Combining ISO 9001:2000 QMS and PZB Gap Model to Reach Customer Satisfaction -- An Integrated Approach and Empirical Study

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ABSTRACT

Due to the intensive competition, the competence of an enterprise has focused on knowing customers, satisfying customers and continuous improvement. Under the emerging paradigm, to establish an effective and efficient quality system becomes a main issue for enterprises. Upon the 3rd revision, compared with the 1987 and 1994 versions, the ISO 9001:2000 Quality Management System (QMS) becomes much more clearly emphasizing on implementing customer satisfaction for both manufacturing and service industries. Among the previous researches of the service industries, PZB (Parasuraman, Zeithaml & Berry) Gap Model is cited frequently as a tool to analyze and enhance customer satisfaction. This model suggested a quality improvement way through minimizing five kinds of gaps among customers' expectations, service providers' designs, service delivery, and customers' perceptions after being served.

The aim of this article is to combine the designed structure of ISO 9001:2000 QMS and the analysis flow of PZB Gap Model, and then to conduct an empirical case study. Under the common goal and designed philosophy of applying customer requirement as an input and customer satisfaction as an output, we "build-in" the requirements of ISO 9001:2000 QMS into the five gaps of the PZB Gap Model. Result of the integrated model may be utilized as an effective and efficient tool to introduce and implement customer satisfaction objective.

In our research, we took Extension Education Training Center of Chienkuo Technology University (CTU-EETC) as example. During the establishment of a management system, the ISO and PZB combined model was introduced for CTU-EETC's customer satisfaction purpose. Some ISO documented Procedures were assigned to guide the CTU-EETC's daily CS tasks. Such a "customer-oriented" quality system helped CTU-EETC staff wholly handle every control points and critical jobs for customer satisfaction. Not only the efficiency improved, the higher trainee satisfaction was also reached. CTU-EETC reached a total NT 11,636 thousand dollars (amount to 96.96% of yearly target) in 2005, and was commend by Taiwan's Bureau of Employment and Vocational Training.

Keywords: *ISO 9001:2000, PZB Gap Model, Customer Satisfaction*

1.0 Introduction

Both the purposes of year 2000's ISO standards revision and the PZB Gap Model are focused on the achievement of customer satisfaction. In this article, we try to combine the designed structure of ISO 9001:2000 QMS and the analysis flow of PZB Gap Model, and to "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 the ultimate customer needs, but also to improve the processes of the whole quality management system within enterprises. We took Extension Education Training Center of Chienkuo Technology University (CTU-EETC) as example. The ISO and PZB combined model was introduced for CTU-EETC's customer satisfaction purpose. Some documented Procedures were developed to guide the CTU-EETC's daily tasks in order to reach its CS purpose for both internal and external customers. From the help of such an ISO and PZB combined philosophy, not only the efficiency improved, the higher trainee satisfaction was also reached.

2.0 Service Quality and Customer Satisfaction

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 [1, 2, 3]. A short but widely accepted definition views quality as "conformance to requirements" rather than "goodness, or luxury, or shininess, or weight" [4]. Also, there is a common definition of service quality as "the extent to which a service meets customers' needs or expectations" [2, 3, 5].

Customer satisfaction and enterprise's performance have well been documented to have a positive correlation [6, 7]. Eklöf declared that customer satisfaction should play a central role in the company's Total Quality Management [8]. In the future decade, customer satisfaction issue will become one of the most important strategy and topic. 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.

3.0 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 [9]. 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 [10] 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 [11]. 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.

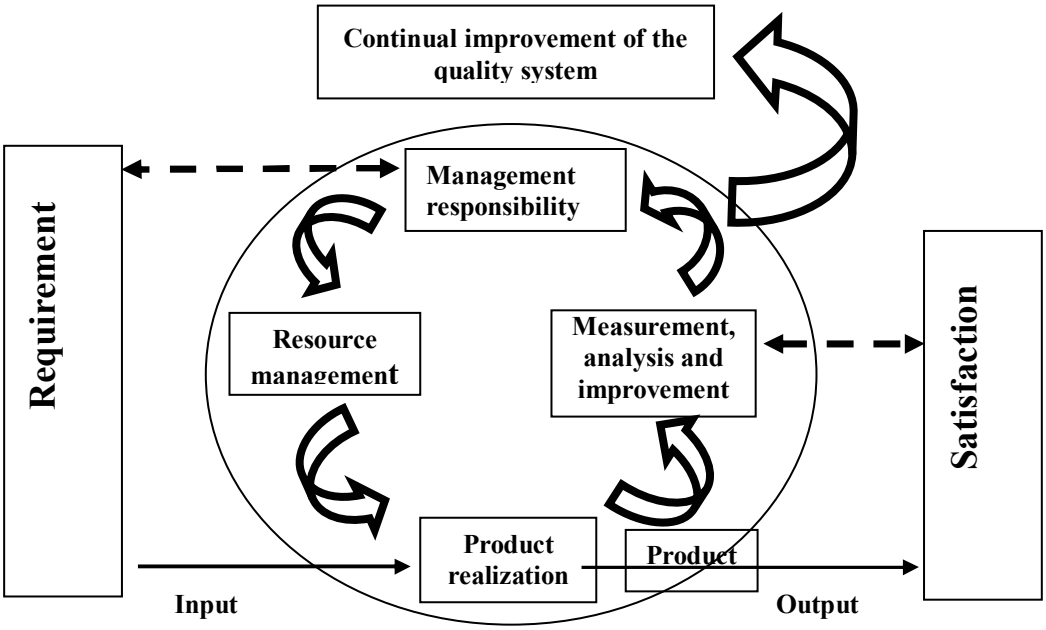

Figure 1. Model of a process-based quality management system

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.

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.

4.0 PZB Gap Model

Researches on service quality and satisfaction have unearthed multitudinous archetypes by various researchers. The most popular gap model of service quality was introduced by Parasuraman et al., as shown in **Figure 2**, defined that consumers' perceptions of service quality are influenced by five gaps occurring during the process of service delivery [12]. 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)

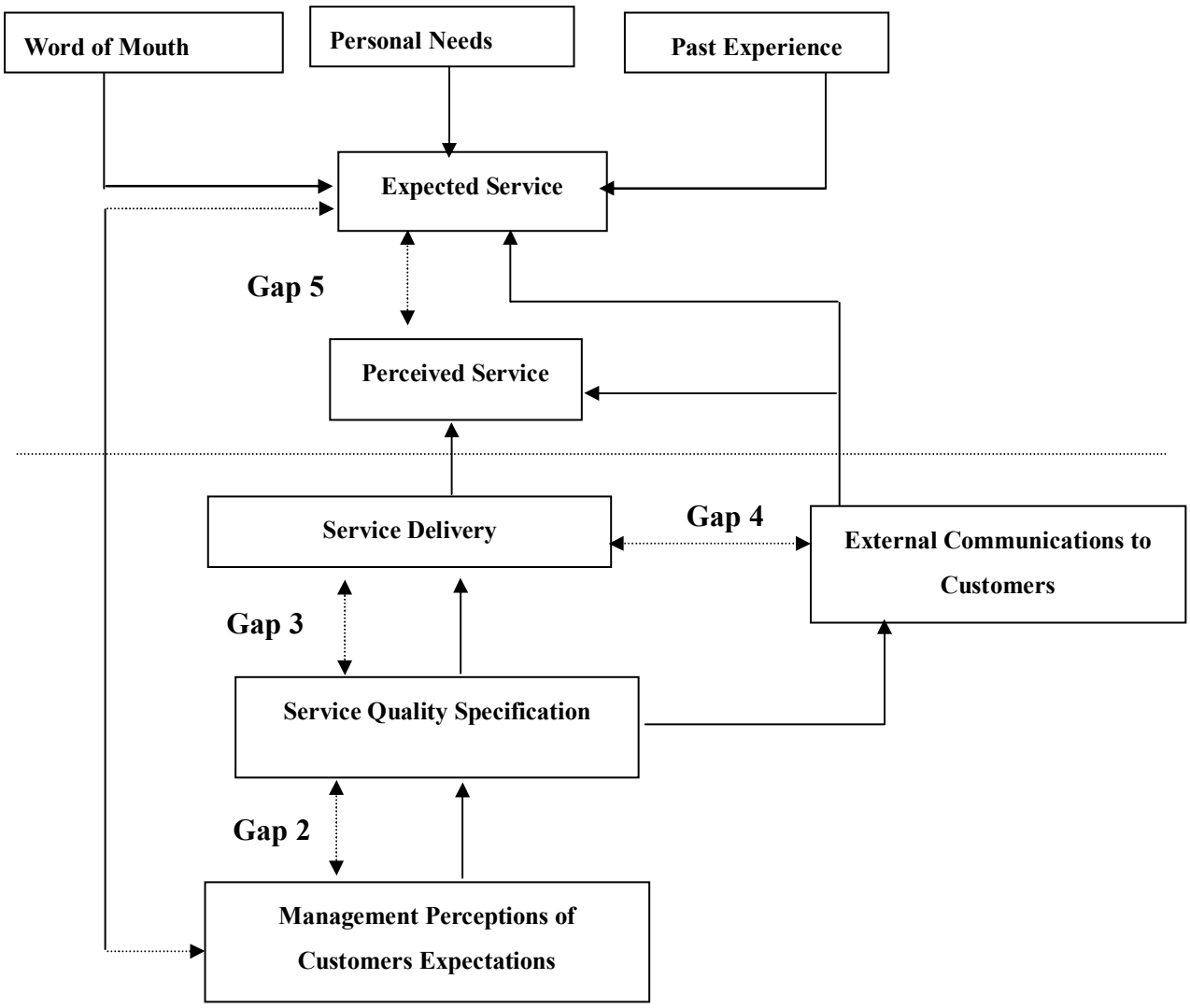

Figure 2. Conceptual Model of Service Quality (Source: Zeithaml, V.A., Berry, L.L., Parasuraman, A. (1988),

5.0 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 2 phases:

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.

Requirements of the ISO 9001:2000 QMS are embedded in each five gaps of the PZB Gap Model, respectively. (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)

ISO 9001:2000 requirements for Gap 1:

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

ISO 9001:2000 requirements : ISO 9001:2000 requirements for Gap 2:

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

ISO 9001:2000 requirements : ISO 9001:2000 requirements for Gap 3:

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

ISO 9001:2000 requirements for Gap 4:

【5.1】Management Commitment	【5.3】Quality Policy
【5.4】Planning	【5.4.1】Quality Objective
【5.4.2】Quality Management System Planning	

ISO 9001:2000 requirements for Gap 5:

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

6.0 Empirical Case -- ISO 9000 Quality Management System for CTU-EETC

We took Extension Education Training Center of Chienkuo Technology University (CTU-EETC) to explain our model. We established an ISO quality management system based on the integrated model. There're 25 Procedures were developed to guide the CTU-EETC's daily tasks. From those ISO documents, which were designed in accordance with suggested model, CTU-EETC staff can wholly handle every control points and critical jobs for customer satisfaction. Suggested ISO procedures 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:

1. Curriculum Planning Management Procedure (EETC-DP-7-03-A)
2. Teacher'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)
2. Teacher'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)
2. Advertisement for Enrollment Management Procedure (EETC-DP-7-05-A)
3. Curriculum Planning Management Procedure (EETC-DP-7-03-A)
4. Course Delivery Planning Management Procedure (EETC-DP-7-04-A)

ISO Procedures for Gap 5:

1. Document and Record Control Procedure (EETC-DP-4-01-A)
2. Management Review Procedure (EETC-DP-5-01-A)

3.	Internal Audit management Procedure (EETC-DP-8-01-A)
4.	Customer Complaint Management Procedure (EETC-DP-8-02-A)
5.	Continuous Improvement management Procedure (EETC-DP-8-03-A)
6.	Corrective and Prevention Management Procedure (EETC-DP-8-07-A)
7.	Student's Score Management Procedure (EETC-DP-8-08-A)

7.0 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. From the case of CTU-EETC's ISO documents system, which designed in accordance with our integrated model, suggested ISO procedures were assigned to improve related "Gap". From 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. CTU-EETC reached a total NT 11,636 thousand dollars (amount to 96.96% of yearly target) in 2005, and was commend by Taiwan's Bureau of Employment and Vocational Training.

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Author's Backgrounds

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