CHAPTER 1

INTRODUCTION

1.1 BACKGROUND OF STUDY

Sigma is a quality improvement approach which systematically effective to improve organization performance based on the use of various statistic analytic technique. The higher sigma level, the smaller probability level of defects occurs in products. However, a number of organizations prefer to use Six Sigma because it has standard of only produce less than 3.4 defects per million opportunities. The purpose is to reduce process variance by eliminate defects that bother customer satisfaction. Six Sigma has concern on improving quality by reducing defects. There are five phase in DMAIC steps which are (1) Define, is define the problem and scope of project; (2) Measure, is measure the performance quality of current process; (3) Analyze, is analyze process performance to separate problems; (4) Improve, is improve performance by giving problem solution (5) Control, is control the process or product which already improved to ensure the target attainment [1].

In this project Six Sigma quality tools are used to improve quality and productivity of the stabiliser bar produced by Company A. This company produces stabiliser bar and supply it to the Proton, Perodua, Honda and other automotive company. Specialize in producing cold drawn steel bars of various sizes for automotive industries and manufacturer of stabilizer bars. Now Sapura already lead a supplier of stabilizer bar in Malaysia. We also aim to bring our product abroad to make Malaysian product become well known.
1.2 PROBLEM STATEMENT

The quality of the stabiliser bar is low due to the some problems at forging process. The quality department faces some complaint from their customer because of the product do not follow the specifications that the customer needed.

1.3 OBJECTIVES

This study will utilize Six Sigma Quality Tools to design a systematic project which will overcome the problem of low quality of the stabiliser bar due to the some problems at forging process at Company A. Thus, the objectives of this study are indicated as follows:

I. To investigate and define the problems at forging process that cause low quality and productivity of the stabiliser bar
II. To measure and analyze the latest technical problem of the productivity and quality in the production line
III. To improve and control the latest technical problem of the productivity and quality in the production line

1.4 SCOPE OF RESEARCH

The scope of research focuses on implementing Six Sigma Quality Tools – DMAIC (define, measure, analyze, improvement and control). DMAIC method is a closed-loop process that removes unproductive steps, focuses on quality measurements, and applies new ideas for continuous improvement. Furthermore, the scopes of research are clarified in the following:

I. Study of productivity and quality problems in the production of stabilizer bar focusing on the forging activity
II. Project investigation is performed using Six Sigma model DMAIC (define, measure, analyze, improvement and control)
III. Research investigation is conducted at Company A, an automotive parts manufacturing company.

1.5 SIGNIFICANCE CONTRIBUTION AND EXPECTED OUTCOME

The significance contribution of this project is through implementation of Six Sigma Quality Tools which is DMAIC which produces suitable statistical process knowledge to better understand and improve future results. It is also a set of solid step and tools for process improvement. It can give variability knowledge in order to reduce instinctive reactions. Lastly, DMAIC is a based decision on facts and concrete quantitative analysis [2]. While, the expected outcome of this research are as follows:

I. The productivity will increase through the application of Six Sigma model in the production line

II. Higher quality of the product can be achieved after the application of Six Sigma model

1.6 OVERVIEW AND THESIS LAYOUT

This final year project thesis has been structured into 5 chapters. Chapter 1 contain the introduction of this research, it provides with the background of studies, problem statements, significance of study, objectives including the scope of study. Chapter 2 is literature review chapter which presents the previous research in various areas which is relevant to this study. The literature review begins with an explanation about Six Sigma Quality Tools and how to apply it in the real situation. The problem that we faced is also mentioned in this chapter. The methodology of this research is presented in Chapter 3. This chapter explains the technique of DMAIC which one of the method for Six Sigma Quality Tools. The experimental results and discussions which show the effect of this improvement for the quality of the products and the productivity are discussed in Chapter 4. The discussion will be focused on the how the Six Sigma Quality method can solve the problem in a quality and productivity aspects. For Chapter 5, the conclusions of this research study and recommendations for further work are discussed in this chapter.