



UNIVERSITI PUTRA MALAYSIA

**A SURVEY ON TOTAL QUALITY MANAGEMENT IMPLEMENTATION
IN MALAYSIAN MANUFACTURING COMPANIES**

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**A SURVEY ON TOTAL QUALITY MANAGEMENT IMPLEMENTATION
IN MALAYSIAN MANUFACTURING COMPANIES**

By

TAN HUI MIENG

**Thesis Submitted in Partial Fulfillment of the Requirements
for the Degree of Master of Science
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DEDICATION

This thesis is dedicated to my parents who always show their support for their children's further education.

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LIST OF ABBREVIATIONS

AFTA	ASEAN Free Trade Area
ASEAN	Association of Southeast Asian Nations
CE	Concurrent Engineering
DFM	Design for Manufacturability
DOE	Design of Experiments
EU	European Union
ISO 9000	ISO 9000 Quality Systems
JIT	Just in Time Operations
MMC	Malaysian Manufacturing Companies
QA	Quality Assurance
QC	Quality Control
QFD	Quality Function Deployment
SPC	Statistical Process Control
TPM	Total Preventive Maintenance
TQM	Total Quality Management

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February 1997

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The manufacturing sector plays a significant role in the success of the industrial development in Malaysia and contributes significantly to the Malaysian economy. With market globalisation, Malaysian manufacturing companies (MMC) must improve their competitiveness to face the stiff challenges in both domestic or international marketplaces. In today's marketplace, quality has become the main focus for better competitiveness. Hence, Total Quality Management (TQM), the latest and most comprehensive quality management philosophy that is capable of improving factors determining competitiveness, is the strategy recommended for improving MMC's competitiveness. In this thesis, a survey was carried out on MMC to understand their quality management status. The survey found many opportunities for improvements in MMC's TQM implementation. On the basis of the survey and literature review, a four-step implementation

approach on the foundation of ISO 9000 was formulated to implement TQM in MMC. The four steps were: obtain ISO 9000 certification, understand the differences and similarities between ISO 9000 and TQM, implement TQM, and continue improvements. The success in implementing all four steps will lead to improved competitiveness of MMC through Total Quality Management.

Abstrak untuk tesis yang dikemukakan kepada Senat Universiti Pertanian Malaysia sebagai memenuhi sebahagian syarat untuk pengijazahan Sarjana Sains.

**SATU PENGAJIAN ATAS PERLAKSANAAN PENGURUSAN KUALITI
MENYELURUH DI SYARIKAT PEMBUATAN MALAYSIA**

Oleh

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Sektor pembuatan memainkan peranan yang penting dalam menjayakan perindustrian di Malaysia dan menyumbang terhadap pembangunan ekonomi Malaysia. Dengan globalisasi pasaran, syarikat-syarikat pembuatan Malaysia mesti memperbaiki daya saing mereka untuk menghadapi saingan sengit di pasaran dalam negeri dan antarabangsa. Dalam pasaran masa kini, kualiti adalah fokus utama untuk memperbaiki daya saing. Oleh demikian, Pengurusan Kualiti Menyeluruh iaitu satu falsafah pengurusan kualiti yang terkini dan menyeluruh yang berupaya meningkatkan daya saing telah dicadangkan sebagai strategi untuk memperbaiki daya saing syarikat-syarikat pembuatan Malaysia. Dalam tesis ini, satu kajian telah dijalankan atas syarikat-syarikat pembuatan Malaysia untuk memahami taraf pengurusan kualiti mereka. Kajian ini mendapati bahawa terdapat banyak peluang untuk memajukan Pengurusan Kualiti

Menyeluruh di syarikat-syarikat pembuatan Malaysia. Atas asas kajian tersebut, satu pendekatan pelaksanaan diasaskan ISO 9000 telah dicadangkan untuk melaksanakan Pengurusan Kualiti Menyeluruh di syarikat-syarikat pembuatan Malaysia. Pendekatan ini mempunyai empat langkah iaitu: pengiktirafan ISO 9000, kefahaman dalam perbezaan dan persamaan antara ISO 9000 dan Pengurusan Kualiti Menyeluruh, pelaksanaan Pengurusan Kualiti Menyeluruh, dan penerusan kemajuan. Kejayaan dalam pelaksanaan semua empat langkah ini akan memperbaiki daya saing syarikat-syarikat pembuatan Malaysia melalui pengurusan kualiti yang lebih baik.

CHAPTER I

INTRODUCTION

The manufacturing sector plays a significant role in the success of the industrial development in Malaysia. Its contribution to the Malaysian Gross Domestic Product (GDP) has increased from 13.9 per cent in 1970 to 27.0 per cent in 1990 and is expected to account for another 40 per cent by the year 2020 when Malaysia is expected to become a fully industrialised nation (Ali, 1993). The future of Malaysia economy will be relying heavily on the well being of the manufacturing industries. Technological advancements in communication, transportation, marketing, etc. have globalised the world marketplace. With this market globalisation, the competition in both domestic and international marketplaces has become more intense. In addition, technological advancements have also put the marketplace in constant evolution. Under these globalised and fast changing market conditions, how Malaysian manufacturing companies (MMC) react to these conditions will determine the future of Malaysian economy. To stay in or even ahead of competition in the changing environments, Malaysian manufacturing companies must look into the ways of making continuous improvements to enhance their competitiveness. Otherwise, their competitors will. Hence, the issue of concern is not whether Malaysian manufacturing companies are competitive today, but whether they will be competitive tomorrow. The extinction of dinosaurs and the down fall of British Empire are good examples of the outcomes of failing to meet the changing environments.

Many factors that affect competitiveness have undoubtedly changed with the advancement and development in manufacturing technologies and operations management. Information technology is one important technological advancement that has drastically altered the facet of the manufacturing industries. Appropriate use of information in manufacturing sector can lead to the improvements in customer service, quality, yield and efficiencies, cost, flexibility, and time to market (Singh, 1994). The information technology has also eased the collection and analysis of huge amount of data and information required to make various quality and productivity improvements. Automation, artificial intelligence, computer aided design/computer-aided manufacturing (CAD/CAM) are examples of important applications of information technology in manufacturing. Automation, the automatic operation of a system by mechanical or electronic devices that takes the place of human observation, decision making, and action, is one key factor to competitiveness. Automation and its more advanced version--robotics--makes it possible to free people from tasks related to the production, testing, and handling of products, components, raw materials, and quality inspection. People tend to introduce variability into routine and repetitive tasks and this can be a significant source of defects and error. Therefore, automation will not only improve the throughputs and productivity of goods but also the quality of these products (Ralph, 1994).

However, one must also realise that technology advancements in manufacturing must be coupled with the developments in the human aspects to achieve optimum results. The advancements in technologies can minimise human dependence on certain aspects of manufacturing but people cannot

be totally eliminated from today's manufacturing environments and are still the key influence of the performance of manufacturing organisations. If developments in manufacturing technologies represent the advancements in the hardware side of manufacturing, then developments in operations management can be classified as the advancements in the software side of manufacturing. The philosophy and culture of an organisation have the same significant effects on the success of the organisation. The strategies and philosophies in operations management have evolved with time and in today's business environment, quality has become the centre of the strategies and philosophies for organisations' successes.

Since the beginning of 20th Century, quality has gone through many stages of definition. The approaches to institutionalise quality in organisations have also changed with response to the different definitions of quality. It is the interest of this research to look into the current quality management status of Malaysian manufacturing companies and based on the observations of the research to come up with an approach that is suitable for Malaysian manufacturing companies to implement quality as part of their culture and strategies in strengthening their competitiveness in both domestic and international marketplaces.

Aims of the Current Research

The main objective of this research is to survey the current status of Total Quality Management (TQM) implementation in Malaysian Manufacturing Companies (MMC). From the findings of the survey and literature review, an approach to strengthen TQM implementation in MMC

will then be discussed. The results of this implementation approach will be the improvements in MMC's TQM implementation and then their competitiveness in both domestic and international marketplaces. In addition to that, the secondary objective of the research is to provide information regarding the current status of MMC that may be useful to other research purposes regarding MMC.

The Layout of the Thesis

Following this introductory chapter, the research background and literature on quality and quality management will be discussed and reviewed in Chapter II. Chapter III presents the methods used to collect the required data and the techniques employed in analysing the data collected. Chapter IV focuses in presenting and interpreting the data, and the findings on MMC's quality management status. Chapter V discusses the roles and importance of quality management and technology management in MMC, and the approaches that will eventually lead to the implementation of Total Quality Management in MMC. Findings and recommendations are summarised in the last chapter, Chapter VI.

CHAPTER II

LITERATURE REVIEW

As discussed earlier in Chapter I, improving competitiveness is the key requirement for Malaysian manufacturing companies (MMC) to stay ahead of the stiff competition in today's world marketplace. Achieving better competitiveness through quality management is the approach that will be investigated in this thesis. Many companies have employed quality management to revive their competitive edge and many ideas have been generated by quality management practitioners and consultants to achieve such competitive edge. In this chapter different ideas generated by quality professionals are reviewed. In addition, discussions on relevant topics pertaining to the objectives of the research such as the research background, the evolution of quality philosophies, competitiveness, quality management tools and strategies will be carried out.

Research Background

For many years, the Malaysian Government has employed various approaches to help Malaysian manufacturers achieve better competitiveness in both domestic and international marketplaces to ensure industrialisation success of the Malaysian economy. Tax reduction incentives and high tariffs on foreign products have minimised the competition in the domestic markets for various key industries. On the international scene, especially in the

world's largest market--the United States of America, Malaysian products are given a special tax relief granted by the U.S. Government under the General System of Preference (GSP) for being considered as one of the developing countries.

However, the market scenario has begun to change. Malaysia's GSP status for exporting goods into the U.S. market will be withdrawn by the end of 1996 after many years of successes in the Malaysian economy. This does not mean the end of the road for Malaysian products into the U.S. but it definitely means that the competition will be much stiffer than it used to be. With the formation of the European Union (EU), competition has also become more challenging for the products from countries outside the EU like Malaysia. In addition, under the agreement of the Association of Southeast Asian Nations (ASEAN), the formation of ASEAN Free Trade Area (AFTA) will see the removal of tariff shields in marketplaces of the member countries. This will have both positive and negative impacts on Malaysian manufacturers. The positive impacts will be the gain of the market a few times larger than the current Malaysian market at the price of competition in the domestic market from neighbouring ASEAN countries. Compared to most ASEAN countries other than Singapore, Malaysia's competitiveness lies in the area of higher technology levels and better skilled workforce. However, higher wages have somewhat negated this competitiveness. The reverse can be said when comparing Malaysia and Singapore.

The social and economical status of the three markets discussed above, the U.S., EU, and ASEAN, are significantly different. Generally, the well-developed social and economic status of the U.S. and the EU have

shaped the consumer attitudes there to be more in favor of better product quality even if at a higher price. Most of the ASEAN countries are still in the developing stage socially and economically where financial resources are relatively limited. The situation has made the purchase decisions more towards balancing both price and quality aspects. Basically these attitudes relate strongly to customers' perceived value of the goods for which they pay for. The market differences in the developed and developing countries have demanded MMC to meet the requirements of both quality and cost.

Competitiveness

The development and advancement of mass production techniques had made many goods that were originally available only to the upper class society within the reach of the majority of the population. The mass production techniques had greatly increased the number and variety of goods available in the market and created the new balance of supply and demand relationship which in turn resulted in the drop of the prices of goods. The new supply and demand relationship provided the necessary foundation needed for the evolution of the ideas of competitiveness. When goods became more affordable in terms of price to the public, people started looking at other factors other than price before buying a product. Thus, pricing alone could no longer provide enough market competitiveness and the focus on the other factors began.

Many factors determine competitiveness. As discussed earlier, although pricing still plays a significant role, it is no longer the sole determinant. Competitiveness is now a combination of selling price (cost),

quality, dependability, flexibility, time, and service (Noori and Radford, 1995). The lack of one or few of these elements will cause customer disappointments and dissatisfactions.

Surveys carried out by the General Systems Inc. in major U.S. markets have shown that consumers have made quality a progressively more important consideration than price in their purchase decision. In 1992, nine out of ten buyers made quality their primary purchasing standard (Feigenbaum, 1994). This may not be true for all countries at the moment but it is the trend the world is moving to. This has placed quality as one of the key focuses of any effort to achieve better competitiveness.

For many progressive companies, quality is given and a necessity to be in business (Pegels, 1995). Hence, focusing on quality alone is not enough. In these companies, productivity and the means of how to improve productivity are as important as, if not more important than, quality. Improving quality in many cases also brings along productivity improvement but there many other ways to further improve productivity. Changes in technology, management, and processes provide opportunities for productivity improvement all the time. These opportunities need to be well capitalised.

The bottom line for all improvement activities, be it quality, productivity, or others, is to satisfy customers so that they will keep coming back to the company for more businesses which in turn results in the superior financial results. As a result, customer focus and ensuring customer

satisfaction are critical goals for the company. Competitiveness will not be an issue when customer satisfaction is achieved.

The Evolution of Quality Management

Traditionally, quality has been viewed as conformance to requirements. When a product or service met the requirements of a set of formally written specifications, it was considered to be good quality (Feigenbaum, 1994). However, this definition was made from the perspectives of product manufacturers or service providers rather than the customers of the goods or services. With the marketplace getting more competitive and consumers' attitude and expectations towards quality more sharpened, meeting a set of manufacturers' specifications is no longer sufficient. Armand Feigenbaum (Feigenbaum, 1991: p. 7) defined product and service quality as "The total composite product and service characteristics of marketing, engineering, manufacture, and maintenance through which the product and service in use will meet the expectations of the customer." Many other authors on quality also emphasize the importance of customer satisfaction (Feigenbaum, 1994; Flood, 1994; Jablonski, 1992). Thus, customer satisfaction has become the main theme in defining quality.

The development of quality philosophy has spanned over the entire twentieth century. Historically, the major changes of quality control techniques occurred in approximately every 20 years and can be summarised in the following chronological order: operator quality control, foreman quality control, inspection quality control, statistical quality control, total quality control, and total quality management (Feigenbaum, 1991).