



**UNIVERSITI TEKNIKAL MALAYSIA MELAKA**

**IMPACT OF MEETING QUALITY AND DELIVERY ON  
CUSTOMER SATISFACTION FOR A METAL BASED  
INDUSTRY**

This report submitted in accordance with requirement of the Universiti Teknikal  
Malaysia Melaka (UTeM) for the Bachelor Degree of Manufacturing Engineering  
(Manufacturing Management) (Hons.)

by

**INTAN FATIHAH BINTI AHMAD**

**B050810119**

**890715086272**

FACULTY OF MANUFACTURING ENGINEERING

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# UNIVERSITI TEKNIKAL MALAYSIA MELAKA

## BORANG PENGESAHAN STATUS LAPORAN PROJEK SARJANA MUDA

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## **DECLARATION**

I hereby, declared this report entitled “Impact of Meeting Quality and Delivery on Customer Satisfaction for a Metal Based Industry” is the results of my own research except as cited in references.

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Author's Name : INTAN FATIHAH BINTI AHMAD  
Date : JUNE 2012

## **APPROVAL**

This report is submitted to the Faculty of Manufacturing Engineering of UTeM as a partial fulfillment of the requirements for the degree of Bachelor of Manufacturing Engineering (Manufacturing Management) (Hons.). The member of the supervisory is as follow:

.....

Project Supervisor

## **ABSTRAK**

Hari ini, kepuasan pelanggan telah menjadi kayu ukur kepada prestasi sesuatu syarikat. Oleh itu, dengan mendengar apa kehendak pelanggan dan suara mereka boleh menjadi strategi untuk pemasaran dan pembuatan di mana teori ini telah menjadi amalan untuk setiap syarikat untuk masa yang lama. Kajian sebelum ini ada menyatakan bahawa kepuasan pelanggan terhadap sesuatu produk mempunyai kaitan dengan kualiti dan penghantaran produk itu sendiri. Kajian ini membentangkan kesan kualiti sesuatu produk dan penghantaran produk dengan kepuasan pelanggan untuk industri yang berasaskan logam dengan menggunakan cara soal selidik. Secara keseluruhannya, seramai 50 orang pekerja tidak termasuk operator mengambil bahagian dalam soal selidik ini. Daripada jumlah populasi sample ini, seramai 30 responden dari syarikat A di mana data daripada responden ini digunakan untuk membina satu persamaan matematik manakala kesemua 20 responden data dari syarikat B digunakan untuk membuktikan kesahihan persamaan tersebut. Keputusan kajian menunjukkan profil syarikat menerusi elemen kualiti dan penghantaran produk mereka dalam memenuhi kepuasan pelanggan. Khususnya, kekuatan kajian ini terlatak kepada persamaan matematik ini di mana ia dapat membantu untuk mengukur kepuasan pelanggan dalam masa yang singkat.

## **ABSTRACT**

Customer Satisfaction has become a crucial indicator of performance in the industries nowadays. By listening to the voice of the customer which has been embraced in marketing theory and manufacturing strategy and has been practiced for a long time, it is an important strategy to meet this objective. With reference to the previous study, it is stated that, the relationship between quality and delivery and customer satisfaction exist. This study presents the findings of a survey conducted to discover the impact of meeting quality and delivery, with the criteria of customer satisfaction in a metal based industry. Altogether, 50 workers excluding operators responded to survey questionnaire. From the total sample population, 30 respondents are from Company A and another 20 are from Company B which operating in the nature of business. The 30 respondent's data were used to develop mathematical equations whereas another 20 respondent's data were used to validate the equation. From the results of the survey emerged a profile of the both companies in terms of product quality and delivery which reflecting their customer satisfaction. The particular strength of this study is providing the mathematical equation by taking quality and delivery as independent variables by which it can calculate the satisfaction of the customer in a short time.

## **DEDICATION**

I dedicate this dissertation to my family and friends, especially...

To Papa and Mama for instilling the importance of hard  
Work and higher education;

To grandpa, grandma, and uda for encouragement;

To Zulhilmi for opening my eyes to the world;

To Intan for her patience and understanding;

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## **LIST OF ABBREVIATIONS, SYMBOLS AND NOMENCLATURE**

ANSI	-	American National Standards Institute
ASQC	-	American Society for Quality Control
CSM	-	Cumulative Satisfaction Measure Model
$H_0$	-	Null Hypothesis
$H_1$	-	Alternate Hypothesis
MBI	-	Metal Based Industry
NAE	-	Need and Expectation
ND	-	No Date
SPSS	-	Statistical Analysis in Social Science
TNB	-	Tenaga Nasional Berhad
US	-	United State
n	-	Sample
$\alpha$	-	Alpha
$\beta$	-	Beta
$\mu$	-	Mean
$\sigma$	-	Standard Deviation
>	-	More than
<	-	Less than

# **CHAPTER 1**

## **INTRODUCTION**

### **1.1 Background**

For a manufacturer, they will only survive in the industrialized world when their product can be sold in the high number. But to achieve the target, the manufacturer has to win the customer first where the product produced by the manufacturer must have the criteria that win the order in the market where we called it as order winner. Other than that, the product that has been introduced by the manufacturer also must have their unique criteria where we called it as qualifier to win their customer's heart. By having the product differ from other might win the customer heart but, the product produced most relevant to what customer expect and want.

In this journal, the author tends to create the mathematical equation of customer satisfaction for the manufacturer. Thus, it can make manufacturer easy to know what customers want and need.

#### **1.1.1 History of Customer Satisfaction Researcher.**

Research on customer satisfaction has occurred in the early 1980s. The operationalization of customer satisfaction and its antecedents has been working and focus by Oliver (1980), Churchill and Surprenent (1982), and Bearden and Teel (1983). The focus of both applied and academic research had shifted to construct refinement and

the implementation of strategies designed to optimize customer satisfaction in the mid-1980s (Zeithaml *et al.*, 1996).

Parasuraman (1985), Berry (1985) and Zeithaml (1985) has attributed a rigorous scientific inquiry and develop a general service quality theory. Their discussion of customer satisfaction, service quality, and customer expectations represents one of the first attempts to operationalize satisfaction in a theoretical context. They proposed that the ratio of perceived performance to customer expectations was key to maintaining satisfied customers. In 1988, Parasuraman, Berry, and Zeithaml has published a second, related discussion that focused more specifically on the psychometric aspect of service quality. Their multi-item servqual scale is considered one of the first attempts to operationalize the customer satisfaction construct. The servqual scale focused on the performance component of the service quality model in which quality was defined as the disparity between expectations and performance.

The battery of items used in the servqual multi-item scale is still used today as a foundation for instrument development. The primary areas considered in the scale involved tangibles, reliability, responsiveness, assurance, and empathy. For many years these dimensions were regarded as the basis for service quality measurement.

Both applied and academic researchers focused on these issues and their effects on overall customer satisfaction in 1980s (Zeithaml *et al.*, 1996). That is, the primary research question involved which of the five areas were most important vis-a-vis customer expectations. Much of the earliest applied work involving the derivation of attribute importance involved stated important measures. Surveys commonly sought both importance and performance measures for every item. The gap between these two measures was considered instrumental in resource allocation. Large gaps demanded the most attention. Note, however, that Parasuraman *et al.* (1988) employed regression analysis to assess the effect of each dimension relative to a dependent measure in their introduction of the SERVQUAL model. Using regression analysis and other dependency



models to derive the importance of attributes relative to an outcome measure is now considered de rigueur.

## **1.2 Problem Statement**

There is no doubt to tell a good design of the product depends on what customers want and need. Thus, the manufacturer needs to clearly know what customer want and expect from their product before they release their product to market. If the manufacturer wants to introduce a new product, the product need to have a criteria based on what customer want, in order to survive in a market where we called it as order qualifier and order winner.

Quality and Delivery have been listed as the one of order winner and qualifiers but there is no proof that the Quality and Delivery were ones of the factors that contribute to the customer satisfaction.

Thus, the author wants to produce an equation to calculate the customer satisfaction by using Quality and Delivery as independent variable. Thus, in order to know the impact of the Quality and Delivery to customer satisfaction, thus the author has come out with two hypotheses:

H<sub>0</sub>: Quality and Delivery can affect customer satisfaction

H<sub>1</sub>: Quality and Delivery cannot affect customer satisfaction

## **1.3 Objective of the Study**

The main objective of this study is to find out the impact of the customer expectation towards enhancing the customer satisfaction in the metal based industry.

The specific objectives are:

- (a) To investigate the environment of metal-based industry from which the factors contribute to quality and delivery can be determined.
- (b) To create an effective customer satisfaction model suitable for metal based study.
- (c) To validate the model of customer satisfaction.

#### **1.4 Scope of the Study**

This study will focus on the medium and high volume industry.

The scope of the study is to find on how the customer satisfaction can affect the development process in the industry. Thus, this study will attempt to understand the character of the customer satisfaction and how it be used in the industry. The condition of the company after implementing the customer satisfaction model will be observed and all the information will be noted, so that the impact of the customers' expectation on their satisfaction can be known.

This research will be done at two companies where in this study the two companies will be addressed as Company A and Company B. Both of the Company A and Company B which located at the Balakong, Selangor and Krubung, Malacca were together responsible to produce TNB part. After the equation has been generated, then the validity of the equation will be tested with data from Company B. Less or equal with 30 respondents will be collected for each of the companies.

## **1.5 Layout of Study**

In order to understand the flow of this study, here is the outline given so that the reader can understand the progress of this study.

- (a) The first chapter will introduce the introduction, the objective, scope of the study and problem statement.
- (b) The second chapter is about literature review.
- (c) The third will explain and show all the methods and methodology of study.

## **CHAPTER 2**

### **LITERATURE REVIEW**

Design solution should appear after understanding the customer needs and expectation (Xinwei Zhang *et al.*, 2010). It also has been the subject of many studies in recent years, however, there are some shortcomings in research on this subject that particular not or lack bring out the specific issues on the impact of the customer needs and expectation (NAE). The purpose of this research is to address this issue.

#### **2.1 Introduction**

The origin research on factors influence in customer satisfaction can be traced back early in 1980s. The researcher on customer satisfaction has been done by Oliver (1980), Churchill and Surprenent (1982), and Bearden and Teel (1983). They have responsibilities to attribute a rigorous scientific inquiry and develop a general service quality theory. They have discussed and represents the ratio of perceived performance to customer expectations was a key to maintaining customer satisfaction.

There is another crucial factor can affect the customer satisfaction which are delivery, time, cost and quality (Terry Hill, 2000). This statement has been agreed by Roberto Sarmiento *et al.* (2005) when he stated that, quality, flexibility, delivery and costs has aimed at manufacturing firms to achieve the highest levels of performance along this area. Thus, it has admitted that, the position of a company in the

marketplace can be enhanced with manufacturing capabilities such as flexibility, quality, delivery and cost.

Womack *et al.* (1990), Kim and Arnold (1992), Sweeny and Szwajkowski (1996), McKone *et al.* (2001) has reported that there are compatible between delivery reliability and quality. This association is important; as it prompts the question of what type of relationship exists between those two variables and whether it can contribute to the Customer satisfaction.

## **2.2 Customer Satisfaction**

Customer satisfaction has been defined as a response to the evaluation of the process (Joan L. Giese and Joseph A. Cote, 2000). The existing literature indicates the wide variance definition of the customer satisfaction. Lack of the definition will limit the contribution of consumer satisfaction research. Joan L. Giese and Joseph A. Cote (2000) has stated that, the lack of a consensus definition of satisfaction will creates three serious problems for consumer satisfaction research: selecting an appropriate definition for a given study; operationalizing the definition; and interpreting and comparing empirical results. These three problems affect the basic structure and outcomes of marketing research and theory testing. The important to defining a construct's theoretical meaning and conceptual domain has been agreed by Bollen (1989), Churchill (1979) and Gerbing and Anderson (1988) as a necessary steps to developing appropriate measure and obtaining valid results. By giving a unclear definition of the terms will develop the specific item's context becomes difficult and idiosyncratic. This statement can be proven when Westbrook (1987) defines satisfaction as a 'global evaluative judgments about product usage or consumption. In this case Joan L. Giese and Joseph A. Cote (2000) has argued this statement based on this definition, satisfaction was assessed using an item like the following.

Because the concept of customer satisfactions a new, it's important to be clear on exactly what's meant by the term. Customer satisfaction can be defined as a state of mind that customers have about the company when their expectations have been met

or exceeded over the lifetime of the product or service. The company loyalty and product repurchase will be led by the achievement of customer satisfaction.

Kevin Cacioppo (2000) has stated reason the important implications of this definition:

- (a) Customer satisfaction is a subjective, no quantitative state; measurement won't be exact and will require sampling and statistical analysis.
- (b) The measurement of the customer satisfaction must be undertaken with an understanding of the gap between customer expectations and attribute performance perceptions.
- (c) The customer satisfaction measurement has to be connected with the bottom-line results.

The word 'satisfaction' can be referring to different facts of the relationship with a customer, and this fact is shown below:

- (a) Satisfaction with the quality of a particular product or service.
- (b) Satisfaction with an ongoing business relationship.
- (c) Satisfied with the price-performance ratio of a product or service.
- (d) Satisfaction because a product/service met or exceeded the customer's expectations.

Any company can be helped by defining and understanding customer satisfaction clearly by identifying opportunities for product and service innovation and serve as the basis for reward systems and performance appraisal. Customer satisfaction surveying program can be a basis that can ensure that quality improvement efforts are properly focused on issues that are most important to the customer (Kevin Cacioppo, 2000).

### 2.2.1 Objective of a customer satisfaction surveying

Here, the purpose of making the customer surveying will be defined because any successful surveying program must have a clear set of objectives that, once met will lead to improve the performance. The basic objective that should be met by any surveying program includes:

- (a) The satisfactions of competitors over these expectations and requirements and how well our companies were determined.
- (b) The expectations and requirements of all our customers should be understood.
- (c) The service and product standards will be developed based on our findings.
- (d) Trends over time were examined in order to take action on a timely basis.
- (e) Priorities and standards were established to judge how well you've met these goals.

This program is burdensome to the organization and its customers in terms of time and resources on where there is a no point to engaging in this work unless it has been thoughtfully designed so that only relevant and important information is gathered. But of course it is frustrating if there are informations that indicate the problem but the organization fail to take direct action and fail to isolate the specific cause. There are lesson to overcome with the problem:

- (a) The more specific question should be attached in order to et the customer satisfaction measurement because the general question are not often helpful.
- (b) It is more difficult to design an excellent customer satisfaction surveying program than it might first appear. It will require more than just writing a few questions, designing a questionnaire, calling or mailing some customer, and then tallying the result.

## 2.2.2 Advantage of Customer Satisfaction

Dr. Jagdish (Jag) N. Sheth (n.d.) has state 6 competitive advantage through Customer satisfaction.

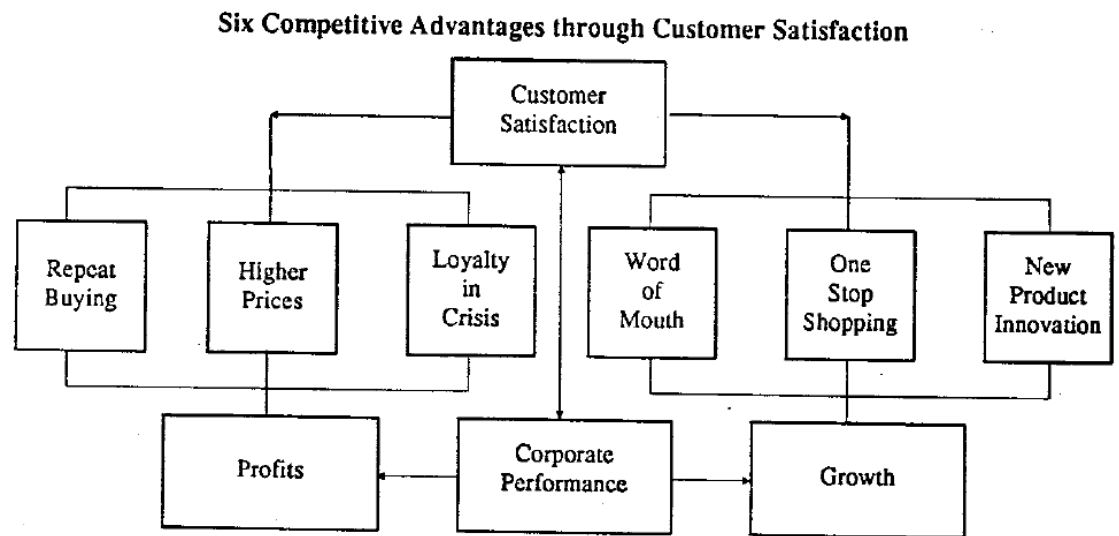


Figure 2.1 Six Competitive Advantage through Customer Satisfaction

Dr. Jagdish (Jag) N. Sheth (n.d.) has explain each 6 competitive advantage through Customer satisfaction:

(a) Repeat Buying Results in Lower Costs

By retaining as much as 90 to 95 percent customer can label the company as the best competitive where total business comes from existing customers. It is less costly by retaining existing customers compared to gaining the new customers, especially in mature markets with entrenched competitors.