CHAPTER 1

INTRODUCTION

1.1. Background

P.T. Mekar Armada Jaya is the biggest autobody industry in South-East Asia. One of the products is Reinforcement Rocker-Outer Left Handed (Y 2021). It is a component of Xenia, a car produced by P.T. Astra-Daihatsu Motor Jakarta.

Within the progress, P.T. Mekar Armada Jaya has experienced on applying inappropriate sampling plan. The inappropriate sampling plan resulted on the invalid inspection result. The inappropriate sampling plan gave wrong perception about the quality level of the lot. P.T. Astra-Daihatsu Motor frequently claimed P.T. Mekar Armada Jaya for receiving and/or accepting bad lot(s). The bad lot did still exist even when the Quality Control staffs have inspected the product very carefully. In quality control, there is a term called 'consumer's risk'. It is a risk suffered by consumer for accepting bad lot(s) through sampling method. It happens if the inspector picks the few-good product(s) as sample(s) within many-defect products in a lot. The wrong perception of the lot quality level occurs due to the high consumer's risk, as the result of inappropriate sampling plan.

P.T. Mekar Armada Jaya suffered extra cost burden to repair or replace the bad lot(s) or product(s) as the impact of the invalid inspection

result. The invalid inspection result also disturbed the production process smoothness in P.T. Astra-Daihatsu Motor. Learning from the experience, P.T. Mekar Armada Jaya does not want to have inappropriate sampling plan anymore. It has replaced the inappropriate sampling plan with the new one. The inappropriate sampling plan used 3 samples within the lot of 100 products with acceptance number equal to 0. The new sampling plan uses 82 samples within the lot of 100 products with acceptance number equal to 2. The new sampling plan has lower consumer's risk and able to cover the consumer quality requirement. In short term, P.T. Mekar Armada Jaya has overcome the problem, but new problem possibly rises in long term. P.T. Astra-Daihatsu Motor has a regulation to tighten the minimum defect limit gradually until touching zero level. The minimum defect limit is the minimum percentage of defect(s) may exist in a lot. It means P.T. Astra-Daihatsu Motor will reject any lot with defect percentage larger than the minimum defect limit. In quality control term, the minimum defect limit is recognized as Limiting Quality Level (LQL). Considering the regulation to tighten the LQL, the current sampling plan will be obsolescent in certain point of LQL. The obsolescent sampling plan will cause the invalid inspection result and make P.T. Mekar Armada Jaya to repeat the bad experience.

It is important to alert the obsolescence of the current sampling plan in order to avoid P.T. Mekar Armada Jaya from having invalid inspection result. To help alerting the obsolescence of the sampling plan,

the writer would like to find out the affordable LQL limits for the current sampling plan. The LQL limits describe the range of LQL that can be covered by the current sampling plan. The upper LQL limit tells the user to loosen the sampling plan if the LQL value increases above the upper limit. The lower LQL limit tells the user to tighten the sampling plan if the LQL value decreases below the lower limit. The writer uses trial and error method to find out the affordable LQL limits for the current sampling plan.

1.2. Problem Statement

The main problem of the research in this final report is finding the answer of the question below:

a. What are the affordable LQL limits for the current sampling plan?
b. What should P.T. Mekar Armada Jaya do to face the tighter LQL requirement from client?

1.3. Objective of the Research

a. To find the affordable LQL limits for the current sampling plan.
b. To alert the obsolescence sampling plan in order to avoid the Quality Control Division of P.T. Mekar Armada Jaya from invalid inspection result.

1.4. Problem Limitation

a. The research occurred in the Quality Control Division of Stamping Tools Department of P.T. Mekar Armada Jaya Magelang.
b. The object of the research is Reinforcement Rocker-Outer Left Handed (Y 2021). The product produced only for P.T. Astra-Daihatsu Motor Jakarta.
c. The sampling plan in the research is given. It is the up-to-date sampling plan in P.T. Mekar Armada Jaya.
d. The writer assumes all components of the sampling plan, except the LQL, are stable and fixed.
e. The method to find the LQL limits is trial and error method.

1.5. Methodology

1.5.1. Data

The data for doing research in this final report is the sampling plan data of Reinforcement Rocker-Outer Left Handed (Y 2021). The sampling plan data includes the lot size, sample size, acceptance number, AQL, LQL, α, and β. The writer obtains the data from the writer's internship study report and interview with the Head of Quality Control Division.

1.5.2. Step of the Research

The steps of conducting the research are:

a. State the problem formulation, the background and the objective of the research.

b. Determine problem limitation, method of analysis, data needed, and schedule of research.
c. Make proposal and submit the proposal to the faculty.
d. Collect the data for conducting the research.
e. Analyze the data and search the affordable LQL limits for the current sampling plan using trial and error method.
f. Discuss the analysis result.
g. Take the conclusion from analysis and discussion.

The flowchart of the steps to conduct the research is shown on figure 1.1. on the next page.

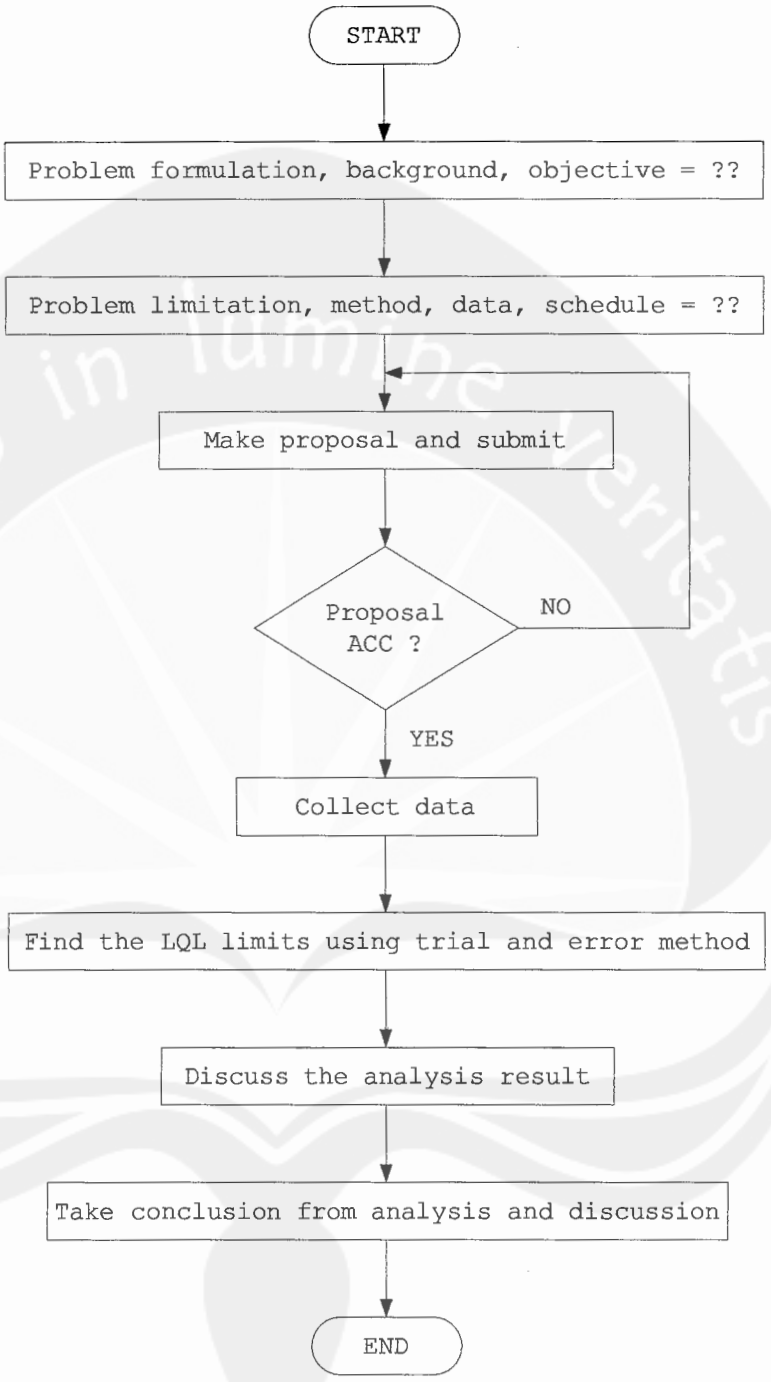

Figure 1.1. Flowchart of Steps to Conduct the Research

1.6. Report Outline

The report outline of the final report is listed as follow:

Chapter 1 : Introduction

This chapter contains background, problem formulation, objective of the research, problem limitation, research methodology, and report outline.

Chapter 2 : Literature Review

This chapter contains list of earlier research(s) related to the topic. It also contains the difference of the earlier research(s) toward this research.

Chapter 3 : Theory

This chapter contains theories from books as the base of analysis.

Chapter 4 : Company Profile and Data

This chapter contains brief description about the research object and the manufacturer. Data used in this research is the data of sampling plan for one defined type of product (Y 2021).

Chapter 5 : Data Analysis & Discussion

This chapter contains analysis and discussion from the data using trial and error method.

Chapter 6 : Conclusion and Suggestion

This chapter contains conclusions from the analysis and discussion. It also contains suggestion for the further research.