

# **QUALITY MANAGEMENT IN MICRO ENTERPRISE'S FOOD AND BEVERAGE PROCESSING INDUSTRY**

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## **LIST OF ABBREVIATIONS**

<b>CSF</b>	<b>Critical Success Factor</b>
<b>SME</b>	<b>Small and Medium Enterprise</b>
<b>TQM</b>	<b>Total Quality Management</b>

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## **ABSTRAK**

Perusahaan kecil dan sederhana memainkan peranan penting dalam pertumbuhan ekonomi Malaysia. Bilangan perusahaan mikro dalam industri pemrosesan makanan dan minuman menunjukkan trend yang meningkat. Kebanyakan mereka adalah syarikat berasaskan keluarga. Tanpa sistem pengurusan kualiti yang betul, pembesaran pasaran terutamanya ke pasaran antarabangsa adalah amat susah. Salah satu alat kualiti yang popular adalah Pengurusan Kualiti Menyeluruh (TQM). Ia ialah satu pendekatan penambahbaikan berterusan untuk meningkatkan prestasi syarikat dengan meningkatkan Proses, produk, perkhidmatan, budaya dan persekitaran. Pelaksanaan TQM dalam industri pemrosesan makanan dan minuman terutamanya dalam perusahaan mikro masih sukar kerana kekangan kewangan dan teknikal. Untuk mengatasi cabaran ini, penyelidikan mengenai amalan sistem pengurusan kualiti dalam perusahaan mikro perlu dilakukan. Seterusnya, elemen-elemen kritikal pelaksanaan TQM boleh dikenal pasti. Sehubungan itu, hubungan antara TQM dan prestasi organisasi dapat ditemui. Kajian mengenai elemen TQM dan prestasi organisasi dapat mengurangkan kekangan kewangan di samping menggalakkan aktiviti kualiti. Satu kajian kes telah dijalankan dengan tiga buah syarikat usaha mikro pemrosesan makanan dan minuman syarikat di kawasan Utara Malaysia untuk mengenalpasti amalan semasa sistem pengurusan kualiti dalam dan penentu elemen TQM. Temu bual berstruktur telah dijalankan bersama pemilik syarikat atau pengurus besar untuk mendapat kualiti data dan maklumat yang diperlukan untuk penyelidikan. Data tersebut telah dianalisis dan ditafsirkan untuk mencapai objektif penyelidikan. Ia didapati bahawa tahap semasa sistem pengurusan kualiti masih rendah dan kualiti hanya tertumpu semata-mata pada produk. Penentu elemen TQM telah dikenalpasti - kepimpinan, tumpuan pembekal, tumpuan pelanggan dan penambahbaikan berterusan. Keempat-empat elemen ini mempengaruhi prestasi perniagaan dan operasi syarikat. Sementara itu, pengurusan sumber manusia dan penjaminan kualiti mempengaruhi prestasi inovasi syarikat. Kepimpinan kekal sebagai elemen utama dalam melaksanakan sistem pengurusan kualiti dalam sesuatu syarikat. Pelaksanaan sistem pengurusan kualiti seperti TQM memberi manfaat dan penting kepada pertumbuhan perusahaan mikro untuk bersaing di tempatan dan antarabangsa.

## **ABSTRACT**

Small and Medium Enterprises (SMEs) play important roles in Malaysia's economy growth. There is a growing trend in the number of micro enterprises in food and beverage processing industries. Many of them are family-based enterprises. It is proven difficult to enlarge the business without a proper quality management system especially to the international market. One of the popular quality tools is Total Quality Management (TQM). It is a continuous improvement approach to improve the performance of a company by improving the processes, products, services, cultures and environments. The implementation of TQM in SMEs' food and beverage processing industry especially in micro enterprises is still hard due to financial and technical constrains faced by them. In order to overcome these challenges, research on the quality management system practices adopted by these enterprises is conducted. Hence, the critical elements in implementing TQM is identified. Subsequently, the link between TQM elements and organizational performance is found. Study on TQM elements that directly impact the organizational performance will reduce the financial constrains while encouraging more quality activities. A case study was conducted with three micro enterprise food and beverage processing companies in Northern Malaysia area to determine the current practices of quality management system. The determinants of the TQM elements are identified. Structured interview was conducted with the company owner or the general manager to obtain the quality data and information needed for the research. The data was then analysed and interpreted to suits the research objectives. It is found that the current quality management system level is still low for the micro enterprises and the quality practices focus solely on the product. The determinants of TQM elements identified are leadership, supplier focus, customer focus and continuous improvement, and they affects the operational and business performance of the case studies companies. Meanwhile, human resource management and quality assurance affects the innovation performance. Leadership remains the major important element in implementing a quality management system in the company. The implementation of quality management system such as TQM is beneficial and crucial to the growth of the micro enterprises on becoming competitive firms in local and international scenes.

## **Chapter 1**

### **INTRODUCTION**

#### **1.1. Background**

In Malaysia, the SMEs contributes the most to the economy growth by providing job vacancies, increases exports while maintaining competitive edges with other growing countries. SMEs in Malaysia are divided into two categories – manufacturing sectors and services or other sectors. Small and Medium Enterprises (SMEs) are defined for those in manufacturing sectors that sales turnover not exceeding RM50 million or full time employees not exceeding 200 workers and for those in services or other sectors that sales turnover not exceeding RM20 million or full-time employees not exceeding 75 workers according to SME Corporation Malaysia. Micro Enterprise refers to those companies who have fewer than 5 workers or sales turnover less than RM 300,000.

In 2010, there were overall a total of 662,939 establishments of enterprises in Malaysia and 645,136 of them were SMEs, with the highest involved industries being services sectors. The SMEs provided job opportunities of more than 3.6 million employment. From those services sectors, the food and beverage industry is one of the key contributors – holding a record of 132,721 enterprises, which is second only to the motor vehicles industries. Overall, it is the second biggest industries in Malaysia.

It is clear that food and beverage industry is destined to be one of the potential and upcoming industries in Malaysia. To emerge as a global competitor in the food industry, there is an urge to provide better quality of food products, with entrusted conformity and quality assurance. The quality of food covers the aspects of food preparation procedure, raw materials contents, nutrition, hygiene, waste disposing system, factory environment and workers' health. Total Quality Management (TQM) is one of the tools many enterprises no matter large or small scale, uses to improve their performance.

TQM is defined as a management approach to long-term success through customer satisfaction. All members of the organization must take part in improving the processes, products, services, culture and the environment in which they work. TQM can be defined as a holistic management philosophy that strives for continuous

improvement in all functions of an organization. [1] It stresses the importance of different elements in organization that affects the overall performances. The elements covers from top to bottom and from inner to outer. From the top, there are the leadership management and strategy planning. From the bottom, there are employee relations and training. From inner, there are teams of manufacturing, management and research team. From the outside, there are suppliers and customers. All these elements will affect the quality management.

## **1.2. Problem Statement**

There is no restriction on which elements of TQM to apply first to achieve the improvement in performance. There are different quality management models based on TQM that can be implemented for different industries. The results shows tremendous improvement in productivity and revenue. However, with the lack of resources and management support, it is no easy feat to simply convince the SMEs to implement TQM. The limitation always comes in term of the money resource, which is a big feat to any small company wanting to apply any kind of quality management system. The investment must be done to recruit the right leaders to lead the quality management and the training. Although the benefits seem attracting, it is still quite a big constrain to invest almost millions of dollars to create and maintain the TQM.

To overcome the limitation, there can be a shift of focus to the more critical elements of TQM rather than TQM as a whole, to achieve the organizational excellences that those companies desire. Although there are plenty of sources for TQM online and printed, there is still lack of study on the critical elements of TQM implementation in food and beverage industry in Malaysia especially related to SMEs. The latest study is in 2013 that relates the TQM elements with organizational performance of SMEs in food and beverage industries in Malaysia. [2] However, the journal only ranks the critical success elements of TQM in relates to organizational performance as a whole combination from business and operational performance. The study did not specify the relationship of TQM elements with the sub-element of organization – innovation performance, which is a key element for branching the business and attracting new customers. TQM elements also weights differently in relation to business and operational performance.

There is also a lack of study on TQM implementation in micro enterprise. Micro enterprise always faces bigger financial problems than most medium enterprise and the majors issues are the lack of human power and technical knowledge. The micro enterprises' environment are drastically different from medium and small enterprise and in food and beverage industry, they are mainly family-based business. There is lack of study specific to understand the quality system in these micro enterprises and the problems they face. There is no clear indicator of quality management level in these micro enterprises. Some may have implemented the elements of TQM without realizing it themselves. This gap of study must be filled to help these micro enterprises to grow into bigger enterprises and be more competitive.

### **1.3. Study Objectives**

To fully understand the implementation of TQM in micro enterprise food and beverage processing industry, it is important to know the current situation of these food and beverage industries right now. The current implementation level of quality management system in these industries needs to be identified. We need to know the critical elements for them in implementing the quality management system and the problems and the constraints they face in enforcing the quality system in their company. From there, we can then identify the critical elements in implementing TQM in these industries and find solutions to solve or reduce the constraints they are facing.

The study objectives are as below:

1. To determine the quality management system practices adopted by micro enterprise food and beverage processing industry.
2. To identify the critical elements in implementing Total Quality Management (TQM) in micro enterprise food and beverage processing industry.
3. To determine the impact of Total Quality Management (TQM) elements on organizational performance.

#### **1.4. Project Scope**

To achieve the project objective, a research is done on quality management in micro enterprises food and beverage processing industry. A questionnaire is prepared as a guide for the structured interview. There were three micro enterprises in food and beverage processing sectors that have been chosen as multiple case studies. The respondents of the study for the interview are influential people in the company which are the general manager or the director of the company. Companies chosen are all from the Seberang Prai District.

#### **1.5. Thesis Outlines**

The thesis has been organized in five chapters. A brief outline of the various chapters is as follows:

**Chapter 1** is the introduction of the thesis. It gives foreword about the micro enterprise and Total Quality Management (TQM) in Malaysia. The chapter gives an overview of the thesis including five important elements such as research background, problem statement, study objectives and scope of the study.

**Chapter 2** presents thorough and extensive literature reviews of the study. The chapters provide important historical, theoretical and methodological understanding of related topics based on various researches.

**Chapter 3** deals with methodology of the research. This chapter will describe the methods used for the research.

**Chapter 4** presents the results and discussion of the study. This chapter commences with research results from the case study. The results are analysed and interpreted.

**Chapter 5** is devoted to conclusions and recommendations. The finding of research is stated in this chapter. This chapter also discuss the recommendations for future research.



## Chapter 2

### LITERATURE REVIEW

#### 2.1. Definition of Quality

In business, quality is often defined as fitness for purpose. Quality is a perceptual and subjective attribute as it is often defined differently by different group of people. For the users, it is mostly focusing on how well the performance of a product or service while for the producers, it is focusing on how correctly the product or service is being produced.

There are many different perspectives when it comes to quality. The popular definition of quality is described by Philip Crosby in his first business book, Quality is free– the definition of quality is conformance to requirements. [3] In this case, the requirements refer to both the product and customer's requirements. The main aim of the quality system is prevention, which is coherent to his idea of solving the North American quality crisis during late 1970s – “Doing it right the first time”. He believes that a good quality performance is zero defects in terms of the customers and product requirements and with a well-established quality management system, the savings return will be more worthy than the cost of setting up the quality system.

The Father of quality, W. Edwards Deming linked quality with the management system. [4] He strongly believes that customers are the key to the production and fulfilling the customers' requirements setting the quality. The quality is defined by product, users and instruction to use. He also taught that by adopting appropriate principle of management, organizations can increase the quality and reduce the cost. In terms of quality, it is defined as the ratio of results of work done or productivity to cost. By improving the quality, the costs will go down and the productivity will increase.

Another Quality guru, Joseph M. Juran defines quality as fitness of use in terms of design, conformance, availability, safety and field use. [5] It also comes from the customers' point of view. He believes that quality does not happen by accident, and it needs to be planned. He introduced the Juran Trilogy which is consisted of quality planning, quality control and quality improvement. The quality planning focuses on identifying the main customers group, determining the voices of customers, translating these voices into product features and specifications and optimising these features to

customer needs. Quality control focuses on measuring the processes' and products' performances and optimising them. Quality improvement is to further improve the quality through 4 different strategies: repair, refinement, renovation and reinvention.

From all the definitions of quality, it can be concluded that quality is conformance and fitness of a product or a service which is defined by the customers.

## **2.2. History of TQM**

Quality implementation in Malaysia started only in 1989, with the program "Excellent Work Culture Movement". Following that, an administrative directive entitled "Guidelines for Strategies for Quality Improvement in the Public Service" was made in 1991. It aims to introduce the importance of quality to the Malaysian industries. The Prime Minister's Quality Award was introduced in 1990, which aimed to recognize and reward the excellence in quality management practice and performance in Malaysian manufacturing industries. [6] The awards are given annually to encourage the industries to improve their quality management practices. The criteria of assessment is based on the following elements:

1. Top Management Leadership and Management of Quality
2. Use of Quality Data and Information
3. Human Resources Management
4. Customer Focus
5. Quality Assurance for External Suppliers
6. Process Management
7. Quality and Operational/Business Results
8. Corporate Responsibility

To further pushing the good quality management practices, government provided quality management and improvement manual in the public service for industries' reference. Government also provided training workshops on quality management and improvement and produced videotapes on quality for use in quality management workshops. Mass media was also utilized to propagate the idea of quality to the Malaysian. For example, slogans "Quality is conformance to customer requirements" and "Quality through prevention" were made.

The stressing on quality is also supported by the introduction of ISO9000 which is launched in 1987. ISO 9000 is a step towards the implementation of TQM as it introduces a quality management system in the industries. Even though it is introduced in 1987, the Malaysian industries are slow in implementing it. They found it difficult to implement TQM due to attitudes problem. The study done by Idris in 1997 showed that there was 66% of industries facing problems of implementing TQM due to attitudes problems – they were sceptical of TQM. [7] They didn't believe that TQM will bring benefits to them. Other than that, leadership commitment and understanding of TQM were the second and third biggest difficulties, proving that the industries lacked of information and knowledge of TQM especially the top management and the company leaders.

Therefore, in 1994, SIRIM was tasked to launch the total quality program (TQP). It is specially designed for small and medium sized manufacturing companies. It provides the training the firms and companies needed to achieve TQM. The steps are summarized as shown in Figure 2.1:

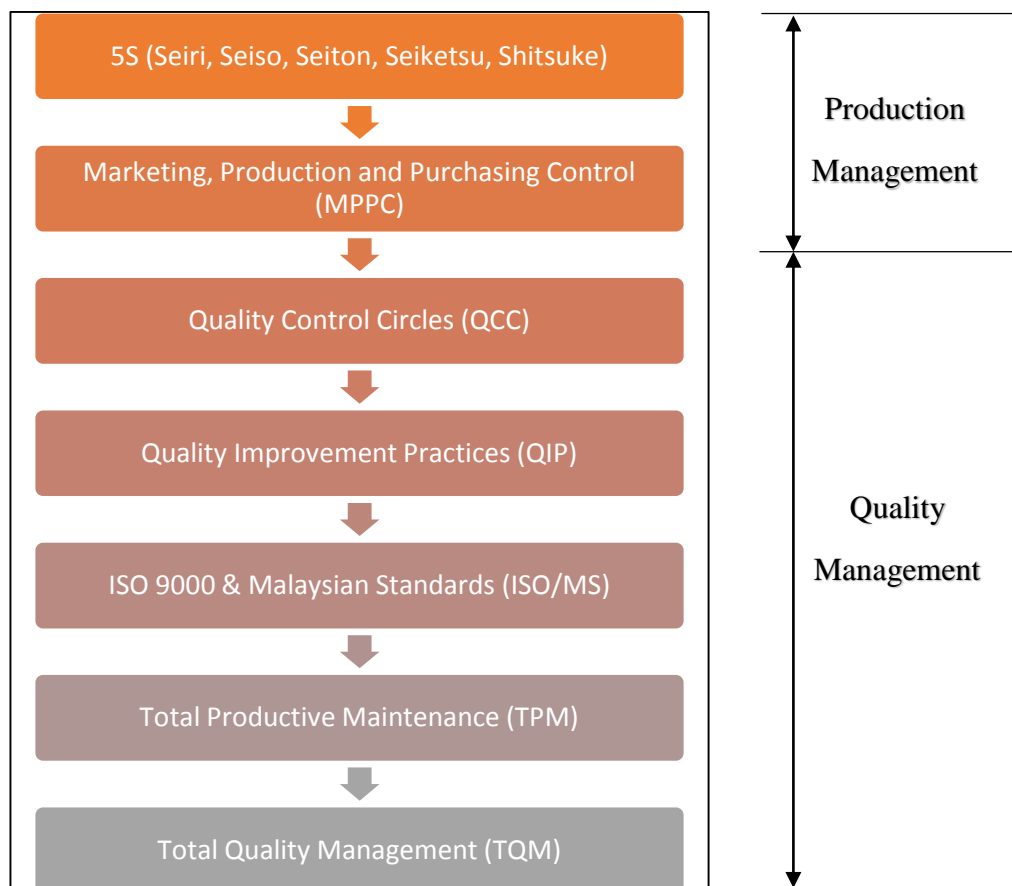


Figure 2.1: The SIRIMEX Model[8]

There is a new model (2016) for SIRIM training module called SIRIM's Total Quality Fast Track Model (TQ<sub>FTM</sub>). The model identifies the level of quality management in the firms or companies. The requirements are updated as shown in Figure 2.2:

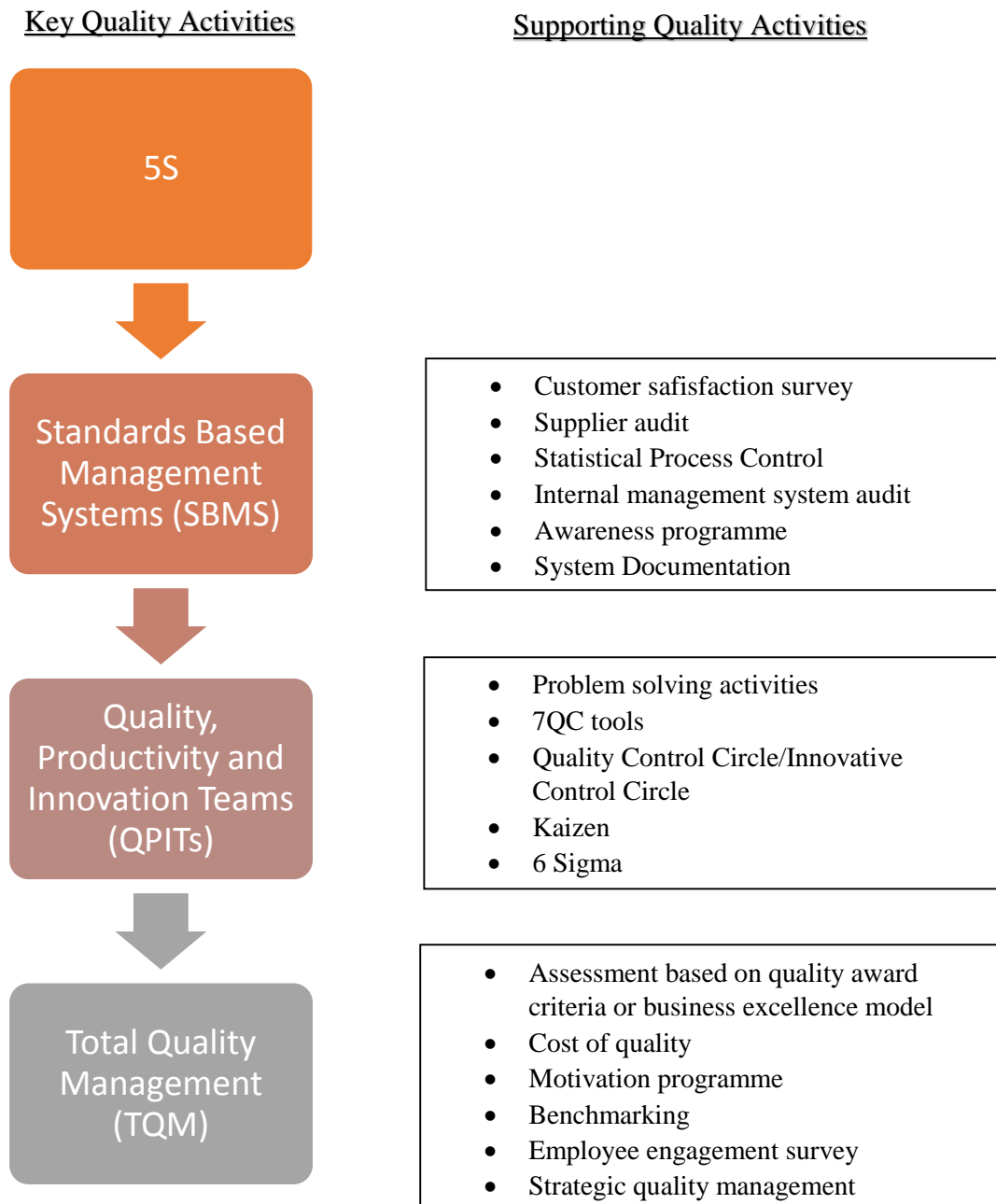


Figure 2.2: SIRIM's Total Quality Fast Track Model (TQ<sub>FTM</sub>) [9]

Although the effort to promote TQM is always ongoing, the implementation has always been easier for larger enterprise than for the small and medium enterprise. The knowledge is there to implement the TQM but many SMEs don't exactly know where and how to begin the implementation. In many cases, they give up in the early stage of

implementation when facing problems. [10] [11] To really implement TQM, it is important to understand the SMEs' standpoint on TQM because TQM implementation requires drastic change to the organization structure and culture, which may not be welcoming to traditional top management culture. Burdened more with limited resources, management and financial issues, the coverage of the quality program is also limited. Most common cases are the top management abandoned the quality program after one trial because it is too "expensive" and "not worth the investment".

According to a Thai SMEs studies in 2002, there were two categories of implementation problems – management and information/awareness problem. Management issues come in term of lack of management resources, lack commitment and team vision, and lack of leadership role in TQM. [10] Information issues come from the lack of awareness of quality problems and their financial consequences, lack of quality indicators and performance benchmark, lack of relevant information to identify potential quality improvement areas, poor information integrity and lack of statistical process awareness. The authors also notes the cultural barriers, financial issues, staff training and education problems as main problems. There is also compilation of all the implementation issues into four main groups – employee characteristics, leadership characteristics, organizational variables and environmental variables. [12] North Mississippi Health Services, two times Malcolm Baldrige National Quality Awards (MBNQA) winner identified people, service, quality, financial and growth as five CFS in maintaining the qualities. [13] The order of implementing is intentional – nurtures the best people to provide the best service and great services results in happy customers and excellent quality. High quality produces good financial results which encourages growth. All the determinants of implementing quality management are interrelated in one way or another.

To cover the issues of constrains faced by SMEs, the study on TQM, especially critical success factors in implementing TQM has been carried out. The study of TQM starts from 1980. The main influential studies are done by scholars such as Deming, Taguchi and also Crosby based on their experience in various industries. At the starting of 1990, the studies are more focused. The confirmation of importance are again stressed by the scholars. Most of their studies confirm the early research by previous scholars through empirical studies that the subject of quality must be handled well to ensure better production. [14] [15] [16] The critical success factor of TQM and its effect

on the performance has been identified, however the results are inconsistent. The results differ from each approach and each scholar use different methodology in determining the performance. Thus, to better capture the critical success factors of implementing TQM, more studies are done by combining the quality awards criteria.

There are several quality awards for manufacturing industries. The most famous international quality award is the Malcolm Baldrige National Quality Awards (MBNQA). [17] MBNQA is award annually to the organization that demonstrate quality and performance excellence. Every year, three awards are given to each of six categories: manufacturing, servicing company, small business, education, health care and non-profit. The awards is established by Congress in 1987 for manufacturers, service business and small businesses. It was first designed to raise awareness of quality management and recognize US companies that have implemented successful quality-management systems. The awards is given based on these 7 areas: leadership, strategic planning, customer and market focus, measurement, analysis and knowledge management, human resource focus, process management and organizational performance.

1. Top Management Leadership and Management of Quality
2. Use of Quality Data and Information
3. Human Resources Management
4. Customer Focus
5. Quality Assurance for External Suppliers
6. Process Management
7. Quality and Operational/Business Results
8. Corporate Responsibility

### **2.3. Determinants of Total Quality Management (TQM) Elements**

The studies by [18], [19], [20], [21] and [22] were chosen for this study as it helps to capture all the critical elements of TQM and their effects on organizational performance. The studies' elements are compared along with the MBNQA and Prime Minister Quality Award criteria to construct a list of TQM elements for micro enterprise right now. The determinants of TQM elements are as shown as followed:

Table 2.1. Determinants of TQM elements with reference to related literature

TQM Elements	Awards / Author (Year)						
	Prime Minister Quality Award	Malcolm Baldrige National Quality Awards (MBNQA)	Lakhal, Pasin, Limam (2006) [18]	Cetindere, Duran, Seda (2015)[19]	Topalovic (2015)[20]	Zehir, Ertosun, Muceldilli (2012) [21]	Sadikoglu, Zehir (2010) [22]
Leadership	Top Management Leadership	Leadership	Top management commitment and support (TMCS)	Leadership	Commitment of top management	Leadership Management	Leadership
Corporate Planning	Corporate Responsibility	Strategic planning	Continuous Support (CS)			Factual Approach to decision making	
Human Resource Management	Human Resource Management	Human resource focus	Employee training (ET) Employee participation (EP)	Internal Customer Training	Responsibility	Employee Management	Training Employee Management
Customer Focus	Customer Focus	Customer and market focus	Customer focus (CF)	External Customer	Courtesy	Customer Focus	Customer Focus
Supplier Focus	Quality Assurance for External Suppliers		Supplier Quality Management (SQM)			Supplier Management	Supplier Management
Information Management	Use of Quality data and information	Measurement, analysis and knowledge management	Information and analysis (IAA)		Courtesy	System Approach to management	Information and analysis
Process Management	Process Management	Process Management	Statistical quality technique used (SQTU)			Process Management	Process Management
Quality Assurance		Process management	Organization for quality (OFQ) Quality system improvement (QSI)				
Continuous Improvement			Continuous Support (CS)	Continuous improvement		Continual Improvement	Continuous improvement

The determinants identified in Table 2.1 are used to formulate the research model. The elements chosen for the model are discussed in the following section:

### **2.3.1. Leadership**

This element is a major element in TQM practices. It involves the senior executive leadership and personnel involvement in building, maintaining and supporting the quality system. It can produce high organizational performance, encourage individual development and change the organizational culture. There are several researches that strongly suggest that top management involvement is crucial to ensure the quality program's success. The significant roles of leaders in shaping the focus of the quality in a company are stressed.[23] Management leadership is necessary for TQM's effectiveness because leadership is directly connected to quality planning, human resource management, learning and customer focus. [24] Furthermore, top leaders control these elements in driving the organization towards total quality. [25] Leadership and top management are drivers for quality management implementation, creating values, goals and systems to satisfy customer expectations and to improve the performance of an organization. Leadership is also important as a fundamental driver of business excellence. [26]

### **2.3.2. Corporate planning**

This element is related to whether a company has a clear quality vision and every employee in the company knows about the quality vision. Corporate planning is important to examine how the company develops, communicates, implements and improves its strategies and policies to achieve excellence in the company performance and to establish a strong competitor position. [27] In addition, effective strategic business planning and deployment of plans, along with the focus on the customers', suppliers', and other stakeholders' requirements are crucial to the success of the implementation of TQM. [28]

### **2.3.3. Human resource management**

The element is connected to the extent the workforce been developed and realized through the human resource practices, employee involvement, teamwork and training in the company. Human resource management has a greater effect on quality outcomes. Through employee empowerment, a sense of ownership can be formed and internal and



external quality results can be improved. [29] The top management believes that “people are our critical resources” and “people are everything”. [30] Thus, it is believed to will have a significant effect on the organizational performance.

#### **2.3.4. Customer focus**

This element is measured by the commitment of the organization to satisfy their customer needs. It will break down the level of customer satisfaction to the company’s corporate planning, the understanding of customer needs and expectations, customer feedback, customer satisfaction in the monitoring system, and the level of interaction between the company and its customers. [31] Customer focus has a direct effect on financial performance. TQM has a positive link with the customer orientation and that strong consumer orientation encourages the firm to consistently identify new customer needs and expectations that lead to a better performance. [32]

#### **2.3.5. Supplier focus**

This element is measured as to how companies select and manage their suppliers to ensure they attain the expected quality specifications set by them. This element will focus on conceptualization of the supplier selection criteria, number of suppliers, information exchange and services, supplier involvement and the length of the relationship between a supplier and a company. [33] Furthermore, the relationship between buyer and supplier is an important factor in the organizational performance. The relationship with suppliers must be formed in order to manage their processes more efficiently. Moreover, the use of supplier management and relationship will consequently lead to achieving a competitive advantage in long run. [34]

#### **2.3.6. Information Management**

This element is about the management of quality information that influences company performance. An organization must have capabilities to use measurement and information for business performance such as quality data and benchmarking to evaluate the business competitiveness. Most literature on TQM suggests that an organization that consistently collects and analyses information will be more successful than those that do not. However, the core practice of information and analysis has a direct and significant effect on both operational and financial performances.

### **2.3.7. Process Management**

This element is connected to the way the organization manages a combination of machines, tools, methods, materials and people engaged in a production process. Process management represents the production system and procedures to establish quality in the many manufacturing activities. Process management influences continuous improvement and leads to quality outcomes. The integration of process management together with the continuous quality improvement will lead to quality products and services.

### **2.3.8. Quality Assurance**

This elements are measured by new product design review procedures, design for manufacturing procedures, control of product/s and work specifications and procedures, preventive maintenance activities, and quality control activities along the value added chain. [35] A quality system is more than an organizational structure or registration/system, but quality assurance is a culture approach achieved through training and participation in the organization.[36] Quality assurance is important and gives a significant impact to the business performance. To enable the business to succeed in the global competitive market, food manufacturers must comply with various international and local quality standard requirements. [37] [38] [39]

### **2.3.9. Continuous Improvement**

This element is related to the organization's culture and practices. This is the philosophy of continually seeking ways to improve the organization. In Japanese concept, it is called Kaizen, which is a philosophy of continually seeking ways to improve operations.

## **2.4. Organizational performance**

Organizational performance is related to how well an organization perform. The organizational performance measures should be multidimensional, as single performance can't define the quality of the organization. From the literature review, there are several ways to measure the performance of an organization.

Table 2.2 Table of study and their study level, data gathering methods and findings

Studies	Operationalization of TQM	Sources of performance data	Performance measurement level and operational definition of performance	Data gathering technique and analysis	Main findings
Quality management practices and their impact on performance. [18]	Multidimensional construct <b>Management Practice</b> Top management commitment and support <b>Infrastructure practices</b> Organization for quality Employee training Employee participation Supplier Quality Management Customer focus Continuous Support <b>Core Practices</b> Quality system improvement Information and analysis Statistical quality technique used	Perceived performance (subjective)	<b>Financial performance</b> Return on investments Return on assets Sales Growth <b>Operational performance</b> Waste level Productivity Cycle Time <b>Product Quality</b> Reliability Durability Tenacity Regularity	Questionnaire Structural equation modelling	Top management commitment and support plays a crucial role to the firm performance. Infrastructure, core practices and organizational performance are all correlated.
The effects of total quality management on the business performance: An application in the province of Kütahya. [19]	Single construct (in this study, various dimensions of TQM were examined; however a single TQM construct is used to analyse the relationship between TQM and performance) Training Leadership Continuous Improvement Internal Customer External Customer	Perceived performance (subjective)	<b>Business performance</b> Profitability	Questionnaire Correlation analysis	Emphasis on TQM will result in an increase in the performance. TQM's leadership and training criteria have higher impact on the business performance.

<p>The implementation of total quality management in order to improve production performance and enhancing the level of customer satisfaction.[20]</p>	<p>Single construct (in this study, various dimensions of TQM were examined; however a single TQM construct is used to analyse the relationship between TQM and performance)</p> <p>Commitment of top management Courtesy Responsibility Tangible element</p>	<p>Perceived performance (subjective)</p>	<p>Customer satisfaction</p>	<p>Questionnaire Correlation and multiple regression analysis</p>	<p>Commitment of top management shows the strongest influence on the customer satisfaction.  Tangible element did not show impact on customer satisfaction.</p>
<p>Total Quality Management Practices' Effects on Quality Performance and Innovative Performance. [21]</p>	<p>Single construct (in this study, various dimensions of TQM were examined; however a single TQM construct is used to analyse the relationship between TQM and performance)</p> <p>Leadership management Factual Approach to Decision Making Employee Management System Approach to Management Supplier Management Process Management Customer Focus Continual Improvement</p>	<p>Perceived performance (subjective)</p>	<p>Innovative Performance Quality Performance</p>	<p>Questionnaire Correlation and multiple regression analysis</p>	<p>Management leadership and process management affects the quality performance the most. Management leadership, continuous improvement and customer focus shows positive relations with innovative performance.</p>
<p>Investigating the effects of innovation and employee performance on the relationship between total quality management practices and firm performance: An empirical study of Turkish firm. [22]</p>	<p>Multidimensional construct.</p> <p>Leadership Training Employee management Information and analysis Supplier management Process management Customer focus Continuous improvement</p>	<p>Perceived performance (subjective)</p>	<p>Innovation Performance Employee Performance Firm Performance</p>	<p>Questionnaire Exploratory factor analysis and Confirmatory factor analysis Structural Equation Modelling via path analysis</p>	<p>Continuous improvement and process management can improve innovation performance. Both employee performance and innovation performance affects the firm performance. Focus on employees need to improve performance.</p>

Table 2.2 is a review of the studies. Many researchers qualify business performance as the ultimate organizational performance, however this approach is one-dimensional and does not really reflect the organization's quality and overall performance. The study on performance should be multi-dimensional. Many variables used are often broken down into financial and non-financial performances. Organizational performance measurement should be consists of operational performance and business performance. The other elements that should be included is innovation performance.

The three key performance measurements for organizations performances are described as below:

1. Operational Performance – A measure of a firm's internal operation. This includes productivity, product quality, customer satisfaction, waste level and cycle time.
2. Business Performance – A measure of a firm's overall financial and marketing health. This includes sales growth, profit growth and return on investment (ROI).
3. Innovation Performance – A measure of a firm's capability to create and modify the products and process to suit customers' requirements and attract new customers. This includes the number of new products and process innovation.

## Chapter 3

### RESEARCH METHODOLOGY

This chapter is focusing on the approach of the study. The methodology will discuss on the research design, data collection methods, data analysis and the data interpretation

#### 3.1. Research Design

Research design refers to the ways or methods on how research is conducted and which source of information is gathered. Multiple case study design is adapted as methodology for the research. It was introduced by the researchers, Bogdan and Biklen. [40] This approach gathers much finer quality and convincing evidences rather than conducting a single case study. [41] [42] Real-life situations governing quality management in food and beverage SMEs are identified. This approach requires acquisition of both the primary and secondary data through data collection methods. The flow chart of the project methodology is as shown in Figure 3.1:

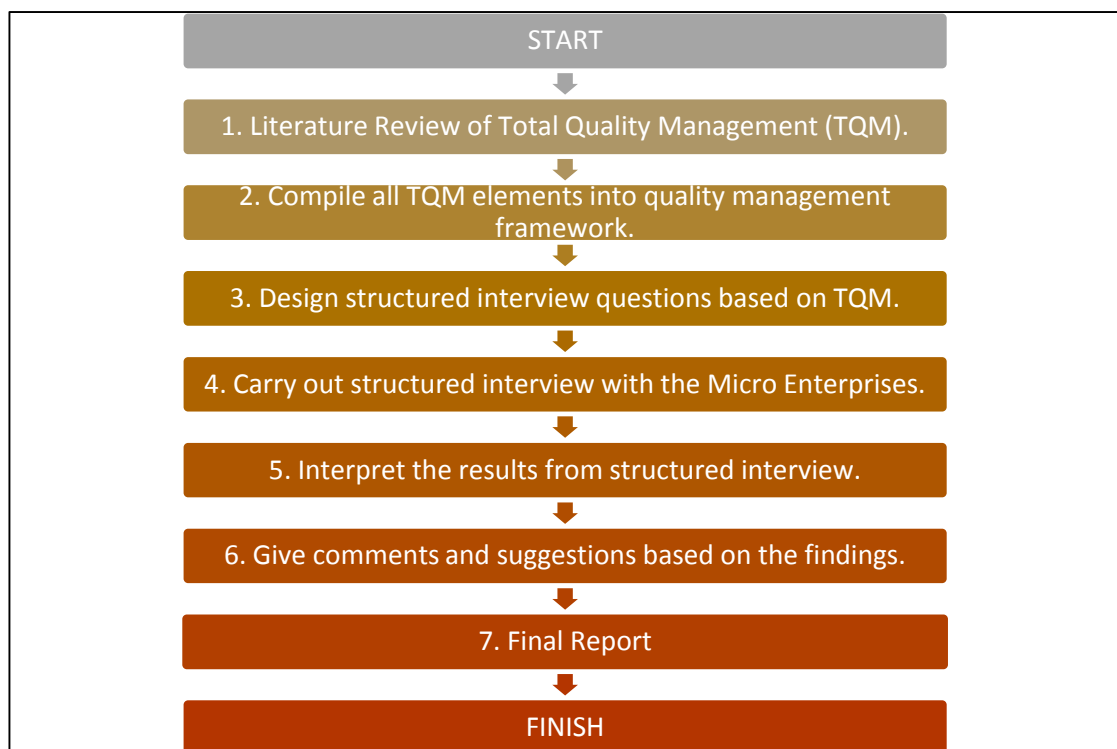


Figure 3.1: Flow Chart of the Project Methodology

### 3.1.1. Multiple Case Study

The research methodology chosen is multiple case study with structured interview. The case study approach is particularly suitable for exploring quality management practices because it can provide more prominent details. Structured interview is often conducted to truly understand the companies that are studied. The reasons for choosing the multiple cases with structured interview are:

1. Case study with structured interview reflects the clear and real image of the company.

Structured interview provides important contextual details that is often missing from normal questionnaire. Through interview, the real case of the company can be recorded in full details instead of just generalized into few choices.

2. Multiple case study provides finer quality data than single case study.

Multiple case study provides images of different case studies for comparison and analysis. It captures the subtle and minor differences between the case studies' operation and management which may contribute to multiple different results. [41] [42]

3. The number of the SME food and beverage industries that are willing to participate in questionnaire is low.

Although micro enterprises food and beverage processing industries in Malaysia plays the head when it comes to the country's economy, many are not willing to let students or researchers to go and collect data from them. They tend to do their own business with their own knowledge. Also, typical questionnaire requires 30 to 500 respondents for the mathematical modelling to be done and it can be time consuming. [43]

4. The level of language literacy for SME food and beverage industries owners is low.

A lot of Malaysia's SME comes from family business. The company holders often started working as a labour worker as a child and then took over the business from their parents. Many of them are from older generation and did not receive proper education especially in English language. Questionnaire, even with dual-languages provided, may still prove to be a difficulty for them to answer as some of them may be illiterate. Not to mention that most micro enterprises do not hire engineers or even have a quality department. Thus, some

advanced questions involved manufacturing terms (productivity, machinability etc) may be answered wrongly if using questionnaire.

### **3.1.2. Qualitative Design**

This approach of design is from appropriate interview process through the interpretation of interview data. Investigation is done by conducting a qualitative research interviews. In-depth information related to the interviewees' experiences and viewpoints of the topic discussed is the interest of this particular research design.

## **3.2 Data Collection Methods**

Primary data and secondary data collection methods has been used to gather the data in this research. In the initial stage of this research, secondary data were collected and later structured interview technique was conducted with experience respondents from micro enterprises food and beverage processing industries based on questionnaire design to evaluate the micro enterprises on their quality management adoption. Three companies are selected as the case studies to be interviewed. The company chosen must have at least a quality system. [44]

### **3.2.1 Primary data**

Primary data is obtained by execution of interviews with the general manager or the founder of three case study companies. A layout of questionnaire is prepared to guide to structured interview session and the feedbacks are analysed.

### **3.2.2 Secondary data**

Secondary data is gained through the effort of collecting information from SME-related journals, books, proceedings, case studies, newspaper and internet as being mentioned in Chapter 2.

## **3.3 Research instrument**

Questionnaire has been used in this study to aid the structured interviews with the micro enterprises' representatives. Questionnaires can be defined as a set of questions and survey to obtain useful or personal information from individuals Thus, in order to perform a good research, a good questionnaire must be designed as a guideline to the interviews. The questionnaire is divided into 4 sections:



- I. Company Profile
- II. Quality Management Practices
- III. Organizational Performances
- IV. Extra Questions

The first section is about the company background. This section aims to establish the size of the company and the basic information of the quality management system.

The second section is about quality management practices. The quality management practices are grouped according to TQM elements. The interviewees were asked about the practices they apply in their companies. All the quality practices are grouped following the literature research done in chapter 2. [45]

The third section is about the organizational performance. The interviewees were given multiple measures of organizational performances and were asked to rank them. The measures are to reflect the performances of the case studies from all dimensions.

The final section is to about the interviewees' opinions and perception on quality and quality management system. The interviewees were asked about the constraints and benefits in implementing quality management system. This section aims to gain more detailed data and review of quality system in the companies.

### 3.4. Research Model

From the literature review, a quality model for Micro Enterprises food and beverage processing industries has been drawn. It will serve as the research model for the case study.

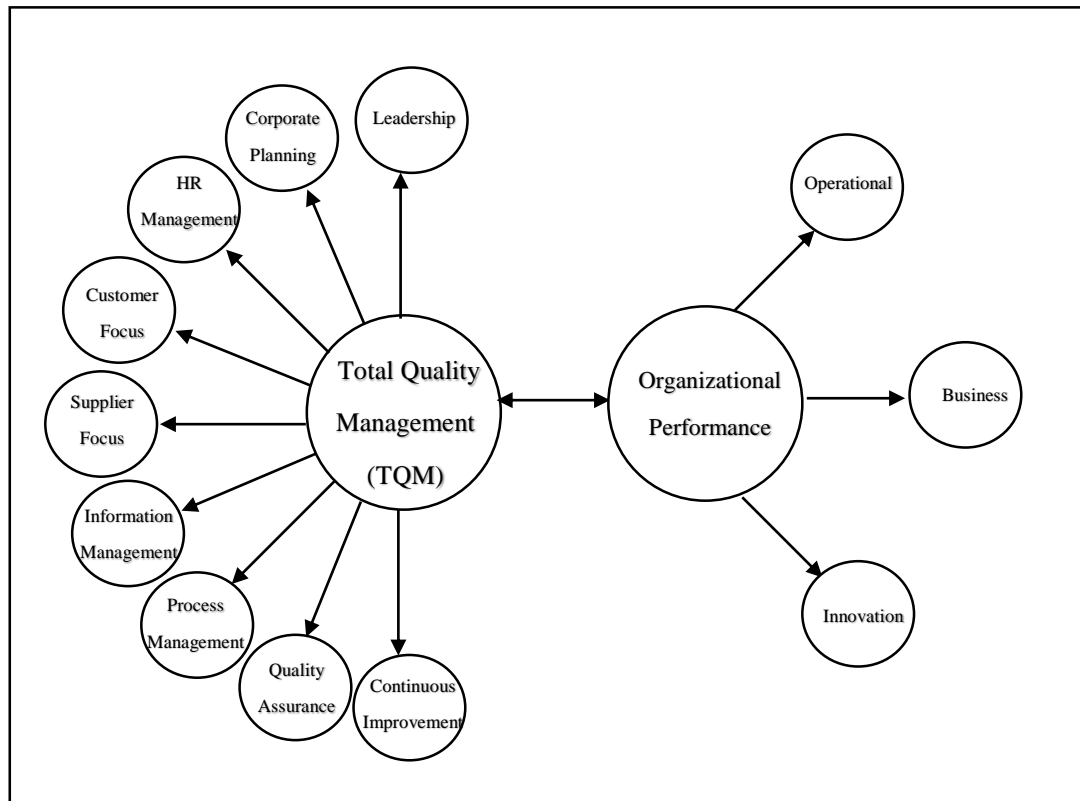


Figure 3.2: Quality research model for Micro Enterprises food and beverage processing industry.

## Chapter 4

### RESULTS AND DISCUSSION

#### 4.1. Company Profile

Common practice in industry identifies company with less than 200 employees as SMEs or sales turnover less than RM50 mil. Small firms are generally has fewer than 75 employees or sales turnover less than RM15 mil while micro enterprises have at most 5 workers or sales turnover less than RM300,000. Company A, B and C are categorized as micro enterprises as they have sales turnover less than RM300,000.

##### 4.1.1. Company A

Company A is a factory producing chocolate related products. It was a family business. Starting out as a home factory, the business expanded to a shop with the chocolate factory in the back in 2003 due to overwhelming demands from the customers. The company now has 8 full time workers, with 4 working in chocolate-focus products factory and the remaining in bread-focus products factory.

Table 4.1. Company A Profile

Company :	Company A
Address :	Pulau Penang
Year founded:	2003
Respondent :	Mrs. Aishah bt Baharom
Position :	Company Owner
Service area :	Malaysia
Types of products :	<ul style="list-style-type: none"><li>• Bread</li><li>• Cookies</li><li>• Cake</li><li>• Chocolates</li></ul>
Number of employees :	8
Customer:	Contractor, Distributor, Direct customer
Yearly Income :	RM 200,000 – RM 300,000
Quality Certifications :	<ul style="list-style-type: none"><li>• Makanan Selamat Tanggungjawab Industri (MeSTI)</li></ul>

	<ul style="list-style-type: none"> <li>• HALAL</li> </ul>
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#### 4.1.2. Company B

Company B is a bumiputera company that produces branded coffee. It was established in 1946. The coffee powder is traditionally cooked using firewood to retain the delicious aroma and taste. However, the company began to experience a decline when the coffee are no longer welcome, beside the existence other coffee companies.

On October 29, 2010, Company A was established again to continue the production of coffee powder and produce new products, namely premixed instant coffee to meet the demands of today.

Table 4.2. Company B Profile

Company :	Company B
Location :	Pulau Pinang
Year founded :	1946
Respondent :	Mrs. Syarifah Murni bt Hj Kasim @ Musa
Position :	Company Owner
Service area :	Malaysia
Types of products :	<ul style="list-style-type: none"> <li>• 2 in 1 Coffee</li> <li>• Teh Tarik</li> <li>• White Coffee</li> <li>• Coffee Durian</li> <li>• Chocolate</li> </ul>
Number of employees :	6
Customer:	Contractor, Retailers, Agent, Distributor, Direct customer
Yearly Income :	RM 240,000
Quality Certifications :	<ul style="list-style-type: none"> <li>• Makanan Selamat Tanggungjawab Industri (MeSTI)</li> <li>• HALAL</li> </ul>