

# 结合 ISO 9000 品质管理系统与 PZB 缺口模式以达成顾客满意目标之整合方法

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## An Integrated Approach Combining ISO 9000 QMS and PZB Gap Model to Reach Customer Satisfaction Objective

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**Abstract:** The aim of this study is to combine the designed structure of ISO 9001:2000 QMS and the analysis flow of PZB Gap Model. Related requirements of ISO 9001:2000 QMS were “build-in” into the five gaps of the PZB Gap Model, during 3 phases, for the achievement of service quality. In phase 1, to identify Gaps by using PZB Gap Model as an analysis tool; In phase 2, we fill Gaps by applying ISO 9001:2000 clauses requirements; In phase 3, action are taken to close or narrow Gaps by developing SOP which can be followed by employees in accordance with ISO requirements suggested in phase 2. The integrated model and 3-phase transformation could be utilized as an effective and efficient tool to achieve customer satisfaction objective. It can not only to help both the manufacturing and service industries to satisfy or exceed the ultimate customer needs, but also to improve the processes among enterprises’ whole quality management system. To verify our suggested model, we helped a university’s Extension Education Training Center in Taiwan to establish its ISO quality management system. A Quality Manual and some ISO procedures were assigned to improve related “Gap” which designed in accordance with our integrated model. From the help of such an ISO and PZB combined philosophy, not only its efficiency improved, the higher trainee satisfaction was also reached.

**Key words:** ISO 9001 2000 QMS; PZB gap model; customer satisfaction

### 1 Introduction

Both purposes of ISO 9000 international standards and the PZB Gap Model are focused on the achievement of customer satisfaction. In this study, we combined the designed structure of ISO 9001:2000 QMS and the analy-

sis flow of PZB Gap Model, and “build-in” the requirements of ISO 9001:2000 into the five gaps of the PZB Gap Model. The integrated model can be used as a foundation to establish businesses’ ISO quality management system, then to become an effective and efficient tool(document system) to achieve customer satisfaction

objective. Results of our study can not only to help both manufacturing and service industries to satisfy or exceed the ultimate customer needs, but also to improve the management processes of the whole quality system within enterprises.

## 2 Service Quality and Customer Satisfaction

The majority of early quality models were concentrated on tangible goods. Bergman and Klefsj proposed that, due to the intangible nature of services themselves, to define and to model the quality of services are generally acknowledged to be more difficult than modeling the quality of goods<sup>[1]</sup>.

Service quality is a concept that has aroused considerable interest in the research literatures because of the difficulties in both defining and measuring it with a consensus for both is still missing<sup>[2-4]</sup>. A short but widely accepted definition views quality as “conformance to requirements” rather than “goodness, or luxury, or shininess, or weight”<sup>[5]</sup>. Also, there is a common definition of service quality as “the extent to which a service meets customers' needs or expectations”<sup>[3,4,6]</sup>. Today, it is widely accepted that, using the definition from Zeithaml et al., service quality can be defined from five dimensions, namely Tangibles, Reliability, Responsiveness, Assurance, and Empathy<sup>[7]</sup>.

Customer satisfaction and enterprise's performance have well been documented to have a positive correlation<sup>[8,9]</sup>. Eklf also declared that customer satisfaction should play a central role in the company's Total Quality Management<sup>[10]</sup>. Customer satisfaction is the most efficient and, at the same time, least expensive source of market communication, as a satisfied customer will tell others of his satisfaction and recommend the product or service to potential customers. But we must also take into consideration the danger of the spread of unfavorable appraisals of the product or service that occurs with dissatisfied customers. These dangers were illustrated from different researches<sup>[11,12]</sup>. Hence, knowing the undesirable effect from dissatisfied customers. The product or service providers must, therefore, devote most attention to ensure the customer satisfaction.

## 3 Designed Structure of ISO 9000 Series Standards

ISO 9001:2000<sup>[13,14]</sup> 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 9000 series' standards provide a process-based QMS model, as shown in Fig.1, for establishment, implementation, and continual improvement of a quality system<sup>[15]</sup>. Using the concept of “process”, the ISO 9000 series' standards clearly define the quality-related requirements ranging from “customer requirement” as an input transferred<sup>[1]</sup> to “customer satisfaction” as an output. The output of one process may directly form the input to the next process and the final product is often the result of a network or system of processes.

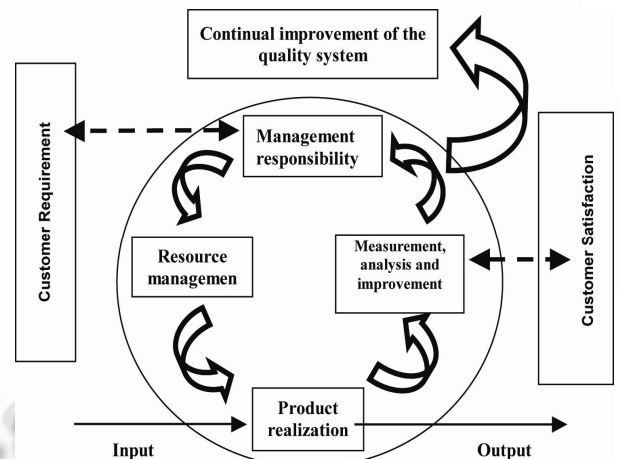


Fig.1 Model of a process-based quality management system

According to the official ISO official web-site, the ISO 9000/9001/9004:2000 standards that mainly make up the ISO 9000 family are listed below:

**ISO 9000:2000, Quality management systems - Fundamentals and vocabulary**

**ISO 9001:2000, Quality management systems - Requirements**

**ISO 9004:2000, Quality management systems - Guidelines for performance improvements**

Since customer satisfaction is now the primary objective of the quality system. One of the major reasons for the year 2000 revision from original 1994 version

ISO 9000 family 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.

### 4 PZB GAP Model

Researches on service quality and satisfaction have unearthed multitudinous archetypes by various researchers. Parasuraman et al.<sup>[2]</sup> suggested three underlying themes in the academic literatures on services: (1) service quality is more difficult for the consumer to evaluate than goods quality, (2) service quality perceptions result from a comparison of consumer expectations with actual service performance, and (3) quality evaluations are not made solely on the outcome of service; they also involve evaluations of the process of service delivery. Zeithaml et al.<sup>[7]</sup> defined perceived service quality as the difference(gap)between customers' expectations for service performance prior to the service encounter and their perceptions of the service received<sup>[16]</sup>. The most popular gap model of service quality was introduced by Parasuraman et al., as shown in Fig.2, defined that consumers' perceptions of service quality are influenced by five gaps occurring during the process of service delivery. The definition of those five "Gap" for the PZB Gap Model and some extended explanations are as follows:

**Gap 1:** Not knowing what customers expect - the difference between "expected service of customer" and "management perceptions of customers expectations".

**Gap 2:** Not selecting the right service design - the difference between "service quality specification" and "management perceptions of customers expectations".

**Gap 3:** Not delivering to service standards - the difference between "service quality specification" and "service delivery".

**Gap 4:** Not matching performance to promises - the difference between "external communications to customers" and "service delivery".

**Gap 5:** Perceived service quality- the difference between "expected service" and "perceived service". (PS: Gap 5 is resulting from the sum of degree and direction of Gaps 1 to 4)

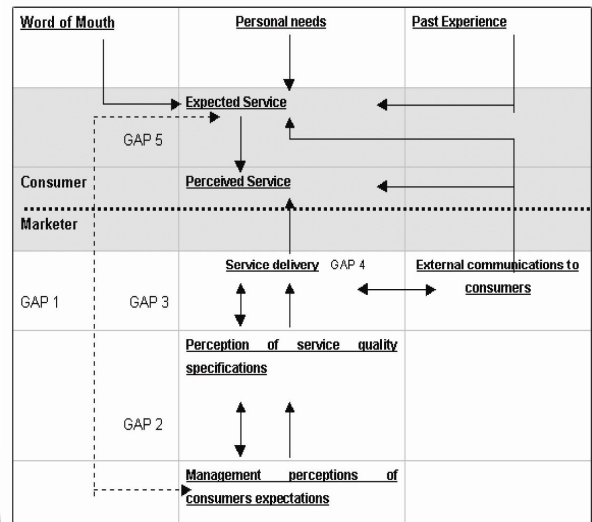


Fig.2 Model of service quality (Source: A. Parasuraman, Valerie A. Zeithaml, and Leonard L. Berry. (1985))

### 5 Combination of ISO 9001:2000 QMS and PZB GAP Model

Since PZB Gap Model is one of the best procedures to help lead a company to not only improve their processes, but recognize which processes are in need of improvement for customer satisfaction. So we try to separate the achievement for service quality into 3 phases which will be explained in the next section.

Our purpose is to combine the designed "process-based" structure of ISO 9001:2000 QMS and the analysis flow of PZB Gap Model. We try to "build-in" the requirements of ISO 9001:2000 QMS into the five gaps of the PZB Gap Model. We hope to develop an integrated model to be used as a tool to improve the processes among enterprises' whole quality management system and to achieve customer satisfaction objective, for both manufacturing and service industries. 3 phases were suggested as followed:

**Phase 1: Identify Gaps by using PZB Gap Model as an analysis tool.**

**Phase 2: Fill Gaps by applying ISO 9001:2000 requirements as base of quality system.**

**Phase 3: Action taken to close or narrow Gaps by developing SOP in accordance with ISO 9001:2000 requirements suggested in phase 2, with which can be followed by enterprise employees.**

Requirements of the ISO 9001:2000 QMS will be suggested to be embedded in each five gaps of the PZB Gap Model. From our study, each “gap” were mapped as shown respectively in Tables 1~5. ( each number in the **【** denotes the clause number of the ISO 9001:2000 QMS, and the following sentence shows the title of the clause requirement)

Table 1 Suggested ISO 9001:2000 requirements for Gap 1

<b>【5.2】</b> Customer Focus	<b>【7.2】</b> Customer Related Processes
<b>【7.2.1】</b> Determination of Requirements Related to the Product	<b>【7.2.2】</b> Review of Requirements Related to the Product
<b>【7.2.3】</b> Customer Communication	

Table 2 Suggested ISO 9001:2000 requirements for Gap 2

<b>【6】</b> Resource Management	<b>【7.1】</b> Planning of Product Realization
<b>【7.3】</b> Design and Development	<b>【7.3.1】</b> Design and Development Planning
<b>【7.3.2】</b> Design and Development Inputs	<b>【7.3.3】</b> Design and Development Outputs
<b>【7.3.4】</b> Design and Development Review	<b>【7.3.4】</b> Design and Development Review
<b>【7.3.5】</b> Design and Development Verification	<b>【7.3.6】</b> Design and Development Validation
<b>【7.3.7】</b> Control of Design and Development Changes	

Table 3 Suggested ISO 9001:2000 requirements for Gap 3

<b>【7.5.1】</b> Control of Production and Service Provision	<b>【7.5.2】</b> Validation of Processes for Production and Service Provision
<b>【7.5.3】</b> Identification and Traceability	<b>【7.5.4】</b> Customer Property
<b>【8.2】</b> Monitoring and Measurement	

Table 4 Suggested ISO 9001:2000 requirements for Gap 4

<b>【5.1】</b> Management Commitment	<b>【5.3】</b> Quality Policy
<b>【5.4】</b> Planning	<b>【5.4.1】</b> Quality Objective
<b>【5.4.2】</b> Quality Management System Planning	

Table 5 Suggested ISO9001:2000 requirements for Gap 5:

<b>【8.2】</b> Monitoring and Measurement	<b>【8.2.1】</b> Customer Satisfaction
<b>【8.2.4】</b> Monitoring and Measurement of Product	<b>【8.5.1】</b> Continual Improvement
<b>【8.5.2】</b> Corrective Action	<b>【8.5.3】</b> Preventive Action

Till now, phase 1 and 2 of our proposed model were completed. And each PZB gap was assigned a set of ISO 9001:2000 guidelines to close/narrow it.

## 6 A Demonstration Case

To verify our suggested model, a demonstration study was conducted. We took Extension Education Training Center of Chienkuo Technology University (CTU-EETC) in Taiwan to explain phase 3 of our proposed methodology. An ISO quality management system based on the integrated model was established in accordance with the ISO 9001:2000 QMS structure. A Quality Manual and some Procedures were developed to guide the CTU-EETC’s daily tasks. From those ISO documents, which designed in accordance with suggested model, CTU-EETC staff can wholly handle every control points and critical jobs for customer satisfaction. Samples of established of ISO procedures ( with series number) to improve related “Gap” were listed as followed:

ISO Procedures for Gap 1:

- ① Document and Record Control Procedure (EETC-DP-4-01-A)
- ② Quality Policy and Objective Control Procedure (EETC-DP-5-03-A)

ISO Procedures for Gap 2:

- ①Curriculum Planning Management Procedure (EETC-DP-7-03-A)
- ②Teacher's Qualification Evaluation Procedure (EETC-DP-5-02-A)

ISO Procedures for Gap 3:

- ① Course Delivery Planning Management Procedure (EETC-DP-7-04-A)
- ②Teacher's Teaching Performance Evaluation Procedure (EETC-DP-8-05-A)

ISO Procedures for Gap 4:

- ① Document and Record Control Procedure (EETC-DP-4-01-A)
- ②Advertisement for Enrollment Management Procedure (EETC-DP-7-05-A)
- ③Curriculum Planning Management Procedure (EETC-DP-7-03-A)

ISO Procedures for Gap 5:

- ① Document and Record Control Procedure (EETC-DP-4-01-A)
- ②Management Review Procedure (EETC-DP-5-01-A)
- ③Internal Audit management Procedure (EETC-DP-8-01-A)
- ④Customer Complaint Management Procedure (EETC-DP-8-02-A)
- ⑤ Continuous Improvement management Procedure (EETC-DP-8-03-A)

With the help of such an ISO and PZB combined philosophy, not only the efficiency improved, the higher trainee satisfaction was also reached. Such a "customer-oriented" quality system helped CTU-EETC staff wholly handle every control points and critical jobs for customer

satisfaction. With the help of such a quality system, under past work experience, CTU-EETC reached a total NT 11,636 thousand dollars income (amount to 96.96% of yearly target) in 2005, and was commend by Taiwan's Bureau of Employment and Vocational Training

## 7 Conclusion

Customer satisfaction has received widespread recognition and it would be one of the principal strategies that enterprises need to face in the future. However, most enterprises have difficulty in accurately making customer satisfaction activities strategy decision.

Under the common goal, of applying customer satisfaction as an output, we "build-in" the requirements of ISO 9001:2000 QMS into the five gaps of the PZB Gap Model. The integrated model may be utilized as an effective and efficient tool to introduce and implement customer satisfaction objective. It can not only to help enterprises, both for manufacturing and service industries, to satisfy or exceed customers' needs, but also to improve the processes among enterprises' whole quality management system.

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