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**THE IMPACT OF ISO 9000 ON FIRM PROFITABILITY :**

**AN EMPIRICAL STUDY OF MANUFACTURING**

**COMPANIES IN MALAYSIA.**

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## PREFACE

Existing management literature acknowledges that high quality products provide the competitive edge for a firm to succeed in the global market. To produce high quality goods, firms need to set up an effective quality management system. Hence, the field of quality management is becoming more and more important for the manufacturing and services sector, to produce goods and services which can satisfy customers' needs. Quality management system such as ISO 9000 and TQM programs have been implemented in many firms, to increase the level of product quality and customer satisfaction.

A total of 936 companies from the manufacturing and services sector have been certified to ISO 9000, by the Standards and Industrial Research Institute of Malaysia but no research has been carried out to verify whether the implementation of ISO 9000 leads to increase in firm profitability or any quality improvement. This empirical study is the first attempt to assess the impact of ISO 9000 on firm profitability, product quality and customer satisfaction, of manufacturing companies in Malaysia. This study also verifies whether ISO 9000 implemented in combination with other TQM programs can increase firm profitability on a larger scale compared to ISO 9000 implemented in isolation. Numerical and perceptual data were collected through a survey of 30 Managing Directors and General Managers of ISO 9000 certified manufacturing companies. One tailed t-tests were used to analyse the data. The analysis indicated that:

1. Firms which have successfully implemented ISO 9000 do not show any significant increase in company profitability.
2. Companies which have implemented ISO 9000 in addition to other TQM programs do not show any significant difference in profitability, compared to companies which have implemented ISO 9000 in isolation.
3. It is perceived that successful implementation of ISO 9000 leads to a higher level of customer satisfaction.
4. It is perceived that successful implementation of ISO 9000 leads to a higher level of product quality.

This dissertation is submitted to Management Centre of International Islamic University as partial fulfilment of the requirements for the Master of Business Administration. The results of this study can be used as a base for future researches in the area of quality management.

I wish to thank all those who have given their support to encourage me to conduct this study. Throughout this project, I have been guided and encouraged by my project supervisor, Dr. Naceur Jabnoun and my lecturers of the MBA program. My friends, who are also my course-mates provided the moral support that I really needed. I hereby record my sincere appreciation to my brothers and sisters, who provided the financial assistance and moral support throughout the MBA program. My greatest debt however, is to my mother, who showed me the right path in life and gave me the happiness that I will cherish forever.

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## **1. INTRODUCTION**

The main objective of this research is to assess the impact of ISO 9000 on firm profitability, product quality and customer satisfaction, of manufacturing companies in Malaysia.

Quality is a critical success factor that can lead firms to gain competitive advantage. With the seeds of vision 2020 planted in all industries, Malaysia strives to achieve global recognition for quality management. The Malaysian government encourages companies and government agencies to obtain ISO 9000 certification in order to enhance their quality management system. Based on SIRIM Directory of Certified Products and Companies<sup>1</sup> which was issued in June 1997, there are 936 companies (from the manufacturing and services sector) certified to MS ISO 9000. Although much effort is put in by the industries in Malaysia to obtain ISO 9000 certification, there has been no attempt made to verify whether implementation of ISO 9000 leads to increase in firm profitability or to any quality improvement.

Improvements in Quality normally affect a company's profit by reducing costs and increasing revenues. Quality improvements reduce waste cost and increase productivity. This automatically reduces manufacturing cost. Quality improvements increase revenue when existing and new customers are willing to pay premium prices for unique, value added products. It is important that quality improvements aim to maximise customer satisfaction because customer defection (switching to another brand) can cause the company to lose its profit potential.



Although research work in the field of Quality Management has been increasing tremendously for the past few decades, very few known studies have been conducted to find out if Quality management system brings improvement to company profit, customer satisfaction and product quality. There are examples of companies in USA which have won the coveted Malcolm Baldrige National Quality Award, but had failed to show any improvements in terms of profit. One such company is, Wallace Company<sup>2</sup> which won the MBNQA but eventually had to file for Chapter 11 Bankruptcy Protection. Al-Humedhi<sup>3</sup>, who studied the effects of TQM on improving organisational quality in Colorado State Government found that only modest improvement was observed in the areas of human resource utilisation, quality assurance of products and services and quality results. Moreover, some scholars suggested that ISO 9000 is not well linked to product quality.

Though most of the Quality Management practitioners strongly support the notion that implementation of ISO 9000 leads to a higher level of product quality, customer satisfaction and firm profitability, this notion is not supported by strong evidences, as there has not been any known study which compares the level of product quality, customer satisfaction and firm profitability before and after implementation of ISO 9000. This study is conducted to come up with the evidence which can confirm whether the implementation of ISO 9000 leads to a higher level of product quality, customer satisfaction and firm profitability. Through this study, we also want to confirm whether the positive impact of ISO 9000 on firm profitability is greater when the system is implemented with other TQM programs or not. From the responses received, this study will be able to grasp the extend of implementation of

TQM programs in ISO 9000 certified companies. This study will indirectly serve as a reminder to the Top Management of the sample companies, to assess the impact of Quality Management on their product quality, customer satisfaction and profitability. The results of the study will be able to indicate the current scenario of the impact of ISO 9000 on product quality, customer satisfaction, and firm profitability, of manufacturing companies in Malaysia. This will then be able to guide quality management practitioners and academicians in Malaysia on the future areas for research.

Before outlining the specific objectives of this research, an explanation on the concepts used in this work is presented below.

### **ISO 9000 Quality Management System**

A quality management system is defined as (ISO 8402<sup>4</sup>), “the organisational structure, responsibilities, procedures, processes and resources for implementing quality management”. A quality management standard is developed by customers to give them confidence or assurance that suppliers meet customer requirements and can provide evidence that they have met customer requirements.

ISO 9000 is a set of five universal standards for a Quality Assurance System, that is accepted around the world, adopted by 90 countries. It is divided into a few parts as defined below<sup>5</sup>.

ISO 9000 - 1:1994 : Quality Management and Quality Assurance Standards Part 1:  
-Guidance for Selection and Use.

ISO 9000 - 2 :1993 : Quality Management and Quality Assurance Standards Part 2:  
-Generic Guidelines for the Application of ISO 9001, ISO 9002 and ISO 9003.

ISO 9001 : 1994 : Quality Systems - Model for Quality Assurance in  
Design/Development, Production, Installation and Servicing.

ISO 9002 : 1994 : Quality Systems - Model for Quality Assurance in Production,  
Installation and Servicing.

ISO 9003 : 1994 : Quality Systems - Model for Quality Assurance in Final  
Inspection and Testing.

ISO 9004 - 1 : 1994 : Quality Management and Quality System Elements Part 1:  
1994 Guidelines.

A number of elements in ISO 9000 certification are related somehow to the Total Quality Management (TQM) philosophy. ISO 9000 series quality management system can be integrated with TQM programs to bring about continuous improvement and efficient utilisation of the corporate resources.

## **Total Quality Management**

Feigenbaum<sup>6</sup> defines Total Quality Management (TQM) as the total quality control's organisation-wide impact. Tobin<sup>7</sup> defines TQM as the totally integrated effort for gaining competitive edge by continuously improving every facet of organisation culture. Wicher's definition of TQM<sup>8</sup> :

*Total* : Every person in the firm is involved (and where possible its customers and suppliers).

*Quality* : Customer requirements are met exactly

*Management* : Senior Executives are fully committed.

## **The Basic Principles of TQM**

The TQM philosophy emphasises use of all employees in an organisation, usually in multifunctional teams, to bring about improvement from within the organisation.

The Basic Principles of TQM<sup>9</sup> are classified into ten elements:

1. Leadership
2. Commitment
3. Total Customer Satisfaction
4. Continuous Improvement
5. Total Involvement

6. Training and Education
7. Ownership
8. Reward and Recognition
9. Error prevention
10. Co-operation and teamwork.

The next section, presents the objectives of this dissertation along with the hypotheses to be tested.

### **Objectives of Research**

The major objectives of this research are to investigate whether :

1. Firms which obtained ISO 9000 certification yield higher profits after implementation of ISO 9000, compared with profits before implementation of ISO 9000.
2. The approach of implementing ISO 9000 in combination with other TQM programs leads to greater firm profitability, compared with the approach of implementing ISO 9000 in isolation.
3. The Successful Implementation of ISO 9000 leads to a higher level of customer satisfaction.
4. The Successful Implementation of ISO 9000 improves product quality.

## **Hypotheses**

- H<sub>1</sub> : Companies which have successfully implemented ISO 9000 have managed to increase company profitability.
- H<sub>2</sub> : Companies which implemented ISO 9000 in addition to other TQM programs have shown more profitability than companies which implemented ISO 9000 in isolation.
- H<sub>3</sub> : Successful Implementation of ISO 9000 leads to a higher level of customer satisfaction.
- H<sub>4</sub> : Successful Implementation of ISO 9000 improves product quality.

## **Organisation of the Dissertation**

This dissertation consists of five chapters. Chapter one, gives the introduction and background of this study. Chapter two is a review of the available literature on this subject. The first section of chapter two gives a literature review on ISO 9000, the second section provides some literature on TQM, the third section presents a review of the studies assessing quality programs and general performance and the fourth section discusses the literature on quality and profitability. Chapter three provides the problem definition and the methodology used. Chapter four presents an analysis

of the results in view of the objectives of this work and the literature review.

Chapter five gives the conclusion and recommendations.

## 2. LITERATURE REVIEW

This chapter presents relevant literature related to this study. The first section gives a literature review on ISO 9000. The second section provides some literature on TQM and the third section presents a review of the studies assessing quality programs and general performance. The fourth section gives the literature on quality and profitability.

### **The ISO 9000 series**

According to Hakes<sup>10</sup>, after World War II, pressure for quality came from the military. The 05 series of Ministry of Defence, (MoD) quality standards and the Allied Quality Assurance Publication were originated just after World War II. Firms in the automotive industry began to establish their own quality system standards, to assess their suppliers. In order to reduce multiple assessments, the British Standards Institute (BSI) developed the military standards into BS 5750 series. Since then, these standards have been used as the source for the ISO 9000 series.

The ISO 9000 Series of Standards requires that a basic quality system be implemented to ensure customers that suppliers have the capabilities and systems to provide quality products and services.<sup>11</sup> ISO 9000 series requirements are clearly defined, but how the requirements are met is left up to the organisation. The requirements of ISO 9001 are divided into 20 clauses.<sup>12</sup> The clauses and elements are given in Table 2.1.



Clear documentation of key processes (processes which affect product quality) is required, but the documentation can be in the form of work instruction, training material or displayed as a process flow chart at the work area. A distinctive feature of ISO 9000 is its requirement for internal quality audits. Internal quality audits are to be performed in accordance with documented procedures and the management personnel are responsible to take timely corrective and preventive actions on the deficiencies found by the audit. The effectiveness of the corrective and preventive actions are confirmed by the internal quality auditors.

**TABLE 2.1 : THE STRUCTURE OF ISO 9001 : 1994**

<b>CLAUSE</b>	<b>ELEMENT</b>
4.1	Management Review
4.2	Quality System
4.3	Contract Review
4.4	Design Control
4.5	Document and Data Control
4.6	Purchasing
4.7	Control of Customer Supplied Product
4.8	Product Identification and Traceability
4.9	Process Control
4.10	Inspection & Testing
4.11	Control of Inspection, Measuring and Test Equipment
4.12	Inspection & Test Status
4.13	Control of Nonconforming Product
4.14	Corrective & Preventive Action
4.15	Handling, Storage, Packaging, Preservation & Delivery
4.16	Control of Quality Records
4.17	Internal Quality Audits
4.18	Training
4.19	Servicing
4.20	Statistical Techniques

## **Total Quality Management (TQM)**

TQM is a revolutionary concept<sup>13</sup> which recognises that quality is not only affected by tangible investments such as machines, processes and facilities, but is also affected by intangibles such as the integration and management of these resources, the corporate and cultural environment, personnel motivation, etc. It is a management philosophy that was invented by an American, W. Edwards Deming but first accepted and implemented by the Japanese, who named it Total Quality Control. TQM is viewed as a total commitment to manage a firm's resources to achieve the highest levels of performance in everything in which the firm is involved. In TQM, in addition to the external customer, there is also the internal customer. The internal customers are the layers of people within the company who must be satisfied with the operations of their jobs so that they can produce a quality product that they are satisfied with before they can sell it to the external customer. TQM recognises that there is always a better way to get things done. Traditionally, production and its control were two separate functions. TQM recommends that the management of quality be integrated and that self-control and regulation be introduced at the areas where defects can occur. Continuous improvement by total involvement of employees is much emphasised in TQM. TQM encourages innovative approaches to problem solving, in order to improve work practices. Another aspect of TQM is the use of statistics to identify the areas for improvement. There are many approaches of TQM which have been suggested by leading quality practitioners. Basically, all these approaches focus on the following:-

1. Reduce the complexity of the systems through simplification and increased manageability.
2. Be market oriented, by responding to the customer's needs and satisfying his/her real needs.
3. Be people oriented, by increasing awareness through participation, innovation and adaptation to problems when they occur.

Ahire <sup>14</sup> developed ten constructs of TQM implementation, based on the available literature. The ten constructs of TQM Implementation suggested by him are :

- top management commitment
- customer focus
- Supplier Quality Management
- Design Quality Management
- Bench marking
- SPC Usage
- Internal Quality Information Usage
- Employee Involvement
- Employee Empowerment

A high level of employee involvement is required throughout the organisation, to successfully implement TQM activities. The commitment and effort needed to implement TQM can be substantial. Continuous commitment from the CEO and the management team is necessary to build an effective team that aims for continuous improvement.

### **Studies assessing Quality Programs and General Performance**

This section outlines some of the studies that were conducted to assess the impact of Quality Programs on the firm's general performance. Empirical evidence of ISO 9000's potential for improving financial performance is not available to date. Sidney Hill<sup>15</sup>, in one of his articles, highlighted that one weakness of ISO 9000 program is the lack of link between ISO registration and higher quality products. The link is missing because, while ISO 9000 calls for creating and documenting a systematic program for producing and delivering products, it has no specific provisions for judging product quality. A small number of studies have been carried out on TQM and its impact on financial performance. Most of the literature that is available is based on studies which have small sample sizes and studies which normally focus on one particular organisation or industry. These studies are usually supported by a few success stories. The following are descriptions of such studies, drawn from the available literature.

TQM has become a famous buzzword. Managers rushed to implement TQM in order to improve quality, increase productivity and cut down cost. Many companies have however, failed in achieving the desired goals through TQM. Many such companies have failed to increase profits. Studies so far have shown that the benefits of TQM are only marginal. For example, Boston Consulting Company carried out a survey on TQM and its impact on firm competitiveness<sup>16</sup> in 1992 and found that **only one-third of the companies surveyed acknowledged that their TQM process had a significant impact on improving competitiveness.**

An empirical study by Opara<sup>17</sup> investigated the effects of successful implementation of total quality management philosophy in a corporation. Likert scale questionnaires which measures attitude, were administered to selected Chevron employees in five of its facilities in California. The survey concluded that if TQM principles are successfully implemented, not only will better productivity reduce cost per unit, but customers will also respond to better quality, which will **increase corporate market share, create more jobs and maintain a higher return on investment.**

Al-Humedhi<sup>18</sup> evaluated the effects of implementing TQM on improving organisational quality, in Colorado State Government. A questionnaire was developed to measure employees' perceptions of quality improvement. The survey was developed based on the criteria for Malcolm Baldrige National Quality Award. From a random sample of 600 employees, a response rate of 68.3 % was achieved. The survey results revealed that while recognisable improvement was observed in

overall organisational quality, leadership commitment and customer satisfaction, only **modest improvement** was noticed in the areas of human resource utilisation, quality assurance of products and services, and quality results.

Christensen<sup>19</sup> carried out a study that utilised 150 of Ford Motor Company's Q1 suppliers as models for the successful implementation of a TQM program. Tests comparing 3 year pre- and post-sample period performance concluded that significant improvements occurred from the adoption of a TQM program. Accounting and market-based financial performance measures revealed that Q1 firms outperformed their competitors. However, Christensen recommended that **more studies be conducted** before a broad based endorsement of TQM from a financial stand point is warranted.

Edward E. Lawler and colleagues<sup>20</sup>, in their book, 'Creating High Performance organisations : Practices and Results of Employee Involvement and Total Quality Management in Fortune 1000 Companies, discuss the findings of a long term research project sponsored by Association of Quality and Participation. In 1993, survey forms were sent to 985 companies from the fortune 1992 listing of large manufacturing and service organisations. 279 companies responded. The relationship between Employee Involvement (EI) and TQM practices and measures of performance such as return on sales, return on investment and return on equity was studied. The authors mention that multiple regression analyses showed that five out of seven financial performance measures were significantly related to the levels

of adoption of EI and TQM programs but they do not report the actual regression results. **Although the authors conclude that companies can improve their financial performance by adopting EI and TQM practices, they do not provide the evidence to support this conclusion, in the text.**

Ahire, S.L.<sup>21</sup> conducted a study to determine if TQM age affects TQM effectiveness in terms of operational results. He developed a set of TQM implementation constructs from the available quality management literature, which is mentioned on page 13. Ahire also developed a scale to measure the critical operational outcome of quality efforts, that is - product quality. Items on the ten implementation constructs were measured on a seven point Likert scale. Responses were referred to the primary product of the firm or, the product generating the highest annual sales revenue. The study focused on two industries in the United States : electronics and motor vehicle parts and accessories. A total of 181 usable responses were received. The hypotheses were tested using one-tailed-t-tests. The result of this study dismisses the opinion that due to its strategic nature, the payoffs from TQM cannot be expected until years after its launch. The study showed that successful firms can achieve higher operational results in the first two to three years of implementation. The results of the study also revealed that **a firm can increase their operational performance through strict execution of the ten TQM implementation constructs.**