

Chapter 22

Satisfaction Measurement in Education

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ABSTRACT

The chapter presents the importance of providing high quality e-learning and the need to apply the requirements of the standards from ISO 9000 series for continual improvement of the quality management systems in education. The work applies the main principles for multiple criteria decision making. An approach for satisfaction measurement is developed. It uses weighting coefficients as qualitative valuation of the importance of the quality characteristics and numerical valuation for the level of satisfaction with the quality characteristics. The suggested approach is suitable to apply for different purposes in education in order to achieve high quality e-learning. It is also suitable to apply to different areas within quality management systems.

INTRODUCTION

E-learning is becoming an education standard and the e-learning industry is gradually expanding. Providing e-learning courses is a complicated task and the various applications strongly need to interoperate and exchange data efficiently in order to better meet the needs and expectations of the students and the teaching team. E-learning standards aim to bring order in different aspects of the e-learning. Some organizations work to develop

such standards. The Aviation Industry Computer-based training Committee (AICC) (<http://www.aicc.org/>) is the pioneer in creating e-learning standards. Though their standards are applicable mostly within government and aviation circles, they give a set of guidelines for interoperability. The IMS Global Learning Consortium (<http://www.imsproject.org>) works on the problems connected with the learning content in aspect of how to describe, discover and reuse that content, and to assure that it is fully interoperable within different administrative systems. IMS Meta-data Specification defines a method for describing learning

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content including a description of the content, the title, the author, location, cost and payment structure, prerequisites, and learning taxonomy. Institute of Electrical and Electronics Engineers (IEEE) Learning Technology Standards Committee (LTSC) (<http://www.ieeeltsc.org:8080/Plone>) develops technical standards guidelines and recommendations for e-learning components and systems. The Advanced Distributed Learning (ADL) Initiative (<http://www.adlnet.org/Pages/Default.aspx>), sponsored by the government, industry, and academic leaders, is directed to facilitate e-learning content development and delivery. They develop the Sharable Content Object Reference Model (SCORM). SCORM refers to design of an interoperable, durable learning system. It does not specify a programming language, authoring tool, or operating system and includes content meta-data.

The available standards cover different aspects such as learning management systems and learning environments, interoperability, learning objects standards, usability, security issues, metadata standards, reusability of learning data. The standards aim to provide preconditions for effective high quality e-learning; however they do not include tools for quality evaluation of the provided e-learning.

The educators have always worked towards the idea to achieve effective education. Modern e-learning systems still need further development to become effective learning environments for both student and teacher and it turned out to be a rather complicated task. A research study examines possibilities to achieve optimal learning. The research results in a PhD thesis entitled "An examination of an intelligent cybernetic learning model for formative assessment and diagnostics in open and distance learning" (Nacheva-Skopalik, 2007). The dissertation develops a cybernetic model of the learning process and suggests how the feedback channels can be used for optimal control of the learning process. During the investigation the author had to consider the standards for

quality management. ISO 9000 series is the most established worldwide set of standards for quality management systems. The standards are suitable for any organization aiming to improve the way it operates toward increasing their market share, improving business performance, manages business risk, decreasing costs or improving customer satisfaction, regardless of the size and the sector of the company. Over 800 000 organizations in 170 countries currently use these standards and this is a basis to exchange and compare goods and collaboration on international market. Applying the ISO 9000 standards increases the company reputation clearly demonstrating to all interested parties its commitment to high standards and continual improvement. However, the companies that implement the standards throughout the whole organization rather than just at some departments are expected the best reward on their investment for using these standards. In order to achieve the best effect and to unlock the true potential of the company, applying ISO 9000 standards should be strategic approach of the company's top management (<http://www.bsi-global.com/en/>).

In practice the continual improvement of a quality management system is also an application of the cybernetic principles of control using a feedback channel. One of the practical realizations of the feedback channel here is the evaluation of customer satisfaction with a product. Therefore it is natural to apply the rich, well-grounded and powerful scientific theoretical basis from the theory of the area of automatic control for the purpose of optimal control of the quality of education.

The standards from the ISO 9000 series require customer satisfaction measurement however they do not specify any particular approach. There is a need to develop a suitable approach to fill this gap. This way the requirement of the standard will become an applicable methodology.

This chapter presents one approach for satisfaction measurement that is evaluated as reliable, sufficiently precise, universal and applicable, which gives good experimental results so far. Statistical

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