Questions)

A. **Audit preparation and planning**

1. **Elements of the audit planning process**
Identify and implement steps in audit preparation and planning, such as verifying audit authority, determining the purpose, scope, type, requirements to audit against, and identifying

6. **Auditing strategies**
Identify and use various tactical methods for conducting an audit, such as forward and backward tracing and discovery. (Apply)

B. **Audit performance**

1. **Opening meeting**
Describe its purpose, scope, and elements and conduct an opening meeting. (Apply)

2. **Data collection and analysis**
Select and apply various data collection methods, such as interviewing people, observing work activities, taking physical measurements, and examining paper and electronic documents; perform analysis. (Create)

3. **Working papers**

Six Levels of Cognition based on Bloom's Taxonomy (1956)

In addition to *content* specifics, the subtext detail also indicates the intended *complexity level* of the test questions for that topic. These levels are based on "Levels of Cognition" (from Bloom's Taxonomy, 1956) and are presented below in rank order, from least complex to most complex.

Knowledge Level
(Also commonly referred to as recognition, recall, or rote knowledge.) Being able to remember or recognize terminology, definitions, facts, ideas, materials, patterns, sequences, methodologies, principles, etc.

Comprehension Level
Be able to read and understand descriptions, communications, reports, tables, diagrams, directions, regulations, etc.

CQT

Application Level
Be able to apply ideas, procedures, methods, formulas, principles, theories, etc., in job-related situations.

Analysis
Be able to break down information into its constituent parts and recognize the parts' relationship to one another and how they are organized; identify sublevel factors or salient data from a complex scenario.

Synthesis
Be able to put parts or elements together in such a way as to show a pattern or structure not clearly there before; identify which data or information from a complex set is appropriate to examine further or from which supported conclusions can be drawn.

CQA

Evaluation
Be able to make judgments regarding the value of proposed ideas, solutions, methodologies, etc., by using appropriate criteria or standards to estimate accuracy, effectiveness, economic benefits, etc.

Product & Service Quality

- Certifications typically are followed by **increased rigor** in quality management programs, particularly in areas of defect management and process metrics.
- Learning curve tends to follow a predictable path:
  - Initial efforts often focus on the **supply chain** with supplier-oriented improvement efforts often account for early gains.
  - **Internal process controls** and defect reduction typically follow improvements in supply, with initial gains resulting in improved process productivity and waste/scrap reduction.
  - **Macro-level process changes** typically follow, with impacts on plant/shop floor space and machine organization, preventive maintenance, and materials inventory levels.
  - Once internal process maturity has become more routine, efforts extend into the **customer space**, and product and process design become direct improvement targets.

Customer Satisfaction

- The stronger the customer's process for conducting supplier audits of *you*, the more **visible** your program will be to the customer.
- Some of the obvious immediate factors include: lower **defect rates**, shortened **lead times**, and better **after-service**.
- Delayed factors include: better **product design** and more **product features** as well as increased flexibility in your manufacturing processes for **customized products**.
- Customers also see your emphasis on certification and standard compliance as a **competitive advantage**. Increased **trust** drives increased transactions.

Employee Retention

- Employees want to feel they add value through what they do, and that they are a contributor to the company.
- As employees certify, **they become part of a profession** that defines its own value and approach to work.
- **Job satisfaction increases** for individuals who now play a greater role in defining their own actions.
- Applicants will want to work in an organization where development through certification is common.
- Certified professionals achieve results that justify **greater rewards** than their uncertified counterparts in the company. **Recognize this early in planning!**

Profession vs. Employer

- As employees become certified, a natural **friction** arises between the company and its certified employees.
- Certified employees start to feel **a responsibility to the profession** instead of just their employer.
- That responsibility will cause them to insist on doing things that an employer might shy away from or believe can be sidestepped.
- **Employers must be committed** to allowing these professionals to act professionally, even if it requires *some unexpected or unplanned changes*.
- You don't just want your people to ***be*** certified, you want them to ***act*** certified.

Credentialism

- *Being* vs. *Acting* is the centerpiece of certification success in the organization.
- A downside of certification is **credentialism**:

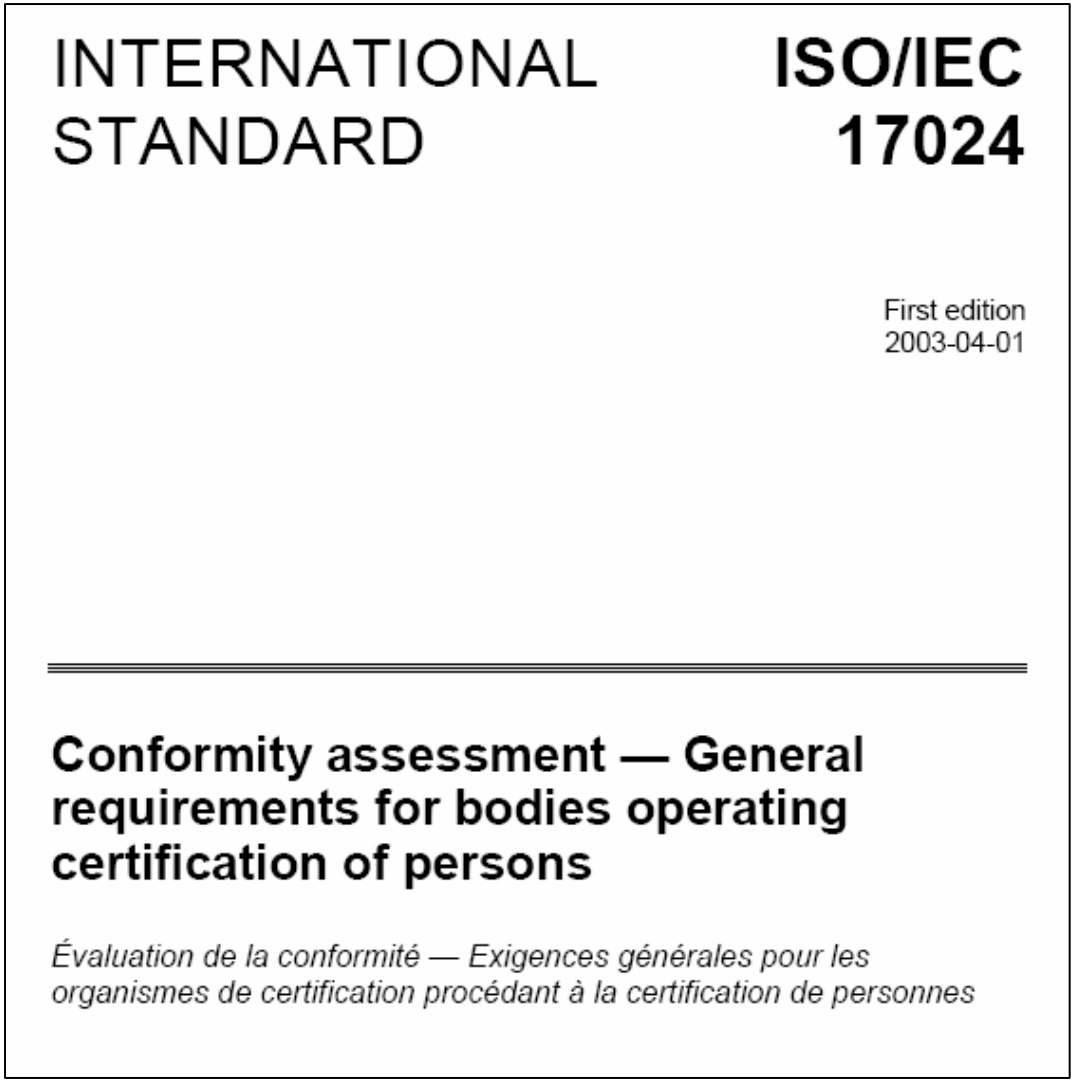
  The exchange-value of certain knowledge and skill milestones periodically overtakes the use-value of the actual knowledge and skills gained.

- If getting people certified is simply a checkmark in a human resource plan, or if it's something to be gained only to be able to mention it in a brochure, it will fail.
- Certification is about changing the thinking process and working actions of employees' ways of thinking and acting that benefit both company and employees.

Accreditation of Certification Programs

Standards in the certification arena are fairly new, but are gaining ground and effectiveness.

Look for programs that are well defined and operated so they can be trusted to truly professionalize employees.



INTERNATIONAL STANDARD

ISO/IEC 17024

First edition
2003-04-01

Conformity assessment — General requirements for bodies operating certification of persons

Évaluation de la conformité — Exigences générales pour les organismes de certification procédant à la certification de personnes

Certification Portfolio

Individual

- Quality (American Society for Quality)
  - Certified Quality Technician (CQT)
  - Certified Quality Auditor (CQA)
  - Certified Quality Engineer (CQE)
  - *others…*
- Project (Project Management Institute)
  - Project Management Professional (PMP)
- Industry
  - Your customers' sectors
  - Your manufacturing segment

Organizational

- Baldrige – Management
- ISO 9000 – Quality
- ISO 14000 – Environmental

Conclusion

- Certification acknowledges an individual's proficiency and comprehension in a specified body of knowledge.
- Employing certified individuals promotes more predictable results in obtaining organizational goals.
- Certification can also be used as a tool to differentiate those people who are knowledgeable from those who claim they are knowledgeable by just using the buzzwords.
- Supporting certification programs proves to your employees that you are serious about their professional development, and contributes to retention and satisfaction while reducing long-term training costs.
- Certification can be a win-win for both employees and employers. Individuals enjoy both personal and professional benefits that come from being certified, and companies obtain the business rewards from the outcomes that certified employees achieve.

Continue the dialogue …

- Please feel free to contact me with any questions you might have as you pursue opportunities for taking advantage of certification in your organization:

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Richard Biehl's Certifications

Current Certifications

Description	Number	Cert. Date	Recertify By
Certified Software Quality Engineer	00436	10/18/1997	12/31/2009
Certified Six Sigma Black Belt	2479	10/16/2004	12/31/2009