

行政院國家科學委員會補助專題研究計畫成果報告

台灣地區通訊工業推行品質管理之實證研究

計畫類別：個別型計畫

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執行期間：89年8月1日至90年7月31日

計畫主持人：蘇朝墩

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The Empirical Study of Implementing Quality Management in Telecommunication Industry in Taiwan

計畫編號：NSC 89-2213-E009-170

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一、中文摘要

隨著全球電信自由化的世界潮流，通訊工業未來將是台灣最具發展潛力的明星產業。在競爭激烈的通訊市場裡，廠商唯有生產高品質且低成本的产品，以獲得消費大眾的青睞，如此方可立足於市場而不会被淘汰。本計劃以問卷調查的方式，訪問國內通訊製造廠商，以瞭解其推行品質管理(包含品質管理實務與全面品質管理)之現況。探討台灣地區通訊工業施行品質管理實務與全面品質管理之間的相關性，以及台灣地區通訊工業推行品質管理與品質績效之間的關係。本計劃將提出若干建議供國內之通訊廠商參考，以提升其品質績效與增強其競爭優勢。

關鍵詞：通訊工業、品質管理實務、全面品質管理

Abstract

Following the trend of global telecommunication liberalization, the telecommunication industry in Taiwan will grow up quickly in the future as a star industry. Telecommunication manufacturers should produce high quality products with low price to customers; otherwise, they will be eliminated through competition in competitive market. Questionnaires are used in this project to survey the implementation issues of quality management (including quality management practices and total quality management) in telecommunication

industry in Taiwan. Over 30 companies are surveyed. This project studies the relationship between QMP and TQM, and the relationship between the quality management issues and the corresponding quality performances such as defect rate, rework rate and delay rate of delivery. Based on these investigations, several improvement suggestions will be given.

Keywords: Telecommunication industry, quality management practices (QMP), total quality management (TQM)

二、緣由與目的

In the 21st century, we are entering into an era of information technology. Companies must effectively master information technology to remain competitive in the increasingly competitive market. The recent trend towards liberalizing global telecommunications has created tremendous potential business opportunities. Taiwan's telecommunication industry is expected to expand to over NT\$300 billion by 2005 with a 17.2% annual growth rate second only to the semiconductor manufacturing industry according to Taiwan Economic Research Institute's projection (Wu, 1999).

Corporations must offer high quality, low cost products to attract consumer attention and build a name brand to sustain their competitive advantage. Quality management is an essential part of internal corporate policy that not only determines

product quality, but also impacts the corporation's future development. Therefore, all companies should invest substantial effort into quality improvement to strengthen their competitive advantage. Ways to improve quality range from quality monitoring in the early days to most recent total quality management (TQM). The quality management system develops a management style that satisfies customer needs. This investigation will fill a void in the research by discussing Taiwanese telecommunication industry quality management by focusing on TQM and quality management practices (QMPs). The Taiwanese telecommunication industry is divided into telecommunication services and the telecommunication production industry; this work focuses on the telecommunication production industry.

This project empirically investigates implementing quality management from the viewpoint of TQM and QMPs and performs the following practical analyses:

1. The current use of TQM in the Taiwanese telecommunication production industry is detailed.

2. The correlation between the implementation of total quality management and quality performance in Taiwan's telecommunication production industry is examined.

3. The current use of QMPs in the Taiwanese telecommunication production industry is detailed.

4. The correlation between the implementation of quality management practices and quality performance in Taiwan's telecommunication production industry is contemplated.

三、結果與討論

1. TQM

This project is based on a survey. The questionnaire used herein was based on the TQM dimensions developed by Huq and Stolen (1998). It contains ten management dimensions and nine control and implementation dimensions: the management dimensions are (1) quality mission statement, (2) customer focus, (3) management

commitment, (4) work environment, (5) communications in the company, (6) performance appraisal system, (7) statistical evidence of quality, (8) familiarity with TQM, (9) measures of quality and (10) causes of quality variation while the control and implementation dimensions are (11) customer feedback – vehicles used, (12) commitment for continual improvement, (13) problem solving approach, (14) activities to remove barriers for reaching consensus, (15) comparison of actual with planned performance, (16) education and training, (17) supplier development, (18) quality circles/quality improvement teams, etc. and (19) application of advanced analysis techniques.

The survey results on management dimensions and the control and implementation dimensions are illustrated in two tables. We conclude that these dimensions are significantly different and can offer a comparative analysis of TQM issues in the telecommunication industry. In addition, we believe that TQM has a positive impact on quality performance and obtaining quality awards is directly related to implementing TQM.

2. QMP

This project utilized a questionnaire that was based on the elements of QMPs developed by Badri et al. (1995): (1) top management leadership, (2) role of quality department, (3) training, (4) product design, (5) supplier quality management, (6) process management, (7) quality data reporting, (8) employee relations. Each factor contains several items. The survey results are summarized in eight tables. These data confirm that the surveyed telecommunication companies' quality management has substantial room for improvement.

The Pearson correlation analysis was used to investigate how QMPs implementation affects the quality performance of each organization. The result indicated that the surveyed telecommunication companies believe that better "supplier quality management" and "process management" help improve the

rework rate. "Top management leadership", "supplier quality management", and "quality data reporting" were also deemed critical to lowering the percentage of late deliveries.

四、計劃成果自評

Local telecommunication firms must be as competitive as possible to win customers in a very aggressive global industry. Companies must gain competitive edges by improving the quality of their products. This project investigated the quality management status in Taiwan's telecommunication industry by repeat visits using a questionnaire modified from Huq and Stolen (1998) and Badri, et al. (1995).

Our investigation found that most of the surveyed telecommunication manufacturers were medium-sized firms and there is room for improvement of quality performances. These manufactures generally did not provide inside training classes on advanced quality control technologies (such as experimental design, Taguchi methods and regression analysis) and most managers ignored TQM concept training. These trends should be reversed and it is recommended that companies invite related specialists and academicians and provide lectures regarding statistical methods and related advanced quality management technologies regularly to enhance their ability in data analysis and application. By doing so, it will also provide evidence for the managers to make decision and strategies.

This project focuses on the telecommunication production industry. Future research on the telecommunication services industry is recommended. Besides, making a study of strengths and weaknesses of ISO 9000 to determine if it affects quality improvement can be considered to be a direction by future researchers.

Our research results have been summarized into two journal papers and they are accepted for publication in *The Asian Journal on Quality* and *Measuring Business Excellence*.

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