

## Applying ISO 9000 QMS architecture to establish a management system for university's extension education training organization -- using Chienkuo Technology University as example

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### ABSTRACT

In recent years, many colleges and universities have established Continuing/Extension Education Centers to provide accredited and non-accredited courses as well as short- and medium-term vocational training for adults, both in and out of the employment pool. Basically, purpose of curriculum design for the extension education training was aimed to satisfy market requirements from society and school's self management cost control. From our observation, the characteristics of extension education training system were so different from those of regular student education system, especially on training courses diversity and trainees' frequently changes. Therefore, those extension education training departments faced some problem, because of their both complex tasks, one to obey internal (in-school) administrative regulations and the other to find ways that can meet many kinds of external training needs.

In our research, taking Extension Education Training Center of Chienkuo Technology University (CTU-EETC) as example, we established a management system based on ISO 9001:2000 QMS. A Quality Manual and 25 Procedures were developed to guide the CTU-EETC's daily tasks. From these ISO documents, which were designed in accordance with TQM philosophy, CTU-EETC staff can wholly handle every control points and critical jobs for both internal and external tasks. From the help of such an ISO management system, not only the efficiency improved, the higher trainee satisfaction was also reached. Results of our research showed that the establishment of such an ISO management system can improve extension education training department's performance, and help to build its competitive advantages.

**Keywords:** extension education training, QMS (Quality Management System), SOP (standard operation procedure), TQM (Total Quality Management)

### 1.0 Introduction

In the last two decades, a revolution in education has followed on the heels of economic growth and political reform. The number of institutions of higher education has increased steadily. As the number of colleges has increased, colleges and universities have found themselves facing stiff competition for students. As a result, many colleges and universities have established Continuing/Extension Education Centers to provide accredited and non-accredited courses as well as short- and medium-term vocational training for adults, both in and out of the employment pool. These institutions take as a foundational principle that successful long-term management of extension education must be focused on satisfying the needs of the community, local industry, and local professional development.

Basically, purpose of curriculum design for the continuing/extension education training was aimed to satisfy market requirements from society and school's self management cost control. Therefore, those continuing/extension education training departments faced some problems, because of their both complex tasks, one to obey internal (in-school) administrative regulations and the other to find ways that can meet many kinds of external training needs. This paper will demonstrate a university in Taiwan how to apply ISO 9000 QMS (Quality Management System) structure to establish a management system, including complete SOP and needed reports/forms, which can improve extension education training department's performance, and help to build its competitive advantages.

## 2.0 ISO 9000 Quality Management System

The 1994 version of the ISO 9000 family of Quality Management and Quality Assurance standards have been revised to form the core of the 2000 version of the ISO 9000 family of standards [1]. ISO 9001:2000 specifies requirements for a quality management system for any organization that needs to demonstrate its ability to consistently provide product that meets customer and applicable regulatory requirements and aims to enhance customer satisfaction. ISO 9004:2000 [2] is also designed to help extending the benefits obtained from ISO 9001:2000 for all parties that are interested in or affected by business operations. ISO 9004:2000 harmonizes ISO 9001:2000 with structure and terminology, with purpose to assist business to advance smoothly for excellent performance. ISO 9000 series' standards provide a process-based QMS model, as shown in Figure 1, for establishment, implementation, and continual improvement of a quality system [3]. Using the concept of "process", the ISO 9000 series' standards clearly define the quality-related requirements ranging from "customer requirement" as an input transferred to "customer satisfaction" as an output. Processes that are recognized as one or more linked activities require resources and must be managed to achieve predetermined output.

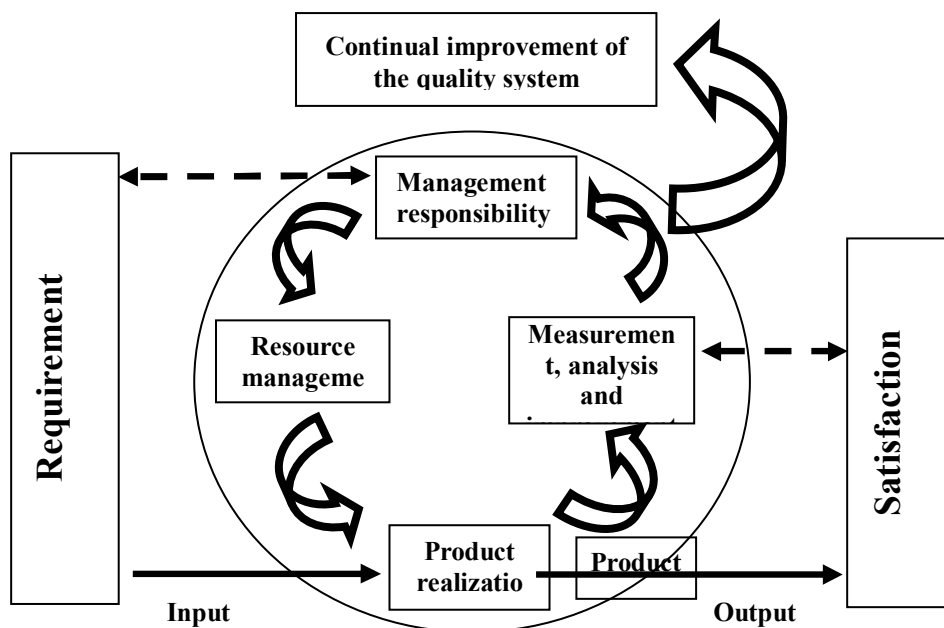


Figure 1. Model of a process-based quality management system

Nowadays, customer satisfaction is now the primary objective of the quality system. One of the major reasons for the year 2000 revision of the ISO standards is to emphasize the need to monitor customer satisfaction. At least one-third of new requirements pertain to customer-related processes. Besides, throughout the text of the standard, a broad application to both manufacturing and service industries "product" is the key characteristic of the year 2000 revision.

Quoting from clause 3 of the ISO 9001:2000 QMS, the definition of product:

*Throughout the text of this International Standard, whenever the term "product" occurs, it can also mean "service"*

Moreover, ISO 9001:2000 use "product realization" to substitute the original "process" in the 1994 version for the broader application upon customer communication, design and development, procurement, production, and control of measurement equipments. In other words, those changes require users to access their quality management systems as a series of processes, and not merely to follow the 20 elements of the QMS structure given in ISO 9001:1994. The overall process management approach is widely used in today's business.

### **3.0 Extension Education and Training Center of Chienkuo Technology University**

Extension Education and Training Center of Chienkuo Technology University (CTU-EETC) was established in August 2002, aimed to provide a unique opportunity for students to return to an academic environment with the perspectives of the real world. What CTU wanted to make EETC different were “service-oriented”; “faculty are top professionals” and “educators-mentors who are committed to offer their expertise to students for their interest”. Hence, the core business of CTU-EETC isn’t just providing the timely and variety of courses and programs to students. It’s paving the pathway that will lead the students to reach their personal and professional goals.

The missions of CTU-EETC were stated as followed:

- 1. Providing the continuing education to develop the global economy**
- 2. To extend the academic resource to the public, and sharing the experience and knowledge with the society.**
- 3. To offer the students an environment of dynamic and variety background with practical and skillful knowledge**
- 4. To develop the academic cooperation with school abroad and to enhance the teaching quality**

### **4.0 Why Need To Establish an ISO 9000 Quality Management System**

Basically, purpose of curriculum design for the extension education training was aimed to satisfy market requirements from society and school’s self management cost control. From our observation, the characteristics of extension education training system were so different from those of regular student education system, especially on training courses diversity and trainees’ frequently changes. Therefore, those extension education training departments faced some problem, because of their both complex tasks, one to obey internal (in-school) administrative regulations and the other to find ways that can meet many kinds of external training needs.

For an extension education training organization, a good SOP system will ensure their staff to meet those” customer needs orientation” and “customer satisfaction assurance” purposes.

### **5.0 An ISO 9000 Quality Management System for CTU-EETC**

We applied ISO 9000 QMS (Quality Management System) structure to set up a management system, including complete SOP and needed reports/forms, to ensure EETC’s quality of teaching service and administrative support. In accordance with the structure of ISO 9001 : 2000 Quality Management System, we established an integrated quality management system which consisted of a Quality Manual and 25 Procedures explained as followed.

#### **5.1 *Quality Manual***

Quality Manual has been developed to give support to related people in the delivery processes of the training courses, and to ensure that the trainee’s learning experience/satisfaction is placed at the centre of all activities. In accordance with the structure of ISO 9001 : 2000 Quality Management System, CTU-EETC’s QM was divided to 8 sections: including Section 1: Introduction of QM; Section 2: Purpose and Scope of QM; Section 3: Quality Policy and Objective; Section 4: Quality Management System; Section 5: Management Responsibility; Section 6: Resource Management; Section 7: Product/Service Realization; Section 8: Measurement, analysis and improvement. Part of QM will be illustrated as followed (see Table 1).

Table 1: Quality Manual

<p><i>Chienkuo Technology University</i>  <i>Extension Education and Training Center</i></p> <p><b><u>Quality Manual</u></b> <span style="float: right;">ETC-QM-001-A</span></p>	
<b>Section 1: Introduction of QM</b>	
To ensure the teaching, service and administrative support quality, this Quality Manual (QM) is published by Extension Education and Training Center	
<p>(EETC) of Chienkuo Technology University (CTU), to clearly define all requirements and contents of CTU-EETC's quality management system. This QM is established in accordance with ISO 9001 : 2000 international standard, defining all required organizations, responsibilities, processes and resources. Through the operations and continuous improvements of this quality system, we hope to provide our customers with the most satisfied service quality.</p>	
<b>Section 2: Purpose and Scope of QM</b>	
<b><u>Purpose</u></b>	
Publication of this documented QM is to assure that, under such a quality management system, all the teaching/service/administrative support activities will conform to standard quality requirements. Moreover, this QM will be provided as the guidelines of CTU-EETC's educators-mentors during offering their expertise to students, to ensure the properly and adequately operations of CTU-EETC's quality management system.	
<b><u>Scope</u></b>	
Those contents and required issues are applicable to the quality management of <b>teaching, service and administrative support</b> activities.	
<b>Section 3: Quality Policy and Objective</b>	
<b><u>Quality Policy</u></b>	
CTU-EETC's quality policy is: <i>Aim to provide knowledge service to our society. We extend school's teaching resources, connected with industry requirements, then to provide accredited and non-accredited courses as well as short- and medium-term vocational training for adults, both in and out of the employment pool.</i>	
<b><u>Quality Objective</u></b>	
<ol style="list-style-type: none"> <li>1. Providing the continuing education to develop the global economy</li> <li>2. To extend the academic resource to the public, and sharing the experience and knowledge with the society.</li> <li>3. To offer the students an environment of dynamic and variety background with practical and skillful knowledge</li> <li>4. To develop the academic cooperation with school abroad and to enhance the teaching quality</li> </ol>	
<b>Section 4: Quality Management System</b>	
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<b>Section 5: Management Responsibility</b>	
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<b>Section 6: Resource Management</b>	
.....	
<b>Section 7: Product/Service Realization</b>	
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<b>Section 8: Measurement</b>	
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5.2 *Procedure*

Applying the process-oriented philosophy in the ISO quality management system, we established 25 documented procedures (see Table 2) to define standard operations for all CTU-EETC’s teaching, service and administrative support activities. All documented procedures were written in the same 5-section format: including **Section 1: Purpose**- to explain purpose of that procedure; **Section 2: Scope**- to define applicable area of that procedure; **Section 3: Responsibility**- to define related organizations and responsible personnel; **Section 4: Operation Process**- to explain the applicable processes and control points of related operations; **Section 5: Related Document**- to explain the relationship of this procedure with the other procedures and QM. A sample of documented procedure will be illustrated as followed (see Table 3).

**Table 2: Documented Procedure in accordance with ISO 9001:2000 QMS clauses**

ISO 9001 Clause	Related Documented Procedure ( with series number )
4	1. Document and Record Control Procedure (EETC-DP-4-01-A)
5	1. Management Review Procedure (EETC-DP-5-01-A) 2. Teacher’s Qualification Evaluation Procedure (EETC-DP-5-02-A) 3. Quality Policy and Objective Control Procedure (EETC-DP-5-03-A)
6	1. Facility Management Procedure (EETC-DP-6-01-A) 2. Rules of Attendance for Teacher (EETC-DP-6-02-A) 3. Procurement Management Procedure (EETC-DP-6-03-A) 4. Teacher’s Part-Time Teaching Pay Management Procedure (EETC-DP-6-04-A) 5. Staff Recruitment Management Procedure (EETC-DP-6-05-A)
7	1. Enrollment Plan (to MOE) Management Procedure (EETC-DP-7-01-A) 2. Issue of Certificate Management Procedure (EETC-DP-7-02-A) 3. Curriculum Planning Management Procedure (EETC-DP-7-03-A) 4. Course Delivery Planning Management Procedure (EETC-DP-7-04-A) 5. Advertisement for Enrollment Management Procedure (EETC-DP-7-05-A)
7	6. Student’s Entrance and Register Management Procedure (EETC-DP-7-06-A) 7. Textbook Order/Return Management Procedure (EETC-DP-7-07-A)
8	1. Internal Audit management Procedure (EETC-DP-8-01-A) 2. Customer Complaint Management Procedure (EETC-DP-8-02-A) 3. Continuous Improvement management Procedure (EETC-DP-8-03-A) 4. Rules of Attendance for Student (EETC-DP-8-04-A) 5. Teacher’s Teaching Performance Evaluation Procedure (EETC-DP-8-05-A) 6. Non-conformance Management Procedure (EETC-DP-8-06-A) 7. Corrective and Prevention Management Procedure (EETC-DP-8-07-A) 8. Student’s Score Management Procedure (EETC-DP-8-08-A) 9. Certificate Qualification Review Management Procedure (EETC-DP-8-09-A)

**Table 3: Documented Procedure (Sample)**

<p><i>Chienkuo Technology University</i> <i>Extension Education and Training Center</i></p> <p><b>Curriculum Planning Management Procedure    EETC-DP-7-03-A</b></p>
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**1. Purpose:**

This document is established to ensure the reasonably and smoothly arrangement of EETC's courses, and provide for students' course choose.

**2. Scope:**

Applicable to all curriculum plan of CTU-EETC

**3. Responsibility:**

3.1 Director of CTU-EETC: Inspection and Final Confirm of Curriculum Plan

3.2 Chief of Education/Training Section: Preparation all curriculum plan for specific enrollment period

**4. Operation Process:**

4.1 Number of student for every course shall not below the designed lowest limit.

4.2 Planning of curriculum shall consider the availability of CTU-EETC's teachers and equipments.

4.3 Every course of CTU-EETC, including course name and hours, shall follow the regulation of "Enrollment Plan (to MOE) Management Procedure", to be reviewed by Ministry of Education.

4.4 Course schedules can not be changed after arranged. Student's absence shall follow the regulation of "Rules of Attendance for Student".

**5. Related Document:**

5.1 Enrollment Plan (to MOE) Management Procedure

5.2 Rules of Attendance for Student

## 6.0 Conclusion

The establishment and maintenance of business competitive advantage is based on the perceived value of provided product or service by its customers. Business nowadays has to pay more effort on the establishment and maintenance of an effective quality management system. Extension Education and Training Center of Chienkuo Technology University took one year to establish a management system based on the ISO 9001:2000 QMS international standard. A Quality Manual and 25 Departmental Procedures were developed to guide the CTU-EETC's daily tasks. From these ISO documents, CTU-EETC staff can wholly handle every control points and critical jobs for both internal and external tasks. As a result, not only the efficiency improved, the higher trainee satisfaction was also reached.

Learning from the establishment for CTU-EETC's quality management system, we found it's important for the integration of "regulation establishment" and "process management". The key successful factor for CTU-EETC's quality management system was that we clearly define EETC's operation processes at the first stage. Then to allocate needed ISO 9001 requirements to related functional sections. As a result, we can ensure both "total processes management" and "total involvement of people", a typical integrated model of TQM and ISO 9000 system.

## Reference

1. Quality Management Systems – Requirement, ISO 9001:2000 IS Edition.
2. ISO 9004:2000, Quality management systems - Guidelines for performance improvements
3. ISO 9000:2000, Quality management systems - Fundamentals and vocabulary
4. <http://www.iso.ch/>

## Author's Backgrounds

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